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Building Bridges: Improving Extension Support to Organic Growers in North Georgia

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Organic agriculture has the potential to improve the environmental performance of U.S. agriculture, supporting increasing food demand and diversification of food consumption while improving the quality of ecosystems. Organic growers are challenged by a lack of Cooperative Extension agent support as agents have not served organic growers to the same extent as conventional growers nationwide. Rogers’ (2003) diffusion of innovations theory guided our phenomenological inquiry to explore (a) what agents experienced while supporting organic growers, and (b) how agents experienced providing support to organic growers in north Georgia. According to participants, the essence of the support offered to organic growers was an uneven bridge. Agents were willing to provide growers with the resources to support organic production; however, they lacked theoretical and empirical knowledge regarding organic agricultural production that would enable them to establish stronger relationships with growers. Findings from the study and the uneven bridge metaphor led to an original model to assist Extension agents in better serving the organic agricultural community.

Keywords: Extension agents’ perceptions, organic agriculture, organic growers, phenomenology

Introduction

The United States (U.S.) is expected to lead global economic and agricultural growth for the next eight years (Interagency Agricultural Projections Committee, 2018), supporting increasing food demand and diversification of food consumption globally. According to the United Nations (UN), by 2030, sustainable food production systems and resilient agricultural practices should be adopted by growers to increase food production while improving the quality of ecosystems globally (UN, 2019).

Organic agriculture has the potential to improve the environmental performance of U.S. agriculture by reducing pesticide residues in water and food; reducing nutrient pollution and...
carbon levels in the atmosphere; improving physical, chemical, and biological conditions of soils; and enhancing biodiversity (Greene et al., 2009). According to the U.S. Department of Agriculture (USDA) Certified Organic Survey (2012, 2017), between 2011 and 2016, the total number of farms under USDA certified organic operations increased over 55% nationally and over 100% in Georgia. The USDA survey did not take into account organic operations that were classified as Certified Naturally Grown (CNG); thus, undercounting total acreage in organic production nationwide. There are over 750 CNG producers in the U.S., most of which are located in Georgia (Certified Naturally Grown, 2019), which prompted us to explore Extension agents’ experiences and perceptions of supporting organic growers in this state.

Our previous research with organic producers in north Georgia uncovered many challenges and barriers to growing and marketing organic produce, including a lack of accessible research-based information made readily available to conventional growers by Extension agents (Marabesi & Kelsey, 2019). Extension is fundamental to the entire agricultural sector and has the potential to encourage organic growers as well as recruit new producers to grow organically (Marabesi & Kelsey, 2019). However, the Extension model used to support conventional growers is inadequate for organic growers because organic growers require a more knowledge-intensive and bidirectional mode of engagement between Extension agents and growers. Therefore, investigating how Extension agents perceive organic agricultural practices is important for identifying improved outreach strategies targeted to organic growers (Agunga, 1995; Özkaya, 2003).

Despite numerous studies reporting the economic profitability and increased yields in agriculture resulting from Extension agents’ efforts, there is a dearth of literature exploring Extension agents’ experiences working with organic growers. Therefore, using phenomenology research design, we explored what University of Georgia (UGA) Extension agents experienced while supporting organic growers and how they experienced it in terms of conditions, situation, and context. From a phenomenological lens, we analyzed Extension agents’ experiences in providing support to organic growers (Creswell & Poth 2018; Moustakas, 1994; van Manen, 2014). The essence of these experiences emerged to inform recommendations for establishing Extension educational programs to better serve organic growers. We present an original model for extending land-grant university research-based knowledge and educational support to organic growers using Extension agents as change agents.

**Cooperative Extension Service History of Supporting Organic Agricultural Growers**

The Cooperative Extension System’s (CES) purpose is to promote improved agricultural practices among U.S. growers by diffusing research-based information regarding agriculture and home economics to the public (Rogers, 2003). Extension is an interpersonal communication network that delivers scientific information to shift attitudes and change behaviors among agricultural growers to adopt best practices. Agunga (1995, p. 171) stated that “farmers’ full
comprehension of an innovation is the necessary first step to adoption or rejection.” Therefore, Extension has served as an important educational mediator by maximizing growers’ access to research-based information for the purpose of improving practice (Agunga, 1995; Boone et al., 2007; Diehl et al., 2018). Over the last century, Extension has confirmed its capacity to conduct research and teach best practices through trained agents, evolving as a fundamental agency supporting U.S. agricultural development (Brunner & Yang, 1949). Goetz (2016) estimated that federal CES programs have helped more than 137,000 growers stay in business since 1985. Between 1984 and 2010, 490,000 growers left farming, yet without CES and the underlying research supporting agricultural innovation, it is estimated that the U.S. would have lost an additional 28% of growers (Goetz, 2016).

While Extension has played a significant role in supporting U.S. agriculture, it has fallen short in regard to serving organic growers. In their seminal work, Beus and Dunlap (1992) reported that land-grant university faculty were more inclined to conduct research and outreach regarding conventional agricultural practices and were oriented toward large-scale growers. Numerous authors have echoed this finding over the past three decades (Agunga & Igodan, 2007; Beus & Dunlap, 1992; Crawford et al., 2015; Gailhard et al., 2015; Hall & Rhoades, 2010; Marabesi & Kelsey, 2019; Pretty & Vodouhe, 1997; Rolling & Pretty, 1997). In summary, the literature suggests expanding research and Extension efforts to include alternative agricultural practices; however, the scope of the problem remains unknown due to a lack of research on Extension agents’ perceptions and experiences in serving organic growers.

**Extension and Organic Growers**

The term *organic* goes beyond USDA certified organic status. The USDA organic certification process requires that organic food production must not use conventional pesticides and herbicides, petroleum-based fertilizers, sewage-sludge-based fertilizers, genetic engineering, antibiotics, growth hormones, or irradiation (USDA Certified Organic Survey, 2017). Alternatively, the International Federation of Organic Agriculture Movements (IFOAM) defined organic production systems as those that sustain healthy soils and ecosystems, and rely on ecological processes, biodiversity, and cycles adapted to local conditions, while simultaneously building relationships that ensure fairness among current and future human generations (IFOAM, 2018). Since the USDA certification process was considered expensive and bureaucratic by organic growers in Georgia, many pursued other types of certification, such as Certified Naturally Grown (CNG), or remained non-certified (Marabesi & Kelsey, 2019).

Previous research concluded that effective communication between Extension agents and organic growers was essential to further extend research-based knowledge to organic growers and promote best practices among all growers (Crawford et al., 2015; Hanson et al., 1995). For example, Agunga and Igodan (2007) explored Ohio growers’ attitudes toward Extension. They reported that organic growers had a strong interest in receiving support from Extension;
however, they thought Extension agents did not have sufficient knowledge regarding organic agricultural practices to help them. The authors recommended increasing professional development opportunities for Extension agents and establishing stronger relationships with organic growers. Likewise, Crawford et al. (2015) found that establishing relationships between Extension agents and organic growers was challenging but recommended further research to measure Extension agents’ perceptions of organic agriculture that could be used to develop an improved model for service delivery.

**Agents of Change**

A number of studies have shown the potential to further the role of Extension in organic agriculture (Agunga & Igodan, 2007; Beus & Dunlap, 1992; Crawford et al., 2015; Gailhard et al., 2015; Hall & Rhoades, 2010; Marabesi & Kelsey, 2019; Pretty & Vodouhe, 1997; Rogers, 2003; Rolling & Pretty, 1997). Rogers (2003) suggested that Extension agents work as change agents by delivering research-based information that helps form attitudes and change behaviors among agricultural growers. Rogers recognized the U.S. agricultural Extension service as the “oldest diffusion system in the United States” (p. 160) and claimed that research and Extension support for a determined innovation can expedite its adoption in a state or county, whereas the lack of support can hinder an innovation’s adoption. Accordingly, previous research suggested that receiving information from formal actors using various forms of interpersonal communication increased the probability of adopting environmentally-friendly practices (Gailhard et al., 2015; Hall & Rhoades, 2010). Further, Nagel (1997), Pretty and Vodouhe (1997), and Rolling and Pretty (1997) suggested that participatory methods and approaches were important to increase learning between Extension agents, researchers, and growers. Moreover, growers became more confident that agents could help them when participatory approaches were employed.

As Extension agents diffuse university-based research, they are uniquely positioned to introduce and support sustainable practices to growers and stress the value of community engagement due to their historical mission of disseminating agricultural knowledge to the public (Brunner & Yang, 1949). Given these trends, exploring Extension agents’ perceptions and experiences in working with organic growers is important to gain a better understanding of how they go about establishing effective communication channels with this unique and increasingly relevant clientele-base.

**Conceptual Framework**

We built upon Rogers’s (2003) theory of diffusion of innovation (DOI) and Ajzen’s (1985) theory of planned behavior (TPB) to further understand Extension agents’ attitudes and behaviors toward organic growers. As such, we considered Extension as the diffusion system that delivered research-based information to organic growers.
Rogers’s (2003, p. 5) DOI theory provided a framework for understanding how new ideas and technologies are adopted and communicated in society. Rogers considered diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social system.” The process by which individuals seek information concerning an innovation is called the innovation-decision process and occurs through five main steps:

1. Knowledge: Exposure to the innovation and knowledge acquisition regarding how it works.
2. Persuasion: Development of a positive or negative stance regarding the innovation.
3. Decision: Decision-making process on whether to adopt or reject the innovation.
4. Implementation: Application of the innovation to determine its usefulness.
5. Confirmation: Seeking interpersonal reinforcement regarding an innovation-decision to finalize the decision to continue using the innovation.

The rate of adoption of the determined innovation can be understood as the relative speed with which individuals adopt an innovation. Rogers (2003) suggested five categories of adopters: (a) innovators, (b) early adopters, (c) early majority, (d) late majority, and (e) laggards. Rogers (2003) emphasized the role of opinion leaders and change agents as influencers of adoption behavior within the diffusion of innovation process. While opinion leaders are “members of the social system in which they exert their influence” (p. 28), change agents are influencers external to the system. Traditionally, Extension agents have been regarded as change agents.

According to Ajzen’s (1985) TPB, individuals make decisions rationally by considering the implications of their actions before deciding whether to behave in a certain way. Peoples’ behavioral intentions are affected by their favorable or unfavorable attitudes toward a certain behavior, the subjective norms (what other people think about their behavior), and their perceived behavior control (perception of their ability to succeed in performing the behavior, which includes self-efficacy and controllability). According to TPB, people are more likely to intend toward certain behaviors when they believe they can execute them successfully.

Extension agents’ normative beliefs help determine the subjective norms, their control beliefs give rise to their perceived behavior control, and their behavioral beliefs influence their attitudes towards certain behaviors. In conjunction, subjective norms, perceived behavior control, and attitude towards the behavior directly affect Extension agents’ intention to perform their change agents’ role to promote the diffusion of innovations within the organic growers’ community. Extension agents’ actual behavior leads to serving or not serving organic growers through the diffusion of innovations framework.

We combined elements from TPB with elements of the five-step innovation-decision process to create an emergent model to explain effective interpersonal communication between Extension agents and organic growers (see Figure 1). The model considers Extension agents’ behavior towards organic growers as being influenced by normative, control, and behavioral beliefs.
Methodology

Participants

The study population consisted of 12 agricultural and natural resources Extension agents employed by UGA in north Georgia.

The UGA sustainable agriculture coordinator provided a list of 21 Extension agents from the Northeast and Northwest Georgia districts. We targeted these districts due to the homogeneity of these regions in terms of geography and growers’ attributes. After obtaining University Institutional Review Board approval, we invited all 21 Extension agents to participate in the research study via email, and 12 agents agreed to participate for a 57% response rate.

Research Design

Hermeneutic phenomenological research design was used to capture the essence of a phenomenon (Creswell & Poth 2018; van Manen, 1997, 2014). In the context of this study, a phenomenon was considered a lived-through experience that emerges from one’s intentional awareness of an event. Furthermore, hermeneutic phenomenology attempts to interpret ordinary
experiences while simultaneously recognizing the complexity of our lived experiences that interact with the phenomenon. Phenomenological inquiries allow the researcher to understand *what* and *how* participants experience a central phenomenon and bring experiential realities to language by reflecting on themes grounded in participants’ shared experiences.

The central phenomenon addressed in this study was Extension agents’ perceptions of the support offered to organic growers. We emerged the essential structure (essence) of participants’ experiences from textural and structural descriptions of *what* they experienced while supporting organic growers and *how* they experienced giving support in terms of the conditions, situations, and context of that support (Creswell & Poth 2018; Moustakas, 1994; van Manen, 2014).

**Data Collection**

**Instrumentation.** We developed a semi-structured interview protocol to allow participants to describe their experiences through a naturalistic conversation with the interviewer. The protocol was reviewed by a committee of qualitative research specialists who also have Extension experience and followed the hermeneutic research design, utilizing insights from the literature to inform the selection of questions. We developed open-ended questions focused on participants’ experiences working with organic growers, their perceptions of organic agriculture, their participation in programs related to organic agriculture, their sources of information regarding organic agriculture, and their knowledge of organic agriculture.

**Interviews.** After securing IRB approval and informed consent, we conducted face-to-face interviews with 12 participants during fall 2018. Interviews took place at participants’ preferred locations and lasted less than one hour. We recorded the interviews using electronic devices, transcribed the interviews verbatim, and sent the transcripts and final manuscript back to the participants for verification. None of the participants requested modifications of their transcripts or the final manuscript, indicating validity of the data collected (member checking) (Tracy, 2010).

**Analysis.** The analysis included the following procedural steps as prescribed by Creswell and Poth (2018), Moustakas (1994), and van Manen (2014):

1. We developed the phenomenological question and described the central phenomenon using the literature as a guide.
2. We interviewed 12 Extension agents who experienced the central phenomenon.
3. We transcribed the interviews verbatim.
4. We engaged in member checking the transcripts to ensure accuracy by asking participants to review the transcripts for accuracy.
5. We loaded the transcripts into ATLAS.ti 8, a qualitative data analysis software to store, manage, and assist with descriptive and open coding of the interviews and observation data (Friese, 2019)
6. We used the conceptual frameworks to inform our interpretations of the data during thematic inquiry (Saldaña, 2016) and reduced the verbatim transcripts (approximately 120 pages of text) to 271 significant statements by highlighting content that provided an understanding of participants’ experiences of the phenomenon (horizontalization).

7. To emerge themes, we grouped the 271 significant statements into four themes by reflecting on what constituted the nature of participants’ shared experience, including describing what (textural description) and how (structural description) participants experienced the central phenomenon.

8. We emerged the common underlying structure of participants’ experiences or the essence of the phenomenon by writing a composite description from the textural and structural descriptions to explain the phenomenon.

9. The final step in phenomenology analysis is to develop a metaphor to communicate the findings known as the essence to capture the central structure of participant’s experiences.

Quality Control

Ensuring quality in qualitative research includes building in trustworthiness, transferability, and accuracy throughout the study (Tracy, 2010). We employed procedural, situational, relational, and exiting ethics throughout the study by (a) engaging participants in the research process, (b) representing participants’ authentic voices in the findings by using their quotes, (c) asking for participants’ feedback on the analysis and reporting phases of the study, and (d) following procedures to protect participants’ rights as human subjects (IRB approval #: STUDY00005828, MOD00006435). We sent the interview transcripts and draft report to all participants so they could judge the accuracy and credibility of the data. To ensure anonymity, we assigned pseudonyms to all participants and developed the findings as a composite profile rather than focusing on individual assertions (Creswell & Poth, 2018). We provided a thick description of the findings and included direct quotations to remain true to participants’ voices; therefore, addressing credibility and achieving resonance through transferability (Tracy, 2010).

Reflexivity

The first author was born in Brazil and got a bachelor’s degree in Agronomic Engineering. She came to the U.S. to pursue a master’s degree in Agricultural and Environmental Education (UGA, 2018). She is currently a doctoral student in Horticulture at UGA. This study is part of her master’s thesis. While she advocates for the inclusion of organic growers in Extension efforts, her biases were minimized by peer debriefing among authors and bracketing, i.e., setting aside past experiences and assumptions to have a clear interpretation of the phenomenon (Creswell & Poth, 2018). The second author served as the student’s research advisor and has 20 years of experience as a professor at a land-grant university as an evaluation specialist. She has worked extensively with Extension agents to improve program delivery and impacts of
educational efforts offered through Extension. She is also a qualitative research methods expert and guided the student through the methodology to ensure rigor.

Findings

The 12 Extension agents interviewed for this study served in north Georgia counties (see Table 1). All of them reported addressing the needs of both conventional and organic growers. However, they served organic growers to a lesser extent than conventional growers.

Table 1. Participants’ Name, Gender, and Specialty

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Gender</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amy</td>
<td>Female</td>
<td>Entomology</td>
</tr>
<tr>
<td>Bob</td>
<td>Male</td>
<td>Ornamental horticulture</td>
</tr>
<tr>
<td>Craig</td>
<td>Male</td>
<td>Fisheries management and aquaculture</td>
</tr>
<tr>
<td>Erin</td>
<td>Female</td>
<td>Horticulture</td>
</tr>
<tr>
<td>Gary</td>
<td>Male</td>
<td>Horticulture and landscape architecture</td>
</tr>
<tr>
<td>George</td>
<td>Male</td>
<td>Biological sciences</td>
</tr>
<tr>
<td>Hank</td>
<td>Male</td>
<td>Animal science</td>
</tr>
<tr>
<td>Mark</td>
<td>Male</td>
<td>Plant protection and pest management</td>
</tr>
<tr>
<td>Neil</td>
<td>Male</td>
<td>Agricultural engineering</td>
</tr>
<tr>
<td>Oscar</td>
<td>Male</td>
<td>Animal science</td>
</tr>
<tr>
<td>Scott</td>
<td>Male</td>
<td>Plant protection and pest management</td>
</tr>
<tr>
<td>Tom</td>
<td>Male</td>
<td>Biological sciences</td>
</tr>
</tbody>
</table>

The following four themes provide a composite description of what and how participants experienced supporting organic growers. Numbers in parentheses indicate line numbers where participants’ statements are located in interview transcripts for audit trail purposes (Tracy, 2010).

Extension Agents Were Willing to Help Organic Growers

Theme: Participants were supportive of the organic agricultural community; however, they said that organic growers did not reach out to them as frequently as conventional growers, justifying low levels of engagement with organic growers.

Supporting Evidence: Previous findings suggested that organic growers from North Georgia perceived Extension agents were putting more effort towards serving conventional growers (Marabesi & Kelsey, 2019). This finding was affirmed in the research reported here. Extension agent Bob said that organic growers think that Extension agents “do not know how to do anything other than spray” (16-17). Bob’s statement reflected the thoughts of all 12 participants, who agreed that there was a perception from organic growers that Extension agents are
“chemical pushers.” For instance, Craig said that most organic growers chose not to reach out to Extension because they were able to find the information they needed on Google and because they thought Extension agents were going to recommend a non-organic pesticide to solve their problems. Neil considered Georgia’s focus on agricultural commodity production as an influence on organic growers’ perceptions that Extension was not willing to support them. He said,

> There are a lot of agents that all they have ever known is production agriculture, I saw that in agents’ training, they will turn their nose up at organics….So there is a perception among people who work with the university that organic agriculture is not really relevant, is not realistic, and is never going to be an important part of Georgia’s agriculture (170-173).

Despite Neil’s claim, all participants said they were willing to help both organic and conventional growers. Neil went on, emphasizing the role of Extension by saying,

> Extension is here to serve all of our community, all the taxpayers, because we are taxpayer funded, so I feel like it is our responsibility to help someone with crop production, regardless of what their philosophies are with respect to how they grow, whether they grow organically or conventionally or whether it is a little bit of both. To me, it does not matter, if they need help trying to produce a crop, regardless of what their philosophies are, then I think it is our position to help them in any way we can (10-16).

When participants were asked if they thought that organic agriculture contributed to the state’s overall economy, Scott said no. He claimed that only a small group of people could pay the higher prices for organic products. The other 11 participants reported seeing organic agriculture as a niche market that was growing and establishing its importance in consumer preferences. In particular, Gary and George said that they supported organic agriculture and had small organic gardens at home. George grew organic produce for family consumption. Gary grew organic produce for family consumption and to sell to local restaurants. Their personal experiences with growing organically encouraged them to seek more information about organic practices, which provided them with an important knowledge base to help organic growers and promoted their willingness to engage with the organic community.

Although the agents were willing to help organic growers, they reported that they did not reach out to them as frequently as conventional growers and had little feedback when trying to contact organic growers. Gary reported that contacting organic growers was a challenge for three reasons: first, organic growers did not show up to Extension events targeted to organic agriculture; second, they were not interested to know who their county Extension agent was; and third, they did not contact Extension regarding their needs. Gary reported feeling frustrated with organic growers, stating, “I have a hard time listening to the growers complaining that Extension doesn’t try to do anything because we have and they don’t show up. Eventually, you are just going to find other clientele [to serve]” (61-63). As Rogers (2003) stated, Extension agents are
effective in influencing behavior, gaining knowledge, and developing new attitudes; however, according to Rogers, growers tend to seek information sources that reinforce existing values and traditions.

A self-fulfilling negative feedback loop contributed to forming Extension agents’ perceptions of organic growers. Extension agents perceived that organic growers did not want help from them. Craig said that Extension was not traditionally known for serving organic growers, but that did not mean that agents were unwilling to help organic growers. However, Extension agents recognized the stigma organic growers held towards them because they spent most of their time serving conventional growers. This stigma was a substantial factor that may have prevented organic growers from reaching out to Extension agents more often.

**Extension Agents Need Educational Programs in Overcoming Communication Barriers with Organic Growers**

Theme: Extension agents reported that organic growers followed organic practices because they held strong philosophical ideals regarding environmental responsibility and human well-being. Agents reported experiencing difficulties communicating with organic growers because the growers believed that agents did not understand their philosophies; therefore, organic growers did not trust Extension agents.

Supporting Evidence: The most frequently recurring statements within the interview data were participants’ uncertainty about the central factor influencing the relationship between themselves and organic growers. Agents reported barriers to establishing productive relations with organic growers; however, they had trouble identifying and explaining those barriers. Tom said that he perceived a disconnection between Extension agents and organic growers, but he did not know why it existed. Erin said that Extension should provide agents with educational resources regarding organic agriculture and then show organic growers that agents were able to help them. Craig said that it takes time to build a relationship of trust with organic growers because agents did not necessarily have the same philosophies as organic growers regarding agricultural production, environmental responsibility, and human well-being.

Agents agreed that there was a need for more training in organic agricultural production techniques; however, Gary and Neil said that learning about the science of growing organically was relatively easy for agents since all of them had a bachelors’ degree in agriculture. Neil stressed that the main need for education was with respect to understanding organic growers’ philosophies and how to effectively communicate with them. Gary said that it was important to understand growers’ philosophies in order to learn how to establish effective communication that could transcend philosophical stances and ultimately help agents to build rapport with organic growers, as he reflected:
As Extension agents, we have to be sensitive to them. Because you are going to turn that person off immediately if you say, “You can’t do this.” It is like religion and politics; it’s a belief system. Most of the time, you are not going to change that belief system, but you are definitely going to turn them off to you and everything you might have to say. I really have to be careful and try to explain things sensibly. It is a challenging group to serve because of that mentality, that belief system (148-151).

Gary’s statement was similar to others who noted the importance of understanding growers’ philosophies in order to learn how to establish effective communication that could transcend philosophical stances. According to the agents, being able to effectively communicate with organic growers and establish a relationship of trust within the organic community was essential to improving Extension support to organic growers.

**Extension Agents Need More Training in Organic Production**

Theme: Extension agents reported having a limited educational background in organic agricultural production practices and claimed that if they had more training on the topic, they would feel more comfortable working with organic growers.

Supporting Evidence: We asked participants about the existence of programs on organic agriculture provided by the university and their engagement in such programs. Agents reported participating in professional development workshops on cover crops in organic agricultural systems, taught by the UGA sustainable agriculture coordinator. The workshops were the only resource offered to them regarding organic agriculture and happened once a year. Amy, George, Mark, Oscar, Scott, and Tom explained that Extension agents were able to choose which professional development workshops they were going to attend and sought educational training according to the perceived needs in their counties. Amy, George, and Tom said that the organic movement was growing in their area and that UGA Extension agents were not as knowledgeable in this subject as they could be; therefore, they were hesitant to recommend the adoption of organic practices. Specifically, Tom said,

> I think there is definitely a need for more training on organic, more support for Extension agents to provide that organic-based information to the farmer. I think if we had that, then Extension agents might be a little more comfortable working with organic farmers (152-155).

Additionally, George emphasized how agents’ lack of preparation to work with organic growers might have influenced organic growers’ perceptions of Extension. George said,

> It is not that we do not want to help them; it’s a matter that we don’t know if we have all the answers because organic can be very difficult. Therefore, that may cause a lot of
frustration among organic farmers, thinking that we are not willing to help. We just do not have answers yet (141-148).

Collectively, all participants said they could benefit from more educational programs in organic agriculture to increase their knowledge on the topic. Participants were asked about their main sources of information on organic agriculture. Craig, Hank, and Neil typically contacted other UGA Extension agents when they were unknowledgeable of a situation. Neil explained the network of shared knowledge of Extension agents, as they relied on each other’s areas of specialization. However, Bob and Neil said their Extension network lacked agents specialized in organic production, and they would benefit from more organic specialists in the state.

Erin was the only participant who had a formal educational background in organic agriculture with a B.S. in Horticulture, specializing in organic agricultural production. She was mentioned many times by other agents as a reference in the field. Erin said that organic growers from counties outside the area she served called for help. She affirmed that the Extension agents from the counties where she was serving organic growers did not have the same technical background as her; therefore, they were not able to help organic growers to the same extent. Oscar, Scott, and Tom said that UGA should offer a certification program in organic agriculture. They said that if organic growers saw agents participating in more professional development workshops regarding organic agriculture, they would be more likely to reach out to Extension.

Besides asking for help from other Extension agents, Craig, Hank, and Neil reported reaching out to other university databases when they could not find a solution using organic agriculture resources available from UGA. Neil explained,

If UGA has a good resource, I will utilize it. But I use information from other land-grant universities every day. If I get a question that I do not immediately know the answer to, I will research other land-grant universities and what information they have available on it. I will choose the best information for my client. It does not have to be from UGA (71-75).

Seeking the best information available was also important to other agents so they could help their clients most effectively.

Extension Agents Perceive Small-Scale Organic Production as not Economically Viable

Theme: Seven agents reported not having information regarding the economic feasibility of small-scale organic agriculture in their region; therefore, they did not feel obligated to support small-scale organic production as it was considered inconsequential to the overall agricultural industry.

Supporting Evidence: Seven agents were biased against serving organic growers due to a perception that small-scale organic production was not economically viable. Bob, Craig, Hank,
Mark, Neil, Oscar, and Scott said the majority of organic growers in their counties had either another job, a spouse who had another source of income besides farming, or were retired and farming as a hobby. These assumptions led agents to the perception that small-scale organic farms in their counties were not economically viable. Craig, Hank, and Oscar mentioned that the “profit-making standpoint” influenced their attitudes towards organic agriculture. Hank said,

I have not met anybody that has farmed organically on a small-scale and made money. I said that we as Extension agents have a responsibility to, if a person is interested in entrepreneurship, if they want to make money, we have the responsibility to let them know how difficult it is going to be (123-127).

Oscar claimed that organic production could not be called sustainable if it is not economically sustainable. Craig and Hank said that they would like to see a feasibility study for small-scale organic production, where the producer could show a profit without having another source of income. Gary said,

I would like to see somebody’s balance sheet that this actually works, that it is profitable, that it is a viable option. When some person calls wanting to do small-scale organic farming, it is hard for me to say that they should invest money and invest time, without knowing that someone has done it without a whole lot of money sitting somewhere else, and it is just a hobby that might make some money (170-175).

Agents did not feel comfortable encouraging small-scale organic production because they had not experienced a profitable operation within their counties. They claimed that knowing how to help organic growers become profitable would enable agents to better support growers.

Conclusions

According to participants, the essence of supporting organic growers was that of an uneven bridge. Extension agents were willing to provide support to organic growers; however, they said that organic growers did not reach out to them as frequently as conventional growers and that they experienced difficulties in communicating with organic growers, justifying their low levels of engagement within the organic community. In addition, participants reported not having access to information regarding the economic feasibility of small-scale organic agriculture in Georgia’s northern region. Due to the lack of economic viability studies regarding organic production, and therefore, the perceived importance of the organic industry, agents did not feel obligated to support small-scale organic production. To establish productive relationships with organic growers, participants requested more training and access to information concerning the economic viability of small-scale organic agriculture in their region.

Our findings suggest that participants have not fulfilled their change agent role in regard to serving the organic community and that the relationship between Extension agents and organic
growers was not well established. These findings are consistent with other researchers who reported that Extension agents did not serve organic growers to the same extent as conventional growers (Agunga & Igodan, 2007; Beus & Dunlap, 1992; Crawford et al., 2015; Gailhard et al., 2015; Hall & Rhoades, 2010; Marabesi & Kelsey, 2019; Pretty & Vodouhe, 1997; Rolling & Pretty, 1997). Furthermore, agents justified their lack of service to the organic community due to the lessened perceived initiative of organic growers to seek information. This finding supports Crawford et al. (2015) who suggested that organic growers did not perceive Extension as a primary source of information; therefore, they did not reach out to Extension to meet their information needs.

Agents described their experiences working with organic growers and reported that organic growers had a strong philosophical ideal regarding environmental responsibility and human well-being. According to the agents, it was challenging to establish a relationship of trust with growers because they felt that Extension was more supportive of conventional practices. Our findings suggest a need to support agents’ professional development regarding understanding organic growers’ motivation to grow organically and how to effectively communicate with them to build stronger relationships and enhance trust, thus, opening up communication channels.

Agents were willing to support organic growers, but they needed more professional development on organic agriculture production techniques. Agents reported having limited educational resources on organic agriculture and claimed they would feel more comfortable working with organic growers if they had more training. They said that Extension would benefit from more educational programs in organic agriculture and considered the currently available professional development programs offered by UGA as limited. Our findings are consistent with Diehl et al. (2018) who said providing contextually relevant information to organic growers is a challenge for Extension because it requires agents to engage in additional professional development that may or may not be offered by their employer. Several agents reported not having access to information regarding the economic feasibility of small-scale organic agriculture, such as budget projections, leading to skepticism that growing organic was a viable enterprise.

The limited educational resources regarding organic practices aligned with skepticism regarding the economic viability of small-scale organic production led to barriers in establishing effective communication channels with organic growers. One participant said he did not think that organic agriculture contributed to the state’s overall economy and that only a few people could pay for organic products at the market. Others were skeptical of the economic viability of organic agricultural practices; therefore, they were not likely to encourage it. These findings are consistent with Beus and Dunlap (1992), who claimed that Extension agents are more inclined to support conventional agriculture. Our findings point to counterproductive perceptions that growers and agents have towards each other that result in barriers to communication and an overall lack of service to one agricultural sector in Georgia.
**Recommendations**

Our findings are consistent with the literature that emphasizes the need to increase collaboration between agents and organic growers through participatory approaches (Nagel, 1997; Pretty & Vodouhe, 1997; Rogers, 2003). To address the barriers identified in this study, we propose a model (see Figure 2) for building bridges between Extension agents and organic growers that combines elements of the TPB (Ajzen, 1985) and DOI (Rogers, 2003).

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**Figure 2. A Model for Building Bridges**

*Between Extension Agents and Organic Growers*

![Diagram of a model for building bridges between Extension agents and Organic Growers](image)

- **Opinion Leaders**
  - Communication
  - Normative Beliefs
  - Subjective Norms
- **Knowledge Base**
  - Control Beliefs
  - Perceived Behavior Control
- **Budget Resources**
  - Behavioral Beliefs
  - Attitude Towards the Behavior

**Diffusion of Innovations**

1. Knowledge
2. Persuasion
3. Decision
4. Implementation
5. Confirmation

- **Intention**
- **Behavior**

**Extension Agents**

**Organic Growers**
To efficiently act as change agents (Rogers, 2003), Extension agents are advised to

1. **Identify opinion leaders within the organic growers’ community and build rapport with them.** Participants reported that organic growers did not reach out to them frequently and had little feedback when trying to contact organic growers. This negative feedback loop impacted the subjective norms influencing agents’ behavior as they thought that organic growers were not interested in receiving support from Extension (*normative beliefs*). Opinion leaders are a potential means for accessing the organic community as they are able to influence other growers informally and facilitate communication between growers and agents. Therefore, identifying opinion leaders and building rapport with them would likely increase the number of organic growers responding to Extension agents’ efforts.

2. **Implement participatory approaches within the organic community to facilitate communication and build rapport with organic growers.** Participants reported it was challenging to establish a trusting relationship with organic growers. This impacted Extension agents’ ability to become formal actors in the diffusion of this innovation as they thought organic growers did not trust them. Agents would benefit from professional development training regarding communication methods to increase trust between the two groups. In addition, agents are advised to develop a better understanding of (a) growers’ motivation for growing organically through participatory approaches and (b) how to facilitate change through the innovation-decision process. This would afford agents an opportunity to cultivate interpersonal communication and learn about organic growers’ unique situations by creating commonalities between groups (Pretty, 1995).

3. **Develop a thorough knowledge base regarding the principles and practices of organic agriculture to adapt to growers’ situations.** Our findings suggest that Extension agents would benefit from more educational programs regarding organic agriculture production techniques. Improving Extension agents’ expertise would shift their attitudes toward supporting organic growers as they would have more knowledge of organic agriculture topics. Such programs should be promoted and supported by the university.

4. **Promote the development of economic feasibility data regarding the cost of implementing and managing organic agricultural systems through economic studies.** Extension agents reported being skeptical of the economic viability of small-scale organic production, which in turn, influenced the time they spent supporting small-scale organic agriculture. Agricultural leaders are encouraged to further investigate the economic feasibility of small-scale organic production and develop accessible resources that inform financial decisions.
Implications, Limitations, and Directions for Future Research

The results reported here provide practical implications for increasing Extension agents’ professional development required for better serving organic growers. By building stronger relationships between Extension agents and organic growers, there is an opportunity to increase Extension support to the organic community, regardless of the financial status of farming operations.

The findings of this qualitative study are not generalizable; however, they do offer insights into what agents experienced while working with organic growers and how these experiences informed recommendations for improving Extension support to organic growers. It is important to note that this study was limited by a small geographic region in the U.S.; therefore, further research is warranted to determine which Extension educational approaches should be adopted in other regions. Additionally, our population sample resulted from a list of Extension agents provided by a university employee; therefore, not providing a real representation of a population, which could have resulted in a biased sample. Future research should test our model for building bridges between Extension agents and organic growers to determine if the model has generalizability to other situations and whether this approach to Extension promotes the implementation of sustainable food production systems by supporting organic growers to stay in business.

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The Tasting Party Assessment: Can Educators Reliably Evaluate Preschoolers’ Willingness to Try New Foods in Group Settings?

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Food neophobia, defined as an unwillingness to consume novel and unfamiliar foods, is common in young children. Assessment of neophobia can be a challenge with this audience. With the increase in nutrition interventions focused on the young child, valid and reliable measures to assess willingness to try new foods that can be administered in groups by classroom teachers and Extension educators are needed. The Food Friends: Fun with New Foods (FWNF) program aims to increase children’s willingness to try new foods in childcare settings. The Tasting Party assessment was developed as the primary tool for measuring the FWNF program’s impact. Construct and face validity were established, and interobserver reliability between two researchers and teachers was obtained. Findings indicated the Tasting Party could reliably be used by classroom teachers to accurately observe tasting behaviors in a group of preschool-aged children. The Tasting Party provides a low-cost, low-burden valid and reliable assessment tool, thus, enhancing the scalability and reach of nutrition education programs focused on young children. The Tasting Party is adaptable for use in Extension programs such as the Expanded Food and Nutrition Education Program (EFNEP) and Supplemental Nutrition Assistance Program Education (SNAP-Ed).

Keywords: Preschool, childcare, nutrition, teachers, evaluation, food neophobia, picky eating, assessment

Introduction

Children develop eating patterns and preferences for foods early in life. Thus, the preschool years are a critical time for the development of healthful behaviors (Ventura & Worobey, 2013). With 58% of preschool-aged children attending childcare centers in the U.S. (U.S. Department of Education. Institute of Education Sciences [IES], 2017), preschools are viewed as an ideal environment to influence the development of young children’s healthful eating behaviors, such as trying new foods (Niemeier et al., 2010).
Trying new foods can be difficult for children. Food neophobia, defined as an unwillingness to consume novel and unfamiliar foods, is common in young children (Galloway et al., 2003). Neophobic children may have poorer and less nutrient-dense diets than their non-neophobic peers. Increased opportunities to experience and become more familiar with a new food can increase a child’s familiarity with that food and their willingness to try other new foods in the future (Ahern et al., 2013; Maier-Noth et al., 2016).

Unwillingness to try new foods (food neophobia) is one characteristic of picky eating. Picky eaters also reject foods based on sensory characteristics (e.g., aroma, smell, texture) and limit the type and amount of foods they eat. (Johnson et al., 2018). In early childhood, unfamiliarity with foods and sensory characteristics due to limited exposures can lead to children’s unwillingness to try new foods.

With up to 60% of preschool-aged children displaying some degree of picky eating or food neophobia, providing opportunities for children to learn about and try new foods is a recommended nutrition education strategy (Institute of Medicine [IOM], 2011). However, assessing young children’s willingness to try new foods, or food neophobia, can be challenging due to their brief attention span and limited cognitive, verbal, and social skills (Wiseman & Harris, 2015). Traditionally, evaluation measures for food neophobia have been conducted via proxy reports by caregivers – parents and childcare providers – or one-on-one tasting assessments with children (Birch & Sullivan, 1991; Damsbo-Svendsen et al., 2017). These assessments, often used in research studies and conducted by trained research staff, can be resource-intensive and cost-prohibitive for large-scale program dissemination (Austin & Novak, 1976). Further, for interventions delivered in a group setting, like many that target low-income families in Extension programs such as the Expanded Food and Nutrition Education Program (EFNEP) and Supplemental Nutrition Assistance Program Education (SNAP-Ed), individual tasting assessments are not plausible for educators to conduct due to the time and resource commitment needed. With the recent rapid rise of nutrition interventions focused on early care environments, the need for valid and reliable assessments that can be conducted by teachers and Extension educators in group settings is high (Roofe & Bihm, 2013).

Evaluation of nutrition interventions is integral to understanding both impact and effectiveness. Evaluation examines Extension programs and informs decisions about whether to continue, expand or improve interventions, deliver them to new audiences, or shift resources to other programming areas (Braverman, 2020). Ineffective interventions can cost substantial amounts of money that could be directed to more effective programs (Peersman & Rugg, 2004). Thus, programs delivered, either directly or indirectly, by Extension educators warrant strong assessment tools to support program resources and justify the allocation of resources to local, state, and federal stakeholders.
The Food Friends: Fun with New Foods® (FWNF) program is a research-based intervention designed to increase children’s willingness to try new foods in the preschool setting. The FWNF classroom program is a 12-week intervention that includes a 15 to 20-minute nutrition activity 1x/week and opportunities to try new foods 2x/week (Young et al., 2003; 2004). Various tactics bring the Food Friends to life in a playful and exciting manner. Child-centered activities and supporting materials were developed for eight food characters and 13 novel foods (Young et al., 2003; 2004). The eight Food Friends characters, such as Corrine Carrot® and Tina Tortilla®, are central to program themes and materials and help create a positive emotional valence, or ‘goodness’ about trying new foods, while also encouraging positive social interactions around food. The efficacy of the FWNF program was demonstrated originally using the well-documented researcher administered Tasting Panel assessment by Birch and Sullivan (1991; Johnson et al., 2007).

Therefore, the purpose of the study was to develop a tasting assessment to be used in the preschool setting. To allow for expanded implementation of the FWNF program, a Tasting Party assessment was developed to meet the needs of a larger scale program evaluation that could be conducted with groups of children in preschools. Using Sullivan’s tasting panel as the framework, the Tasting Party assessment was developed to be used as the primary tool which would enable teachers to measure the FWNF program’s impact on children’s willingness to try new foods (Birch & Sullivan, 1991).

**Purpose**

The purpose of this research was to a) test the reliability of the Tasting Party in measuring preschool children’s willingness to try new foods when implemented by classroom teachers (Psychometric Testing) and b) report multiple years of statewide implementation data on the FWNF program, which was assessed by the Tasting Party (Program Dissemination).

**Methods**

Implementation of the Tasting Party included two key components to be performed by two members of the teaching staff: a) the food introduction component and b) the data collection component. During the food introduction component, one teacher was asked to introduce and serve each food one-by-one in a fun party-like environment, inviting the children to taste the food. Teachers also served themselves the same foods, in the same order, and modeled tasting for the children. As one teacher served the food to the children, another teacher was responsible for the data collection component where they observed and recorded whether each child tried the food and then recorded the child’s affective rating (tried and liked, tried and didn’t like, didn’t try). Procedures for psychometric testing and program dissemination were approved by the Institutional Review Board at Colorado State University.
Tasting Party Assessment

The Tasting Party was designed to introduce six foods: two familiar foods (peaches and O-shaped cereal/Cheerios®), two FWNF program foods that were offered repeatedly through FWNF (Gouda cheese and daikon radish), and two novel foods (okra and garbanzo beans) to the preschoolers. It was rationalized that: a) the two familiar foods would be eaten by the majority of children, thus establishing a baseline, b) the rate at which program foods were sampled would reflect the impact of the intervention, and c) the rate at which novel foods were sampled would demonstrate the generalizability of the program on children’s willingness to try to other novel foods.

Foods included in the program and Tasting Party assessment were deemed to be novel to the majority of preschoolers in Colorado via previous research (Young et al., 2004). Responses to children’s willingness to try the six foods were counted and tallied as a) “tried and liked” the food offered, b) “tried and disliked” the food offered, or c) “didn’t try” the food offered (Figure 1). “Tried” was defined as the child swallowing the food. “Tried and liked” and “tried and disliked” categories were collapsed into a “tried” category.

To ensure its versatility, the Tasting Party was built into the FWNF program as an activity implemented during week 0 (pre-test) and week 12 (post-test). Teacher input was incorporated into development to ensure that they could easily perform the activity in the classroom, including
being able to a) implement the activity and assessment during existing snack-times, b) evaluate multiple children in a group setting, c) complete the assessment in 20 minutes or less, and d) make sure that the assessment required little training.

**Classroom Implementation of the Tasting Party**

Prior to program implementation, teachers attended a two-hour training session conducted byExtension, SNAP-Ed, or university program staff on the FWNF program during which the implementation of the Tasting Party was briefly covered (10 minutes). Included in the Teacher’s Guide for the FWNF program were instructions on how to execute the Tasting Party: preparation of food to be tasted, information on positive/neutral modeling of eating behaviors by teachers, instructions on how to introduce the foods to the children, and how to record results accurately.

**Psychometric Testing**

Construct validity was established for the Tasting Party through panel review by experts in the fields of nutrition, child feeding, and early childhood, while face validity was established with preschool teachers. To ascertain whether teachers could accurately assess children’s willingness to try new foods, a convenience sample of 9 Head Start classrooms was recruited to test the reliability of the Tasting Party assessment at both pre- and post-intervention. In each of the classrooms, two researchers individually observed and recorded the children’s willingness to try the foods presented. The teacher was asked to independently observe and record the children’s behaviors. Children with known food allergies (e.g., dairy, wheat) were not served that food. Data collected by researchers were combined and compared against data collected by the teacher to determine interobserver reliability (IOR).

**Program Dissemination**

Between 2009-2013, the FWNF program was disseminated to 200 preschool centers statewide, reaching 50,924 children in 941 classrooms (Anderson, 2013). During the training and again at the end of program implementation, teachers were encouraged to complete the Tasting Party with their students. Centers were mailed the Tasting Party recording sheet along with an FWNF Teacher Survey for each participating classroom. The FWNF Teacher Survey consisted of 11 questions seeking input on teachers’ favorite/least preferred program activities and their perceptions of children’s interest in each of the 25 FWNF activities, including the Tasting Party (Likert-type scale with 5 = High Interest and 1 = Low Interest). Teachers also indicated whether they ‘Did not do’ the activity with the class.

**Data Analysis**

To test for IOR, observational data were collapsed into two categories to ascertain trying: tried (scored as “1”) and did not try (scored as “0”). The IOR was assessed by agreements (A) over
agreements plus disagreements (A + D) and multiplied by 100. Research suggests that satisfactory IOR needs to be at 85% or greater percent agreement for a tool to be considered a reliable data-gathering instrument (Baglio et al., 2004; Simons-Morton & Baranowski, 1991). Data collected at pre-test and post-test Tasting Parties were analyzed with a mixed model ANOVA to determine any significant differences among observers in ratings of children’s willingness to try Tasting Party foods. Additional predictors for the class effects and time effects (weeks) were added to the model. Due to the challenges in observing the eating behaviors of all children in large classes, missing data were not considered, and there were uneven sample sizes for different foods. Missing data per food did not exceed five children per food or 4%, which is well within acceptable ranges of 15-20% (Dong & Peng, 2013).

All psychometric testing data were analyzed using SAS for Windows version 9.1 (SAS Institute Inc., Cary, N.C.). Implementation data was inputted into an Excel (Microsoft 2013) spreadsheet where descriptive statistics were calculated. For the Tasting Party data, the percent of children who tried each food was calculated, and the mean for the two foods making up the ‘familiar foods,’ ‘program foods,’ and ‘novel foods’ categories were reported.

Results

Psychometric Testing

A total of 116 children were observed during the pre-test (Week 0), and 113 children were observed during the post-test (Week 12) evaluation. On average, 12 children were observed per classroom (n = 9) for both the pre-test and post-test. Individual demographics for the children were not collected; however, participating preschools served approximately 50% Hispanic and 50% white, non-Hispanic children. A large majority of children came from families with limited resources, as evidenced by their participation in Head Start centers.

The IOR for teachers versus researchers was determined for each food and total foods observed in the pre- and post-Tasting Party. The IOR was strong between researchers and the teachers during both pre-test and post-test Tasting Party for each of the six foods and all the foods cumulatively (Table 1). A significant observer effect for okra $F(1,17) = 4.57, p = 0.048$ was noted, suggesting a discrepancy in observer interpretation of preschool behaviors towards okra during both the pre- and post-test evaluation. Teachers more frequently observed children trying okra than did the researchers. No other significant observer effects were found.

Similarly, no effects were identified for individual classes or time points on child willingness to try the foods. The within-subjects independent time effect (pre- and post-tests of child willingness to try Tasting Party foods) was not found to significantly alter child willingness to try foods. That is to say, children were not more likely over time to try foods, and different classes were not more likely than others to try foods.
Table 1. Reliability of Classroom Teachers vs. Research Staff to Assess Preschool Children’s Willingness to Try New Foods

<table>
<thead>
<tr>
<th>Food</th>
<th>Pre-test</th>
<th></th>
<th></th>
<th>Post-test</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>A/(A+D)*</td>
<td>% Agreement**</td>
<td>n</td>
<td>A/(A+D)*</td>
<td>% Agreement**</td>
</tr>
<tr>
<td>Peaches</td>
<td>115</td>
<td>113/115</td>
<td>98</td>
<td>113</td>
<td>110/113</td>
<td>97</td>
</tr>
<tr>
<td>O-shaped Cereal</td>
<td>116</td>
<td>112/116</td>
<td>97</td>
<td>113</td>
<td>111/113</td>
<td>98</td>
</tr>
<tr>
<td>Gouda Cheese</td>
<td>111</td>
<td>106/111</td>
<td>95</td>
<td>112</td>
<td>108/112</td>
<td>96</td>
</tr>
<tr>
<td>Daikon Radish</td>
<td>115</td>
<td>102/115</td>
<td>89</td>
<td>111</td>
<td>106/111</td>
<td>95</td>
</tr>
<tr>
<td>Okra</td>
<td>115</td>
<td>93/115</td>
<td>81</td>
<td>111</td>
<td>99/111</td>
<td>89</td>
</tr>
<tr>
<td>Garbanzo Beans</td>
<td>116</td>
<td>109/116</td>
<td>94</td>
<td>111</td>
<td>104/111</td>
<td>93</td>
</tr>
<tr>
<td>Total</td>
<td>688</td>
<td>635/688</td>
<td>92</td>
<td>671</td>
<td>638/671</td>
<td>95</td>
</tr>
</tbody>
</table>

* Determined by agreements (A) divided by agreements plus disagreements (A+D)

** Inter-Observer Reliability is expressed as a percent agreement.

Program Dissemination

Over four years, Tasting Party data were collected on 14,343 children. The vast majority (96.8%) of children tried familiar foods (peaches and O-shaped cereal) and program foods (92.5% tried Gouda cheese and Daikon radish); however, fewer children tried novel foods (78.2% tried garbanzo beans and okra). Teachers who completed the FWNF Teacher Survey from 2009-2013 (N = 684) ranked the children’s interest in FWNF activities between 3.4–4.5 (5 = High Interest). The Tasting Party, conducted by 612 respondents (89.5%), was the second highest-ranking activity (4.4) behind the introductory puppet show (4.5; details on other FWNF activities can be found in Johnson et al., 2019). Many teachers listed the Tasting Party as their favorite activity: “The food Tasting Party [was the students’ favorite] because it engaged awesome conversation among the kids at the table,” and “The Tasting Party was great! They loved it. The ones who did not want it [the foods] earlier tried it at the end.”

Discussion

The Food Friends’ Tasting Party was designed as the primary assessment tool for the FWNF program to evaluate children’s willingness to try program and novel foods. The current study found that the Tasting Party could reliably be used by classroom teachers to accurately observe tasting behaviors in a group of up to 15 preschool-aged children. Further, the Tasting Party was deemed a highly popular activity amongst both teachers and preschoolers. This fills a gap in the literature as no reliable observer tool has been documented to measure tasting behaviors in a group setting with young children ages 3-5 years of age (Damsbo-Svendsen et al., 2017). Coupled with nutrition education programming, the Tasting Party offers an assessment tool to
capture program outcomes related to trying new foods, thus, providing objective data to support program effectiveness.

This tool could be of practical use for Extension staff. As noted by Lanigan and Power (2008), Extension educators expressed a willingness to do more related to obesity prevention (i.e., healthy eating activities) if barriers such as a lack of time and resources and other curriculum demands could be alleviated. Extension educators might train classroom educators to use this assessment and, as such, can expand their role in professional development for preschool teachers and program evaluation (Durden et al., 2013; Lanigan & Power, 2008). Further, the Tasting Party could be used with paraprofessionals as part of EFNEP or SNAP-Ed activities.

With the increase and focus on nutrition and food interventions in childcare, several approaches to assessing food preferences have been reported. Recent studies have found that using pictures or questionnaires to assess food preferences and food choices amongst children of various ages are valid when compared to observed behaviors (Jaramillo et al., 2006; Olsen et al., 2012; Wiseman et al., 2017).

Concerns exist, however, regarding social desirability, including caregivers reporting differences in children’s stated willingness compared to observed behaviors (Rioux et al., 2016; Rubio et al., 2008). Further, these assessments focus on behavioral intent (likelihood of trying a food) and not actual behavior.

The Tasting Party assessment presented in this study is an effort to capture children’s observed willingness to try new foods versus children’s reports of what they might be willing to try. The Tasting Party approach aligns with the assessment of Birch et al. (1987) and colleagues who developed the Tasting Panel used with individual children because of differences in food ratings when children examined a picture compared to tasting the food. More recently, a review of instruments to assess food neophobia in children noted that behavioral assessments with actual foods may be more reliable than pictures to assess food-related behaviors and that a taste-testing session with subsequent questions asked of children is a recommended behavioral approach to capture willingness to try new foods (Damsbo-Svendsen et al., 2017).

Taste-testing measures in elementary children have been previously tested, but not for preschool-aged children (Baglio et al., 2004; Damsbo-Svendsen et al., 2017; Kaiser et al., 2012; Martin et al., 2010; Simons-Morton et al., 1992). Kaiser and colleagues developed and psychometrically tested a taste test tool for schoolchildren aged eight and older (2012). Findings from this study demonstrated that a teacher-administered assessment is feasible to conduct in a group setting and produced valid and reliable data. Further, it was noted that the administrative burden of using a group-based assessment is reduced compared to one-on-one interviews often used in research projects (Kaiser et al., 2012). Due to the developmental and cognitive differences between school-age children and preschoolers, a tool to assess willingness to try new foods specific for young children was needed. The development of the Tasting Party allows for research-based
nutrition interventions to be scaled up to community-wide dissemination with fewer resources required.

The Tasting Party provides teachers and Extension educators with an objective and reliable evaluation tool to assess willingness to try new foods, contributing to the scalability and reach of the FWNF program. Scalability and reach considerations can allow small-scale interventions to be efficaciously expanded to larger groups in real-world contexts (Milat et al., 2013). This is of particular importance and value for Extension-based interventions as programs with limited resources can reach greater numbers of people without greatly increasing financial costs, time resources, or other means (Huang et al., 2011; Milat et al., 2013). The ability of the FWNF program to span larger groups of youth increases the reach, scope, and level of effectiveness of the intervention.

**Strengths and Limitations**

One strength of the Tasting Party is its simplicity. Teachers, as observers in the Tasting Party, do not need to quantify or classify foods eaten, only that a food was tried and liked, tried and disliked, or not tried at all. This simplified process allows for a quick and accurate notation of information from teachers, expanding the number of children able that can be observed by one observer and eliminating the need for lengthy trainings and the high cost of researchers as observers. This simplification, however, is also a limitation. The type of data collected is limited to only whether the child tried a food and whether the child liked or disliked it. Other limitations include that the group approach may introduce peer influence and lead to bias in responses. This limitation can be controlled by training teachers to encourage children to wait to provide their response after their tasting experience until all children have had an opportunity to try the food. Further, the ability to assess willingness to taste foods is limited to the specific foods included in the Tasting Party. Lastly, response bias may have occurred with only teachers who completed most activities and/or who had positive views of the program returning the FWNF Teacher Survey and/or Tasting Party.

**Conclusions**

Research related to FWNF highlights that experiential preschool nutrition education programs that focus on positive repeated exposure to new foods yield improvements in children’s eating behavior during preschool and into early elementary school (Johnson et al., 2007; Johnson et al., 2019). As research-based programs begin to scale up in dissemination reach, it is critical to continue to assess the program’s effectiveness (Milat et al., 2013). An evaluation tool in which teachers and Extension educators can objectively and reliably assess the target behavior, such as children’s willingness to try new foods, enhances the scalability and reach of such programs.

The Tasting Party observer tool provides a valuable resource for future evaluation and research, nutrition programming for young children, and the practice of classroom-based health education.
With this tool, young children’s tasting behaviors can be easily collected in group-settings by utilizing teachers or Extension educators as observers in the classroom with minimal resources (training and time) required. While the Tasting Party directly benefited the FWNF program, the flexible structure of the Tasting Party allows researchers and practitioners to switch out foods with other foods that may be more pertinent to their research question or program. This tool can be administered in SNAP-ED, EFNEP, and other Extension nutrition programming to capture program outcomes related to food behaviors. Extension educators and teachers can use this information to justify programming efforts, demonstrate meeting education/program standards, and provide evidence of program impact for allocation of resources.

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Analysis of Networks in a College of Agriculture Course

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Technology advances occur almost daily, and how information is shared constantly evolves. Educators must understand how their students prefer communicating related to coursework. By mapping social networks present in courses, it may allow educators to determine how students prefer to communicate and also determine if there are constant identities that are stable throughout the semester. For the participants in this study, contacts between students increased from the initial to the final assessment of the semester. Face-to-face communication was the preferred method of communication, followed by text messaging and Facebook. Communicating for social reasons was most cited, with planning and venting being the reasons cited for contact after social. Overall, venting increased substantially, as did planning throughout the course of the semester but social kept somewhat constant. No perpetual key players were identified through this study, except one from the middle to the end iteration, which differs from previous research.

*Keywords*: social network, communication, technology, key player

**Introduction/Conceptual Framework**

Numerous advances occur almost daily toward technology (Jones et al., 2011). One significant advancement was the creation of the internet. With the development of the internet, today’s students have been given a plethora of resources to gain knowledge and share knowledge with peers (Chen et al., 2015; The Levin Institute, 2013). The first recognizable social network site was launched in 1997 and was titled SixDegrees.com (Boyd & Ellison, 2007). Online social networks have become a popular way for users to connect and share information, and popular social networks have hundreds of millions of users continually growing (Viswanath et al., 2009). Furthermore, social networking sites have grown to such a great phenomenon that sites such as Facebook had 1.59 billion active users monthly (Facebook Newsroom Fact Sheet, 2019).

Continual advances in technology have changed the way people share information (Gray et al., 2010; Leidner & Jarvenpaa, 1995). It is important for educators to know how their students are communicating about coursework. If misinformation is provided for students through other students, expected understanding and learning may not occur. Coinciding with advances in Direct correspondence to Don W. Edgar at dedgar@nmsu.edu
technology, learners, and how they learn vary. Today’s learners gain information through an active process where they build understanding and make sense of information (Woolfolk, 2010). Some learners use a cognitive approach, while others use interactions with peers to impact their knowledge construction. Students who interact socially may process and use information more efficiently than those who use only the cognitive approach (Fosnot, 1996). With the importance of social interaction, especially where students make connections with peers, behaviors may change, and how learning occurs can be affected (Bandura, 1969; Prawat et al., 1994).

Social networks are formed when individuals share a connection about a common topic through some type of communication. To explore communication among members of a network, we must ask questions that elicit social network data and address the overall question: “Who talks to whom about what?” We know communities are not built on instrumental relations alone; therefore, to tap into both learning and community relations, it is important to ask questions that explore both task-oriented and socially-oriented relations. Social network questions are phrased to gather data on each person’s interactions with each other in the group (for whole network data) or each person’s interactions with others that they name (ego-centric network data) (Renninger & Shumar, 2002).

Social network analysis is tracing, mapping, and analyzing social, economic, and political relationships between people and between organizations (Gomm, 2009). It is one popular analysis method used within the social sciences for exploring human and social dynamics. From the mid-1930s, social network analysis progressed slowly and linearly until the end of the century when advancements such as sociometry, graph theory, and subgroups appeared and were quickly adopted by the relatively small number of “network analysts” (Carrington et al., 2005). “Social network analysis provides a precise way to define important social concepts, a theoretical alternative to the assumptions of independent social actors, and a framework for testing theories about structured social relationships” (Wasserman & Faust, 1994, p.17).

Therefore, with the increasing use of technology in today’s society and education, understanding how students interact with it and socially interact is paramount towards impactful education of students. By exploring social systems present in today’s classrooms, further understanding of how best educators can utilize and gain understanding is imperative. The purpose of this study was to explore social interaction among University of Arkansas students. The following research questions guided this study:

1. How do students in classrooms communicate (personally and course-related)?
2. How proficient are students at using technology, and how does this relate to course content access?
3. Are key players initially identified, and are they constant throughout the course during the semester?
Methodology

This study was an exploratory, descriptive design using survey methodology. An exploratory design was chosen because it focused on a relatively unstudied subject in the context of agriculture. In survey research, investigators ask questions about peoples’ beliefs, opinions, characteristics, and behavior (Ary et al., 2006). The target population consisted of all students (male and female) at the University of Arkansas enrolled in a university core elective course. The purposive sample included the number of students who were present, participated, and completed instruments of the total class enrollment for each iteration (three times throughout the semester).

The sample consisted of students enrolled in the fall semester at the University of Arkansas enrolled in HESC 1403 Lifespan Development. This course was selected to represent the sample population based on the variety of students enrolled and degree programs sought. Nonresponse error was calculated based on the number of students enrolled in the course \( N = 245 \) and the number of students that were present, participated, and completed instruments. The first iteration resulted in 214 responses, followed by 163 at the middle, and 177 in the final iteration. Response rates for each iteration were calculated at 87.35%, 66.53%, and 72.25%, respectively. Although the response rate for the middle iteration was lower than 70%, the descriptive nature of the research does not allow for generalizations to be made and only represents the respondents.

A researcher-developed instrument was used to assess interaction between students. The instrument was developed through a review of literature and previous research assessments (Edgar et al., 2009; Roberts et al., 2010). The six-question instrument was constructed as a matrix survey. Initially, students were asked to list up to six names of the students with whom they interacted in the enrolled course. The instrument was reviewed by an expert panel of social science researchers where face and content validity were deemed appropriate for the population. Post-hoc reliability resulted in a Cronbach’s alpha = .84. Because the instrument queried respondents’ past behavior, it was deemed respondents could reliably and accurately provide needed responses (Dillman, 2000). Respondent answers (names) were used to answer the following questions. The first two questions were designed to solicit the frequency with which each student interacted with each of their peers: (a) On average, how often did you contact this student? and (b) On average, how often did this student contact you? Respondents were instructed to respond using an eight-point rating scale from 0 = never to 7 = several times a day. The third question instructed respondents to indicate all methods used for communicating with each peer where a list of methods was available (email, text messages, instant messages, Facebook® or MySpace, phone, face-to-face). The fourth question sought to determine the reasons each respondent communicated with each of their peers. Respondents were given the opportunity to list the purposes for communication by identifying them as venting/reflection about class, planning/information related to class, or social/personal reasons unrelated to class. Respondents could choose none, one, or multiple reasons. Options were deemed sufficient to cover the breadth of potential interactions and supported by the panel review of the instrument.
(Roberts et al., 2010). Respondents were also asked to rate their technology proficiency level using a self-reported, scaled assessment (0 = no skills to 5 = very skillful) to determine if those reporting higher or lower levels of ability might impact the findings of this study.

Social networks were examined using network analysis software, KeyPlayer (Borgatti, 2012). In network analysis, nodes are points on a network, and edges are connections. KeyPlayer is a software program for identifying an optimal set of nodes in a network for one of two basic purposes: Remove and Observe (Borgatti, 2012). In this social network analysis, nodes are people, and edges are interactions that occurred between them. The Remove function allows researchers to remove persons from the analysis but was not utilized in this analysis. Observe has only one option titled Reach that is programmed to find the fewest number of nodes reaching the greatest number of others (nodes). For the overall network, the Reach was increased to six to allow for the interactions to find the key players (most connected inside a network) that might exist between essentially six networks with different purposes.

**Findings**

**How do students in classrooms communicate?**

Research question one examined how students communicate with each other. The initial analysis found that of the possible respondents ($N = 245$), only 114 respondents contacted someone in the beginning, and 103 contacts were made (Figure 1). It should be noted that respondents did not have to list a contact, and it is assumed that many students did not know others enrolled in this course. This initial contact showed, of the 114 who contacted someone, 103 students reciprocated, and some contacts were duplicated. At mid-semester, an increase in those who contacted someone rose to 127, and 122 were reciprocated. The final iteration showed 133 students contacted someone, and 131 were reciprocal. Those contacted in each iteration were the initial contact of each student, and those increased in amount of contact over the course/semester.

**Figure 1. SNA of Key Players Identified Through Contact(s) at Beginning and End of Semester**

*Note. Blue dots indicate key players, and red dots indicate others in the network.*
To determine the amount of contact by students in the course, contacts were analyzed. The total contacts for each evaluation were 312 (initial), 392 (mid-semester), and 373 (final), indicating contacts increased from the beginning to mid-semester and then lessened by the end of the semester (see Table 1).

**Table 1. Contact Among Students per Week (N = 245)**

<table>
<thead>
<tr>
<th></th>
<th>f</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial (n = 214)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact 1</td>
<td>114</td>
<td>3.59</td>
<td>2.22</td>
</tr>
<tr>
<td>Contact 2</td>
<td>72</td>
<td>3.22</td>
<td>2.18</td>
</tr>
<tr>
<td>Contact 3</td>
<td>48</td>
<td>2.92</td>
<td>2.14</td>
</tr>
<tr>
<td>Contact 4</td>
<td>37</td>
<td>3.54</td>
<td>1.92</td>
</tr>
<tr>
<td>Contact 5</td>
<td>25</td>
<td>3.20</td>
<td>2.56</td>
</tr>
<tr>
<td>Contact 6</td>
<td>16</td>
<td>3.69</td>
<td>2.27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>312</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mid-Semester (n = 163)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact 1</td>
<td>127</td>
<td>4.11</td>
<td>2.11</td>
</tr>
<tr>
<td>Contact 2</td>
<td>93</td>
<td>3.25</td>
<td>1.82</td>
</tr>
<tr>
<td>Contact 3</td>
<td>65</td>
<td>2.75</td>
<td>1.54</td>
</tr>
<tr>
<td>Contact 4</td>
<td>47</td>
<td>2.77</td>
<td>1.62</td>
</tr>
<tr>
<td>Contact 5</td>
<td>34</td>
<td>2.32</td>
<td>1.22</td>
</tr>
<tr>
<td>Contact 6</td>
<td>26</td>
<td>2.38</td>
<td>1.33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>392</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Final (n = 177)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact 1</td>
<td>133</td>
<td>4.05</td>
<td>2.04</td>
</tr>
<tr>
<td>Contact 2</td>
<td>93</td>
<td>3.17</td>
<td>1.94</td>
</tr>
<tr>
<td>Contact 3</td>
<td>55</td>
<td>2.87</td>
<td>1.80</td>
</tr>
<tr>
<td>Contact 4</td>
<td>43</td>
<td>2.84</td>
<td>1.80</td>
</tr>
<tr>
<td>Contact 5</td>
<td>27</td>
<td>3.15</td>
<td>1.88</td>
</tr>
<tr>
<td>Contact 6</td>
<td>22</td>
<td>2.86</td>
<td>2.01</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>373</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Contacts are for only those that had contact with another respondent in the course.*

**How proficient are students at using technology?**

Research question two explored students’ level of proficiency with technology and how this might affect accessing course materials. To determine how students communicate to each other about course work (Figure 2), determining how they communicate was explored. Students (N = 245) were asked to identify what outlet they utilized to contact other students. Each respondent could choose any of the presented methods of contact. Summated responses were used to describe contacts weekly. Additionally, respondents were allowed to state the amount of contacts per method for each individual, which could be none or more than one time. Face-to-face was the most preferred way to contact others (n = 281), with text messaging being second (n = 183). Facebook was third (n = 174), with instant messaging being almost nonexistent at 21 contacts.
Researchers further investigated the purpose of communication between students. Students were given three options for discussion choice; venting/reflecting about course, planning/information related to course, and social/personal reasons unrelated to course. Figure 3 displays whether social was the preferred reason \((n = 261)\), planning \((n = 136)\), and/or venting \((n = 130)\). Social was the most prominent reason for contact, followed by planning and venting. Overall, venting increased substantially \((f = 130 \text{ to } 248)\) as did planning \((f = 136 \text{ to } 264)\). Social uses for contacts remained somewhat constant \((f = 261 \text{ and } 282)\) as the preferred reason for classmate contact.

Additionally, student proficiency with technology was analyzed to investigate how proficient students are at using technology and how this might impact how and why they communicate about a course. Respondents extolled a technology skill level of 3.63 (Table 2). The scale used for this question on the instrument reflects that respondents self-reported a technology proficiency level between average and above average skill. Respondents reported similar levels of proficiency from the beginning to the end of the semester.
### Table 2. Self-reported Proficiency Level of Technology Use (n = 208)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>3.63</td>
<td>0.84</td>
</tr>
<tr>
<td>Mid-Semester</td>
<td>3.57</td>
<td>0.82</td>
</tr>
<tr>
<td>Final</td>
<td>3.61</td>
<td>0.73</td>
</tr>
</tbody>
</table>

*Note. Scale = 0 – No skills, 1 – Little skills, 2 – Below average skills, 3 – Average skills, 4 – Above average skills, and 5 – Very skillful.*

Additionally, researchers investigated if students would use technology to access course materials or additional course materials if available. Of the respondents (N = 245), 208 answered they would indeed use technology to access materials needed or additional materials offered for a course. During data analysis, “yes” was coded as 1, while “no” was coded as 2 (see Table 3). The initial observation reported a mean of 1.00 (SD = 0.07). The mid-semester and final observations both reported a mean of 1.00 (mid-semester SD = 0.82) (final SD = 0.12). Respondents consistently self-reported that they would use technology to access materials needed or additional materials for a course.

### Table 3. Use of Technology to Gain Course Materials

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>1.00</td>
<td>0.07</td>
</tr>
<tr>
<td>Mid-Semester</td>
<td>1.00</td>
<td>0.82</td>
</tr>
<tr>
<td>Final</td>
<td>1.00</td>
<td>0.12</td>
</tr>
</tbody>
</table>

### Are key players initially identified, and are they constant throughout the course?

To investigate the presence of social networks in the course, *KeyPlayer* was utilized to determine the presence of networks and key players. In this study, only one key player kept their status through 2 of 3 iterations (see Table 4). Analysis revealed six key players at each iteration (x 3) based on the observe and reach parameters for this assessment. The strength of ties to other respondents was not analyzed and are displayed in ascending numerical value only. Although key players were identified at each iteration, only one was identified across collection periods, and it was only for the second and third collection periods (Figure 4). It should be noted that in this illustration, stronger ties to key players and their ties to others are shown with lines. When lines between players are not shown, those ties are considered weaker.

### Table 4. Identification of Key Players Throughout the Course

<table>
<thead>
<tr>
<th>Key player*</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iteration #1</td>
<td>25</td>
<td>73</td>
<td>83</td>
<td>87</td>
<td>92</td>
<td>220</td>
</tr>
<tr>
<td>Iteration #2</td>
<td>3</td>
<td>44</td>
<td>74</td>
<td>130</td>
<td>160</td>
<td>189</td>
</tr>
<tr>
<td>Iteration #3</td>
<td>2</td>
<td>59</td>
<td>132</td>
<td>161</td>
<td>189</td>
<td>194</td>
</tr>
</tbody>
</table>

*Note. Identification of key players (1, 2, … 6) does not describe sorting based on strength. Key players are listed from numerical identification only (low to high numbers).*
Discussion

Vygotsky (1978) acknowledged the importance of social interaction when he stated, “every function in the child’s cultural development appears twice; first, on the social level, and later on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)” (p. 57). To incorporate social interaction into the learning process, answering the questions of how students relate in today’s society is paramount for instructor understanding. Developing instructional aids and incorporating best practices aligned with this understanding could impact learning at a high level.

Research question one examined how students communicate with each other. Data analysis revealed that of the respondents (N=245), contacts increased throughout the semester but were at their highest in the middle of the course. Overall, from beginning to end, students made more contact with other students. This finding is plausible because the diversity of students seen in many courses would allow connections to grow. In this instance, the decrease of contact from middle to end should be noted. What caused this decrease? Was it lack of needs exuded by course content? Was the nature of the connection not strengthening through course needs? Many factors could cause this occurrence, and it should be investigated further to determine how connections could be strengthened, which in turn could aid in knowledge and skills developed in the course (Bandura, 1969; Edgar et al., 2010; Roberts et al., 2010; Vygotsky, 1978).

Renninger and Shumar (2002) stated, “To explore communication among members of a network, we must ask questions that elicit social network data and address the overall question: ‘Who talks to whom about what?”’ (p. 169). Social communication (n = 261) was the preferred reason based on collected responses. Social communication remained constant, while there was an increase in venting (f = 130 to 248) and planning (f = 136 to 264) throughout the semester. Data suggest that although social contact remains constant throughout a given amount of time...
together, those connections used socially can develop into a platform for other uses such as venting and planning.

Regarding question two towards determining proficiency levels of students, it should be noted that of the almost 7 billion people living in the world, approximately 3 billion use the internet and technology. With the development of the internet, today’s students have been given a plethora of resources to gain knowledge and share knowledge with peers (The Levin Institute, 2013). Coinciding with the advances in technology, learners and how they learn is changing. Students in this study self-reported a technology proficiency level between average and above average skill ($GM = 3.60$, $SD = .80$). This suggests that even though students are living and learning in an ever-advancing technological world, they report high skill levels but may not be prepared to use technology to its fullest extent.

Furthermore, faculty and students are utilizing technology more than ever, and a concern/thought by many is can students access course content with proficiency, and will they? With advances in technology, the way people share information is changing (Gray et al., 2010; Leidner & Jarvenpaa, 1995). Although using technology for communicating is rapidly changing, scholars still have a limited understanding of who is and who is not using enhanced technology and for what purposes (Boyd & Ellison, 2007). Of the respondents ($N = 245$), 208 answered that they would indeed use the technology access to aid in materials needed or additional materials offered for a course. Gathered data suggested that implementing or using technology to share information about classwork or to enhance learning is what today’s students would use to seek assistance for coursework. Using technology could encourage student-faculty contact, prompt feedback, and respect diverse ways of learning (Chickering & Gamson, 1999).

Research question three sought to determine key players present in the selected course initially and see if they kept that presence throughout the course. Data analyzed through this study revealed that no common key players were present from the beginning to the end of the course, which does not align with previous research. Although some key players were present at the middle and end of the data collection, none were present initially and still at the end of the course. Previous research in a similar course found that three of the six identified key players held that status throughout the semester (Edgar et al., 2010). This research does not indicate that key players keep their status throughout the semester. Further, according to Renninger and Shumar in *Building Virtual Communities, Learning and Change in Cyberspace* (2002), relations tie two people—two nodes—in a network. This research defined the nodes that were already networked before the course and how the contact changed over the semester. How respondents interacted and their frequency impacts identification of key players. It is also important to understand how they interact with each other, especially towards course needs. Furthermore, data suggested that though social networking sites are available, the connections are first made with face-to-face contact and grow into a visible social network using social networking sites.
Implications and Recommendations

According to Renninger and Shumar (2002), communities are not built on instrumental relations alone; therefore, to tap into both learning and community relations, it is important to ask questions that explore both task-oriented and socially-oriented relations. The primary purpose of this study was to explore social interaction among University of Arkansas students. Overall, from beginning to end, students made more contact with other students. Additionally, data indicated students prefer face-to-face contact \((n = 281)\) over other methods such as email, text messaging, instant messaging, Facebook, and phone. Students preferred to use methods to communicate primarily about social/personal matters \((n = 261)\), with planning \((n = 136)\) and venting \((n = 130)\) being the means of contact after social. Also, students self-reported a technology skill level of 3.63, indicating that students perceive their proficiency level related to technology use between average and above average. Of the respondents \((N = 245)\), 208 answered that they would indeed use technology access to aid in materials needed or additional materials offered for a course. Therefore, a majority of students feel confident to access electronic materials and are willing to do so.

Because students make connections by mid-semester, as revealed in this and other research, teachers should consider this when determining groups for class projects and research, presentation groups, or possibly spreading information about coursework. Identifying key players or leaders of communication could allow instructors/faculty to have students who communicate more readily to guide groups, if needed. Even with updates to technology, students still prefer face-to-face contact. Based on this finding, instructors/faculty can realize that the addition of technology to a course can provide an excellent supplement towards learning, but regarding course communications, it is essential to the success of students for face-to-face communication to occur.

Students reported proficiency level towards technology to vary from average to above average. Teachers may expect a student’s level to be higher since we are living in a technology-based world. With the resulting data, teachers should be aware of this level when designing courses and understanding these lower than expected levels of confidence towards their self-perceived technology usage skills. While most students agreed they would use technology to gain resources and materials needed for a course, online learning specifically may be something to reconsider based on the findings.

Recommendations for future research are to replicate and investigate background information such as major, course status, age, etc., for each student in the course to distinguish possible networking opportunities in the course. Additionally, further research should be conducted to determine if the contacts made using face-to-face communication are the same or different than the students that respondents are text messaging, Facebook-ing, or communicating. Furthermore, research should determine if prior sub-groups (major, course status, age, etc.) can play a substantial part in social network analysis. One limitation of this study is the sample accessible
for this study. Although the population was selected due to its diverse parameters, it may not represent essential population demographics seen across the college of agriculture. If subgroups can be determined and analyzed rather than an entire course, data could be compared to prior research in different course sizes or specific major requirements. Perhaps the course size and large differences in subgroups disturb the opportunity for entire network data analysis and specific findings. With students’ self-reporting skill level related to proficiency in technology somewhere between average and above average, further research should be conducted to determine the types of technology in which students are skilled versus the types of technology they struggle utilizing at a proficient level. Data from this research would not only aid the teacher but the student in understanding communication preferences.

References


*Brittany Dees-Leek* is a secondary agricultural teacher at Drew Central in Arkansas. She has taught for more than five years and completed her MS degree at the University of Arkansas.

*Dr. Don W. Edgar* was an agricultural teacher in Texas for 14 years and has been a faculty member involved with agricultural education for more than 12 years. His interest in student cognition and methods of instruction guides his research line of inquiry.
Evaluation of a Health Education Intervention for Rural Preschool and Kindergarten Children in the Southeastern United States: A Cluster Randomized Trial

Holli H. Seitz
Julie C. Parker
Heather L. Hanna
Ginger C. Hooge
Mississippi State University

This research employed a matched-pairs randomized field experiment design to evaluate a classroom-based health education intervention for pre-Kindergarten and Kindergarten children in a rural region of the southeastern United States. Schools were matched on demographic characteristics, then one school from each pair was randomly assigned to the treatment group and one to the delayed treatment group. The intervention included a field trip experience and an integrated curriculum designed to increase knowledge about nutrition, physical activity, and sleep. Staff conducted individual assessments of changes in knowledge with a random sample of children from each classroom (252 children from treatment classrooms; 251 children from delayed treatment classrooms). We used a multilevel linear regression with maximum likelihood estimation to incorporate the effects of clustering at the classroom and school level while examining the effects of the intervention on individual assessment change scores. During the intervention period, an estimated 3,196 children (treatment: 1,348 students in 68 classrooms in 10 schools; delayed treatment: 1,848 students in 86 classrooms in 10 schools) participated in the intervention. Children in the treatment group had significantly larger assessment change scores than children in the delayed treatment group. Findings suggest significant beneficial effects of the intervention on health knowledge.

Keywords: child health, obesity, nutrition, physical activity, school-based health promotion, childcare center, rural health, randomized trials

Introduction

The health consequences of childhood obesity are numerous and include increased risk of cardiovascular disease (Cote et al., 2013), obstructive sleep apnea (Narang & Mathew, 2012), depression (Morrison et al., 2015), and obesity in adulthood (Gordon-Larsen et al., 2010). Although multiple factors contribute to childhood overweight and obesity, some risk factors, such as physical activity and nutrition, are considered modifiable (Benjamin et al., 2008).
Interventions focusing on physical activity and nutrition modifiable risk factors have been proposed to be the most effective in preventing childhood obesity (Wilson, 2009), and there are a number of initiatives that focus on physical activity and nutrition in school-aged children. However, fewer have addressed obesity prevention or reduction in early childhood. In fact, prior systematic reviews of obesity-related interventions for young children (Campbell & Hesketh, 2007; Bluford et al., 2007) identified a lack of existing interventions for young children in the scientific literature and articulated a need for further research.

The need for obesity interventions in the southeastern United States is particularly profound. In particular, Mississippi has one of the highest rates of obesity in the United States (Centers for Disease Control and Prevention, 2015), as 26.2% of children between the ages of 10 and 17 are obese in this state, compared to a nationwide average of 16.1% (Data Resource Center for Child and Adolescent Health, 2016). Additionally, the Centers for Disease Control and Prevention (2009) report that many children in Mississippi have low levels of physical activity and poor nutrition, which provides an opportunity for programming that addresses these modifiable risk factors for obesity.

The purpose of the present study was to develop, implement, and evaluate the effects of “WannaBee Healthy?” a science-based health promotion curriculum and field trip experience, on knowledge about nutrition, physical activity, and sleep among pre-kindergarten and kindergarten children in Mississippi.

**Theoretical Framework**

The intervention design was inspired by the ecological approach to health promotion (McLeroy et al., 1988), which acknowledged the role of multiple factors in determining health-related behaviors. This is especially important for interventions seeking to shape children’s behavior, as the behaviors of children in the priority age range are heavily influenced by others. The intervention focused on influencing intrapersonal (e.g., child knowledge, attitudes, behavior, and skills), interpersonal (e.g., interactions with parents/caregivers), and institutional (e.g., implementation of classroom education) level factors, as child, family, and school factors have been shown to account for a large amount of variance in childhood overweight and obesity (Boonpleng et al., 2013).

**Context of the Study**

Reynolds et al. (1999) provided an overview of the many advantages of using schools as settings for health promotion. First, implementing public health interventions for children in school settings can allow for high intervention penetration with a diverse segment of the priority population, as “more than 95% of children ages 5 to 17 are enrolled in school” (Reynolds et al., 1999, p. 399). Second, the consistency of school attendance provides an opportunity to implement interventions that require repeat exposure and follow-up data collection. Finally,
school settings offer the additional benefit of creating change that goes beyond the children who participate in the intervention. Specifically, teachers trained as a part of the intervention may make environmental changes that support healthy behaviors, and parents exposed to intervention materials may also gain knowledge about the health topic and make changes in the home that support the goals of the intervention.

Like schools, preprimary programs (sometimes housed in childcare centers) also offer desirable environments in which to implement a health promotion intervention due to wide reach, consistency of child attendance, and the ability to reach parents and children. In 2015, 67% of four-year-olds in the United States attended a preprimary program (National Center for Education Statistics, 2017), and students enrolled in these programs come from diverse racial, ethnic, and socioeconomic backgrounds (National Center for Education Statistics, 2016). As in schools, training teachers in preprimary programs also has the potential to multiply the effects of the intervention by increasing the spread of the message to future classes or by inspiring desirable environmental changes.

**Review of the Literature**

A number of obesity-related interventions for young children have been evaluated (Campbell & Hesketh, 2007, Bluford et al., 2007, Waters et al., 2011), but none have been designed specifically for kindergarten and pre-kindergarten classes in the southeastern United States. Campbell and Hesketh (2007) reviewed two U.S. preschool- or childcare-based interventions. Dennison et al. (2004) focused primarily on reducing television viewing, while Fitzgibbon et al. (2005) was a successful dietary and physical activity intervention designed for children in Head Start preschool programs in Chicago, Illinois. A review by Bluford et al. (2007) included the interventions mentioned above and a well-designed comprehensive health education program for preschool children called Healthy Start (D’Agostino, D’Andrea, Nix, et al., 1999; Williams et al., 1998, 2002, 2004). Healthy Start included an extensive developmentally and culturally appropriate curriculum (D’Agostino, D’Andrea, Liebman, et al., 1999) that was designed to be integrated into the existing educational activities of participating New York State Head Start Centers (Williams et al., 1998). However, because the curriculum was combined with food service modification in Head Start Centers, it was difficult to determine the effects of the curriculum alone on nutritional and physical activity outcomes. One existing obesity prevention program designed for a rural southeastern community (Greening et al., 2011) focused on children ranging from six to 10 years of age rather than younger children.

The southeastern United States has a particularly high need for obesity-related interventions for young children due to a high level of obesity in the region (Centers for Disease Control and Prevention, 2015). People living in this region experience higher rates of poverty than those in other regions, which limits their access to education and nutritious foods (Moore, 2018). People living in a particular place also share a culture, “a system of shared understanding that shapes and, in turn, is shaped by experience” (Caprio et al., 2008, p. 2214).
As it pertains to obesity, culture can influence preferences for different forms of physical activity; food consumption; and perceptions about obesity’s “cause, course, and cure, and the extent to which a society or ethnic group views obesity as an illness” (Caprio et al., 2008, p. 2214). Because of this shared understanding, it is important to develop interventions that are culturally targeted or tailored, as interventions that include “both these levels of cultural integration have tended to show the most impact on altering health behaviors and adiposity” (Wilson, 2009, p. 241).

The present study reports results from the development, implementation, and evaluation of the WannaBee Healthy? health promotion curriculum and field trip experience. This new obesity prevention intervention was developed and evaluated to meet the demonstrated need for evidence-based obesity prevention efforts in Mississippi and the lack of prior interventions for very young children (pre-kindergarten and kindergarten) in this region.

**Methods**

**Research Design**

To evaluate the intervention, we employed a matched-pairs randomized field experiment. Directors of all public pre-kindergarten programs and principals of elementary schools with kindergarten classrooms in a 20-county region in northeast Mississippi (N = 63 programs/schools) were contacted and invited to participate. Twenty schools responded and were included in the program over the course of the project: six in Fall 2014, six in Spring 2015, and eight in Fall 2015.

Each semester, participating schools were matched in pairs on race distribution and percent of children receiving free and reduced lunch (a proxy measure for low socioeconomic status) using statistics from the Mississippi Department of Education. One school from each pair was randomly assigned to the treatment group, and the other was assigned to the delayed treatment group. All classrooms within each school were assigned to the same experimental group to reduce the threat of contamination between conditions. See Figure 1 for the participant flow diagram.
Figure 1. Participant Flow Chart Following Consolidated Standards of Reporting Trials (CONSORT) Guidelines

**Enrollment**

- Assessed for eligibility ($N = 63$ schools)
  - Excluded for not responding to invitation or follow-up contact ($n = 43$ schools)

**Allocation**

- Randomized ($n = 20$ schools), 10 matched pairs of schools were created, and one school in each pair was randomly chosen to be in the treatment condition

- Allocated to treatment condition ($n = 10$ schools, which included 68 classrooms, and 1,348 children)
  - Lost to follow-up ($n = 3$ children)
  - Discontinued intervention ($n = 1$ child, changed schools)
  - Analyzed ($n = 247$ children)
    - Excluded from analysis ($n = 5$ children, 3 missing pre-assessment and 2 missing post-assessment)

- Allocated to delayed treatment condition ($n = 10$ schools, which included 86 classrooms and 1,848 children)
  - Lost to follow-up ($n = 1$ child)
  - Discontinued intervention ($n = 1$ child, changed schools)
  - Analyzed ($n = 246$ children)
    - Excluded from analysis ($n = 5$ children, 1 missing pre-assessment and 4 missing post-assessment)
Participants

The research protocol was approved by the Institutional Review Boards at Mississippi State University and North Mississippi Health Services. To evaluate the implementation and outcomes of the health promotion intervention, child assessments were conducted, and surveys were distributed to teachers and one parent or guardian of each participating child. Participant characteristics are presented in Table 1.

Table 1. Demographic Characteristics of Participants, 2014-2015

<table>
<thead>
<tr>
<th></th>
<th>Children</th>
<th>Teachers</th>
<th>Parents*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>DT</td>
<td>T</td>
</tr>
<tr>
<td><strong>n</strong></td>
<td>252</td>
<td>251</td>
<td>57</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-K, %</td>
<td>17.9</td>
<td>17.5</td>
<td>82.1</td>
</tr>
<tr>
<td>Kindergarten, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age, M (SD)</strong></td>
<td>(0.58)</td>
<td>(0.54)</td>
<td>(9.3)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female, %</td>
<td>48.4</td>
<td>43.4</td>
<td>98.2</td>
</tr>
<tr>
<td>Male, %</td>
<td>51.2</td>
<td>55.8</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino, %</td>
<td>4.4</td>
<td>3.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Not Hispanic or Latino, %</td>
<td>93.7</td>
<td>94.4</td>
<td>93.0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian/Alaska Native, %</td>
<td>0.0</td>
<td>0.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Asian, %</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Black or African American, %</td>
<td>42.5</td>
<td>45.4</td>
<td>14.0</td>
</tr>
<tr>
<td>White, %</td>
<td>51.2</td>
<td>45.0</td>
<td>78.9</td>
</tr>
<tr>
<td>Other, %</td>
<td>1.6</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Multiple Races, %</td>
<td>3.6</td>
<td>6.4</td>
<td>0.0</td>
</tr>
</tbody>
</table>

*Note. T = Treatment condition. DT = Delayed treatment condition. Percentages are calculated using the total number of participants completing the survey and may not add to 100 due to missing data (e.g., parent data on ethnicity).

*One parent/guardian survey was sent home with each child.

Children. Across the three semesters in which the intervention was implemented, an estimated 3,196 pre-kindergarten or kindergarten children were exposed to the intervention (1,348 treatment; 1,848 delayed treatment). Parents or guardians of all children were asked for consent to allow their child to be assessed. A random sample of children whose parents or guardians consented was selected for individual assessment and asked for their assent to participate (252 treatment; 251 delayed treatment). Child participant characteristics (Table 1) closely mirrored the demographic characteristics of children in public schools in the study region (Mississippi Department of Education, 2016).
Teachers. Across 154 participating classrooms (68 treatment; 86 delayed treatment), 57 teachers in treatment classrooms responded to the survey, and 70 teachers in delayed treatment classrooms responded to the survey (for response rates of 83.8% and 81.4%, respectively).

Parents or Guardians. Parent/guardian surveys were to be distributed through students and collected by teachers in participating classrooms. Of 3,196 surveys that could have been distributed (1,348 treatment; 1,848 delayed treatment), 372 from treatment classrooms and 464 from delayed treatment classrooms were collected (for response rates of 27.6% and 25.1%, respectively).

Intervention

Development. To inform the intervention’s development, the project team conducted an in-depth assessment of factors affecting obesity-related health behaviors among the priority population. After conducting assessments with children, focus groups with parents/guardians and teachers, and a population-based telephone survey (N = 500 adults) in the 20 targeted northeast Mississippi counties, the project team identified three major themes to be addressed by the intervention: improving nutrition knowledge (“Be Smart”), improving physical activity and sleep knowledge (“Be Active”), and increasing opportunities for children to be advocates for healthy behaviors (“Be a Leader”). Based on this formative research, materials were culturally targeted using images, language, activities, and food that were familiar to children in the region.

The intervention was informed by the ecological approach to health promotion (McLeroy et al., 1988) and the bioecological model (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2007). Working with an interdisciplinary team of nutrition, child development, and early childhood education experts, the project team developed an integrated curriculum for pre-kindergarten and kindergarten students. An early childhood integrated curriculum was designed to promote young children’s efforts in mastering early academic skills (e.g., writing, counting, measuring) and content knowledge and “implies learning that is synthesized across traditional subject areas and learning experiences that are designed to be mutually reinforcing” (Kelly, 2001, p. 553). The curriculum was designed to be incorporated into daily activities over a two-week period by the classroom teacher.

There were four activities for each day, which included health-related activities in the areas of creative expression, language and literacy, math, and science to align with early learning standards (Mississippi Department of Education, 2018), Next Generation Science Standards (National Academy of Sciences, 2012), and CDC National Health Education Standards (Centers for Disease Control and Prevention, 2019). In addition to the curriculum, the team also developed a 31-page family activity booklet that supported ten key concepts the children were learning in the classroom and shared the information through family-friendly activities and games. The curriculum and family activity booklet are available from the corresponding author.
The development team also worked with education specialists at HealthWorks! North Mississippi to develop a 90-minute field trip experience to reinforce curriculum messages.

**Procedure.** The curriculum was implemented in a different set of schools each semester for three consecutive semesters. The teachers were provided the WannaBee Healthy? curriculum and the instructional materials. The study was introduced during a scheduled workshop for the participating teachers. The workshop was initially a brief introduction to the curriculum and materials, but after the first wave of data was collected, the workshop was revised.

The remaining workshops were one hour long, and the curriculum and instructional materials were provided, and selected activities were demonstrated. The workshop provided the teachers with an opportunity to ask questions about the curriculum, discuss how they may use the curriculum and instructional materials in their classroom, and agree upon dates the curriculum would be implemented.

Prior to implementation, evaluation staff blinded to participant condition conducted pretest assessments with children in treatment and delayed treatment schools. Treatment schools were then given approximately four weeks to implement the two-week curriculum and take a field trip to HealthWorks! North Mississippi. After implementation of the curriculum and field trip in the treatment schools, but before implementation in the delayed treatment schools, evaluation staff completed posttest assessments of children in both groups, such that pretest and posttest assessments were separated by the same amount of time for both groups. The delayed treatment group was then exposed to the curriculum and field trip.

**Evaluation Strategies**

**Child Assessments.** Pairs of research team members completed individual child assessments in schools in a location outside the classroom (e.g., library). They assessed children’s knowledge of nutrition and physical activity using a series of ten questions and visual tasks developed by the project team or adapted from other sources (see Table 2). The “healthy food choices” items and “activities that burn energy” items were adapted from Calfas et al. (1991) and have reported test-retest reliabilities of $r = 0.72, p < .001$ and $r = 0.43, p = .001$, respectively. The “activities that burn energy” items were adapted from Mobley and Evashevski (2000), who report high test-retest reliability but did not report a statistic.

The project team developed the remaining assessment procedures based on data collected from the pre-assessment of what children knew about health-related topics like food groups, food origin, how to make a healthy plate, and activities that make their hearts beat faster. These data, combined with information gathered during parent and teacher focus groups, were used to develop an age-appropriate and standards-based child assessment that had an assessment activity for each of the key learning objectives in the curriculum.
### Table 2. Child Assessment Procedures, Scoring, and Source

<table>
<thead>
<tr>
<th>Concept and Source</th>
<th>Procedure and Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food group classification</strong></td>
<td>Children were presented with a container of 10 plastic food and drink models, with two models from each of five food groups. Children were then asked to select a vegetable, a grain, a protein, and a dairy. This item was scored by assigning one point for each food group for which a representative food was correctly chosen, for a maximum of five points.</td>
</tr>
<tr>
<td><strong>USDA MyPlate recommendations</strong></td>
<td>Children were shown an image with four plates, each containing a different proportion of fruits and vegetables (0%, 25%, 50%, and 100%), and asked to identify the plate with the recommended proportion of fruits and vegetables. This item was scored by assigning one point if a child correctly identified Option 3 as the plate with the recommended proportion of fruits and vegetables.</td>
</tr>
<tr>
<td><strong>Integration of food group classification and USDA MyPlate</strong></td>
<td>Children were presented with a plastic MyPlate model and images of 10 food items (two for each food group). After the assessor named each of the food items and showed the student the MyPlate model, the assessor asked children to pick one food or drink picture for each food group and place it in its food group section on the plate to make a healthy plate. This item was scored by assigning one point for each food group for which a representative food was correctly chosen.</td>
</tr>
<tr>
<td><strong>Sugar in beverages</strong></td>
<td>Children were shown pictures of chocolate milk, soda, and water, and the assessor identified each beverage. Children were asked to order beverages by their amount of sugar. Children earned one point if the water was identified as having no sugar and one point if soda was identified as having the most sugar.</td>
</tr>
<tr>
<td><strong>Healthy food choices; adapted from Calfas et al. (1991)</strong></td>
<td>The assessor used sets of image cards to assess children’s ability to identify the healthiest of three food choices (i.e., the one that is least processed and has the lowest amount of sugar, salt, and/or fat). This item was scored by assigning one point for each set of foods for which the child correctly chose the healthiest option.</td>
</tr>
<tr>
<td><strong>Food origins</strong></td>
<td>To assess knowledge about the origins of foods, children were presented with a single sheet of paper that had images of seven possible food origins (tree, garden, chicken, cow, wheat, grocery store, and restaurant). They were then presented with images of five food and beverage items (apple, carrot, chicken leg, milk, and bread) one at a time and asked to put each image on top of the image that showed the food origin. This item was scored by assigning one point for each correctly identified food origin.</td>
</tr>
<tr>
<td><strong>Food benefits</strong></td>
<td>Food benefits were assessed by presenting to the child a single sheet of paper depicting five body parts: a bone, a pair of eyes, a stomach, a runny nose, and a flexed muscle. Children were then given an image of five foods (milk, a carrot, wheat bread, an apple, and a grilled chicken leg), one at a time, and asked to select the food that would help each body part. This item was scored by assigning one point for each correctly identified food benefit.</td>
</tr>
<tr>
<td><strong>Activities that increase heart rate; adapted from Mobley and Evashevski (2000)</strong></td>
<td>The assessor set out images of children doing ten different activities and named each activity (e.g., playing a video game, jumping rope, riding a bike, watching TV, playing on a computer, running, playing soccer, playing with toys, playing on a playground, and drawing). Children were asked to “choose four activities that make your heart beat faster.” This item was scored by assigning one point for each actively item chosen.</td>
</tr>
<tr>
<td><strong>Activities that burn energy; adapted</strong></td>
<td>Children were shown an image of a soda (item 1) or potato chips (item 2) and asked to choose which of a list of activities (playing on a computer, watching</td>
</tr>
<tr>
<td>Concept and Source</td>
<td>Procedure and Score</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>from Calfas et al. (1991)</td>
<td>television, playing soccer/running) a child could do to burn energy and keep their body healthy. This item was scored by assigning one point for each item if children chose “play soccer” or “run” for a maximum of two points.</td>
</tr>
<tr>
<td>Healthy body needs</td>
<td>The children were presented with images of a child sleeping, a child eating a healthy plate, a child playing soccer, a child watching TV, a child drinking soda, a child eating a candy bar, and a child playing a video game. Children were asked to select three things they could do to keep their body healthy. This item was scored by assigning one point each for choosing images of a child sleeping, a child eating a healthy plate, and a child playing soccer.</td>
</tr>
</tbody>
</table>

Note. A two-person team composed of an assessor and a recorder conducted individual assessments with child participants using these procedures. In Fall 2014, the maximum number of points that could be assigned for the assessment was 39. In Spring and Fall 2015, due to changes in items, the maximum score was 42.

**Teacher Surveys.** The teacher survey was distributed to all participating teachers, who were asked to complete it after the conclusion of the curriculum and field trip. On the survey, a curriculum implementation item read, “Not including the ‘Additional Activities’ in the back, how much of the curriculum were you able to complete during your scheduled time?” Response options included *all of it*, *most of it*, *some of it (less than half)*, and *none of it*. A Family Activity Booklet implementation item read, “To the best of your knowledge, what percentage of your students completed the Family Activity Booklets?” Response options included *<25%*, *25%-50%*, *51%-75%*, and *>75%*. Additionally, teachers were asked to report their students’ observations. In the first semester, teachers were asked, “After completing the curriculum and field trip, have your students: a) Talked about what they learned? If so, what are some things they’ve talked about? b) Talked about or modeled the behaviors of the Character Bees (Sunny, Andy, and LaToya)? If so, what?” These open-ended items were recoded as *yes* or *no* to allow for quantitative summary of results, and the teacher survey in the second and third semesters was edited to make this a *yes* or *no* question with room for optional feedback.

**Family Surveys.** Parents or guardians of children in participating classrooms were asked to complete the family survey after students had completed the curriculum and field trip. The survey included one item to assess fidelity of implementation of the family component: “How much of the Family Activity Booklet were you and your child able to complete?” *(all of it, most of it, some of it (less than half), or none of it).* The survey also asked parents or guardians a series of *yes or no* questions to assess their observations of child behavior change, including whether the child had “talked to [the parent/guardian] or other family members about what they were learning about healthy foods and exercise at school,” “talked to [the parent/guardian] or other family members about what they learned on the HealthWorks! field trip,” “shown more interest in what he or she is eating,” and “shown more interest in being active/exercising.”
Analysis

We used an intent-to-treat approach to analyze the effects of the intervention on child knowledge, and each child’s pretest score was subtracted from their posttest score to create a change score. Because observations of children were clustered at both the classroom and school level (and randomization occurred at the school level), we used a multilevel linear regression with maximum likelihood estimation to incorporate the effects of clustering while examining the effects of the intervention on the assessment change score. Because the assessment instrument changed between Fall 2014 and Spring 2015, the most complete version of the model included the intervention semester and the interaction between semester and intervention group as covariates. Cases missing an assessment change score (i.e., because the student had a missing or incomplete pre- or post-assessment, n = 10 children) were excluded from the analysis.

Results

Implementation

Among 57 teachers in the treatment group responding, four (7.0%) reported implementing all of the curriculum, 41 (71.9%) reported implementing most of it, and 12 (21.1%) reported implementing less than half of it. Additionally, 23 of 53 (43.4%) estimated that <25% of their students completed the Family Activity Booklet, 17 (32.1%) estimated that 25% to 50% of their students completed it, 12 (22.6%) estimated that 51% to 75% of their students completed it, and 1 (1.9%) estimated that >75% of their students completed the booklet. Among parents and guardians of children in the treatment group, 116 of 357 (32.5%) reported that they completed all of the Family Activity Booklet, 144 (40.3%) completed most of it, 89 (24.9%) completed less than half of it, and 8 (2.2%) completed none of the booklet.

Outcomes

Child Assessments. Descriptive statistics for items in child assessments are in Table 3.

### Table 3. Descriptive Statistics for Individual Child Assessment Items, by Group, 2014-2015

<table>
<thead>
<tr>
<th>Concept tested</th>
<th>Range</th>
<th>Treatment M (SD), n = 252 children</th>
<th>Delayed Treatment M (SD), n = 251 children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>Food group classification&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0-5</td>
<td>2.25 (1.17)</td>
<td>3.06 (1.39)</td>
</tr>
<tr>
<td>USDA MyPlate recommendations</td>
<td>0-1</td>
<td>0.10 (0.30)</td>
<td>0.17 (0.38)</td>
</tr>
<tr>
<td>Integration of food group classification and USDA MyPlate recommendations</td>
<td>0-5</td>
<td>1.61 (1.27)</td>
<td>3.14 (1.47)</td>
</tr>
<tr>
<td>Sugar in beverages</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2014&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0-3</td>
<td>1.62 (1.03)</td>
<td>2.35 (1.05)</td>
</tr>
<tr>
<td>Spring/Fall 2015&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0-2</td>
<td>1.42 (0.65)</td>
<td>1.74 (0.55)</td>
</tr>
</tbody>
</table>
The primary intervention outcome measure was the change in score from pretest to posttest. Results of multilevel linear regression models estimating the effects of intervention group, intervention semester, and the interaction between group and semester on child assessment change score are presented in Table 4.

**Table 4. Multilevel Linear Regression Models Estimating the Effects of Treatment Group and Treatment Semester on Child Assessment Change Score, 2014-2015**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed effects, Coefficient (SE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>3.39 (0.60)*</td>
<td>1.21 (0.45)*</td>
<td>0.73 (0.56)</td>
<td>0.59</td>
</tr>
<tr>
<td>Group (Treatment vs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delayed Treatment) b</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semester c</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 2015</td>
<td>1.24 (0.77)</td>
<td>1.24 (0.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall 2015</td>
<td>0.37 (0.74)</td>
<td>0.49 (0.61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group*Semester</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment*Spring 2015</td>
<td>2.64 (1.12)*</td>
<td>2.57 (1.24)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment* Fall 2015</td>
<td>0.40 (1.05) d</td>
<td>-0.13 (1.06)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 1: Parameter Estimates for Random Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Random parameters, Variance component (SE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 3 (school)</td>
<td>6.23 (2.33)*</td>
<td>1.08 (0.73)*</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>variance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2 (classroom)</td>
<td>2.67 (0.90)*</td>
<td>2.76 (0.93)*</td>
<td>2.49 (0.79)*</td>
<td>4.84 (2.09)*</td>
</tr>
<tr>
<td>variance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 (student)</td>
<td>13.02 (0.97)*</td>
<td>13.00 (0.97)*</td>
<td>12.97 (0.96)*</td>
<td>12.70 (0.96)*</td>
</tr>
<tr>
<td>variance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-1388.7054</td>
<td>-1376.8223</td>
<td>-1366.0261</td>
<td>-1262.0829</td>
</tr>
</tbody>
</table>

*Note. Group is coded as Treatment = 1 and Delayed Treatment = 0. Semester is coded as 0 = Fall 2014, 1 = Spring 2015, 2 = Fall 2015.*

*Model 4 includes teachers’ self-reported amount of the curriculum completed (0 = “none of it” or “some of it (less than half),” 1 = “All of it” or “Most of it”) as a classroom-level variable. Because 11 teachers in the treatment group did not complete this item, those classrooms are missing, bringing the total number of children included in Model 4 down from 493 to 459.

*Comparison group is Delayed Treatment.

*Comparison group is Fall 2014. *When Spring 2015 was used as the comparison group, the interaction terms for Treatment*Fall 2014 and Treatment*Fall 2015 were both negative and significant.

*p < .05

### Support from Teacher Surveys

Among teachers of treatment classrooms, 49 (86.0%) reported that students had talked about what they learned. Sample open-ended comments from teachers included reports that students “talked a lot about food groups,” “identify fruits and vegetables at lunch,” and “talked about the field trip and activities there.” In the same sample, 40 (70.2%) reported that students had demonstrated behavior change. Sample open-ended comments from teachers included reports that students “exercised in the classroom,” “loved the characters and want to please,” and “want to eat more fruits and veg.”

### Support from Family Surveys

Of parents and guardians who responded to the family survey and whose children were in the treatment group, 293 (78.8%) reported that their child had talked to them or other family members about what they were learning at school. Among the same group of respondents, 248 (66.7%) reported that their child had talked to them or another family member about what they learned on the HealthWorks! field trip; 32 (8.9%) reported that their child had not yet attended the field trip. Nearly three-quarters (72.8%; n = 271) of parents and guardians of children in the treatment group reported that their child had shown an increased interest in what he or she was eating, and 308 (82.8%) reported that their child had shown more interest in being active or exercising.

### Discussion

This classroom-based health promotion intervention for kindergarten and pre-kindergarten students in a rural region of the southeastern United States produced significant improvements in knowledge about nutrition and physical activity. Children in the treatment group had significantly larger differences in pre- and post-assessment scores than children in the delayed treatment group. When self-reported completion of the curriculum was included as a classroom-
level variable in the model, the effect of the intervention increased slightly. There were significant differences in gains by semester, with differences between treatment and delayed treatment schools participating in the second round of implementation (Spring 2015) being higher than the other two semesters. Because the assessment instrument was consistent between the Spring 2015 semester and the Fall 2015 semester, the difference between round of implementation is unlikely to be attributed to the adjustments made in the measurement instrument. It may instead be due to an increase in targeted training for the teachers. In Fall 2014, teachers received minimal training, and additional training was added in Spring 2015. There were also consistent reports by parents and teachers that children in the treatment group talked about what they were learning, shared lessons with family members, demonstrated greater interest in nutrition and physical activity, and demonstrated changes in behavior.

The reported increases in nutrition and health knowledge in the treatment group were expected and are consistent with similar interventions developed for other populations (D’Agostino, D’Andrea, Nix, et al., 1999). This program may be the first integrated obesity prevention curriculum to be developed for and tested with kindergarten and pre-kindergarten children in a rural region of the southeastern United States. The success of this project demonstrates the feasibility of implementing a health promotion intervention that is integrated into pre-kindergarten and kindergarten curricula (i.e., it includes math, science, and language arts lessons that meet state standards, rather than being an extra component). The WannaBee Healthy? curriculum and materials, part of a larger grant-funded project, were provided to all teacher participants. The curriculum and materials were reusable and could be embedded for use with future classes. Additionally, after the project period ended, a project website housed the curriculum and instructional materials and allowed free downloads. Successfully implementing this intervention in multiple classrooms and having activities carried out by existing teachers (78.9% of whom reported completing most or all of the activities) and parents (72.8% of whom reported completing all or most of the Family Activity Book) suggests that this intervention could be sustainable without a large, continued investment of funding.

**Limitations**

This research has limitations in the areas of design, implementation, and measurement. Specifically, the design did not allow us to disentangle the effects of the intervention components, as they were treated as one intervention. This becomes problematic because we do not know if the field trip to HealthWorks! North Mississippi added appreciably to the knowledge gains. If it did, the results reported here might underestimate effects, as some children were not able to take part in the field trip experience. Additionally, 21% of teachers in the treatment group reported implementing only half of the curriculum. If all curriculum components are equally effective, with full implementation, the intervention effects could be even stronger than those reported. However, lack of full implementation could also be an indicator of barriers to implementation or issues with the acceptability of the program. There is a need for future
research that evaluates the effects of each component of the intervention (e.g., the field trip; curriculum; and accompanying materials, including family activity booklets) alone and investigates barriers to implementation.

There were also limitations associated with assessment. Responses from parent and teacher surveys were self-reported and may have been subject to social desirability bias. Children who were not present or whose parents did not consent could not be assessed, so data are not representative of children who are more likely to be absent from school or whose parents did not consent to allow them to participate in the research component.

The measurement instruments also present limitations. For example, the child assessment was changed slightly after the first semester, so it is unclear whether changes from Fall 2014 to Spring 2015 were partially due to the change in the instrument. Finally, this evaluation measured short-term effects (changes in knowledge) rather than longer-term effects, such as changes in behavior or adiposity. Although the teachers, parents, and guardians reported changes in behavior among participating students, there were no comparable data available for children in the delayed treatment group. Further research should investigate the effects of the intervention on long-term behavior changes and adiposity.

**Strengths and Implications**

Despite these limitations, this research has valuable strengths and implications. The intervention was created for and tested in a population with a high need for obesity prevention interventions—young children living in the rural southeastern United States (Bethell et al., 2010). Framed by a bioecological approach (Bronfenbrenner & Morris, 2007), the intervention featured an integrated curriculum designed by an interdisciplinary team that included child development specialists, a family booklet that bridged school to home learning activities, and a field trip that provided additional learning and practice opportunities for the children.

Additionally, the curriculum provides health education while also meeting current requirements for early childhood education, so it can be taught in place of other lessons instead of in addition to existing content. Finally, the rigorous design of the evaluation, which included multiple classes within multiple schools across the region, provides evidence that training teachers in this curriculum is linked to improvements in student knowledge in a real-world setting.

This research has clear implications for health education practice. For health educators, it provides a rigorously evaluated and publicly available curriculum that has been demonstrated to be successful in improving health knowledge among young children and can be implemented in similar settings (i.e., pre-kindergarten and kindergarten classrooms in the rural southeastern United States). It is possible that the curriculum could be adapted for use in other areas, but because language, food choices, images, and other curriculum components (such as books,
songs, and activities) were chosen based on what was familiar to children in the region, these components would need to be tested for cultural appropriateness and acceptability.

There are further implications for children exposed to the intervention: improved health knowledge can influence child and family behavior related to nutrition and physical activity, which are all linked to obesity prevention (Baranowski et al., 2003). Further, children who meet recommendations for healthy lifestyle behaviors (e.g., nutrition, physical activity, and sleep) are more likely to perform well in fundamental academic areas such as math, reading, and writing (Faught et al., 2017). Thus, addressing childhood obesity through the application of an integrated health curriculum that addresses the foundational needs of young children and influences healthy behaviors can have a positive impact on both health and academic success.

**Conclusions**

This classroom-based health promotion intervention for kindergarten and pre-kindergarten students in a rural region of the southeastern United States—the first designed and evaluated for this particular population—produced significant improvements in knowledge about nutrition and physical activity. These findings suggest the curriculum could be implemented with success in other kindergarten and pre-kindergarten classrooms in this region. Further research should examine whether findings replicate in additional locations and in the absence of the field trip component and whether the gains in knowledge produce significant desirable changes in health behavior and adiposity.

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Online Divorce Education: Learning from Participants Who Want More

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Divorce education is designed for divorcing parents with minor children, and in a growing number of states, participation has become court-mandated to finalize a divorce. To increase accessibility, some states have adopted brief, online formats for divorce education programming. Evaluations are encouraging; however, less is known about how opinions on course length relate to participants’ views on the benefits of their participation. This study analyzed qualitative data from parents (n = 41) who thought their mandated divorce education course was too short. Results indicate that participants thought the course increased their knowledge of divorce-related matters. They also suggested improvements related to course content priorities. These findings may inform Extension specialists, family life practitioners, and program planners working to improve the delivery of online divorce education programs.

Keywords: content, course length, divorce, divorce education, online divorce education

Introduction

Divorce education has been offered in various forms since the mid-1970s. Currently, nearly every state offers some form of divorce education programming (Braver et al., 1996; Mulroy et al., 2013). In a growing number of states, these programs have become court-mandated for divorcing couples with dependent children (Cronin et al., 2017), a trend that started to gain momentum in the 1990s (Fackrell et al., 2011). To make courses more accessible, states adopted online formats for divorce education programming in the early 2000s (Bowers et al., 2011), integrating online programs into their court-mandated divorce education programming (Becher et al., 2015; Choi et al., 2017; Hardman et al., 2019). With these shifts in program delivery, opportunities abound in terms of the different approaches that can be taken to evaluate the effectiveness of divorce education programs.

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In general, online divorce education programs have shown positive outcomes in promoting effective coparenting skills and increasing parental understanding of divorce-related matters (Choi et al., 2017; Schramm & McCaulley, 2012). Despite encouraging evidence, a growing concern surrounding online divorce education programs revolves around the tendency of these programs to offer brief, less intense versions of divorce education curricula (Becher et al., 2015). The brief nature of these programs has created some skepticism related to their ability to sufficiently educate parents on divorce-related matters, such as the impact of divorce on children (Salem et al., 2013). The main critique of these brief divorce education programs is that participation in these programs has largely failed to demonstrate long-term benefits for the well-being of parents or their children (Mayhew, 2016). The trend toward more time-sensitive programs has also prompted researchers to evaluate the field to establish course content priorities to ensure the coverage of the most relevant and useful divorce-related topics (Schramm et al., 2018).

Relative to the debate over appropriate course length and establishing content priorities for divorce education, fewer attempts have been made to learn about how participants’ views on the length of online divorce education programs relate to their experiences and program outcomes. With the continued growth of divorce education programming, it has been proposed that gathering more feedback from participants of divorce education programs can help family life practitioners identify the most effective approaches to program delivery and improvement (Ferraro et al., 2018). To improve program delivery, determine appropriate dosage levels, and establish content priorities for online divorce education programs, the literature may benefit from a better understanding of the experiences and perspectives of participants who express concern with course length. This may be especially true in light of recent research findings that link participants’ views on course length with short-term outcomes, most notably in terms of increased knowledge of divorce-related matters. For example, in a recent study, Turner et al. (2019) noted that participants who were satisfied with course length reported significantly higher increases in their knowledge of divorce-related matters when compared to participants who expressed dissatisfaction with course length. These findings suggest that lessons may be learned from participants who express concern with the length of their divorce education course. Indeed, learning more about participant experiences and viewpoints has been used as one approach to evaluating divorce education programming (Choi et al., 2018).

The research reported here explored the feedback of participants who indicated that the divorce education course in which they participated was too short in length. This approach was taken for two reasons. First, multiple studies have demonstrated that course length can be substantially reduced with the adoption of online formats (Becher et al., 2015; Schramm et al., 2012). The reduction in course length is by design, as divorce education programs have become more sensitive to the schedules of working parents with children (Sigal et al., 2011). However, with reductions in course length, it is important to determine whether brief courses are effective in meeting their objectives. With this in mind, we elected to concentrate on participants who
thought the course was too short (as opposed to those who thought the course was too long) in an attempt to examine the “less is more” approach that is common in divorce education. Second, we argue that gaining a better understanding of participant experience and becoming more familiar with the benefits participants believe they derive from participation in divorce education programs may help practitioners establish course content priorities, which has become a growing concern with the increased development of brief divorce education programs (Douglas, 2004; Schramm et al., 2018).

The study was concerned with two main issues related to the experiences of divorcing parents who thought the length of Utah’s one-hour online divorce education course was too short. First, we sought to examine what aspects of the course participants believed were most beneficial to their situation. Second, we aimed to explore the nature of the overall feedback from participants regarding the course, paying particular attention to comparisons between positive and negative feedback. In exploring these issues, the overarching goal of the study was to provide evidence regarding the ways in which qualitative data related to participants’ experiences may be used to inform online divorce education programming, especially in the way of establishing course content priorities.

**Literature Review**

**Online Divorce Education Programs**

Several states have designed online formats for divorce education programs with the goal of making participation more convenient and less time-consuming (Choi et al., 2018). These online programs, some of which have been designed at the request of state legislatures (Becher et al., 2015; Choi et al., 2017), take into consideration the challenges that many parents encounter, such as geographical challenges related to living in remote areas, financial or transportation hardships, and conflicting child care and work schedules (Dennis & Ebata, 2005; Schramm & McCaulley, 2012; Sigal et al., 2011). Online programs have also been found to decrease feelings of social stigma for parents who would otherwise be required to participate in traditional, face-to-face divorce education programs that often take place in public forums (Ferraro et al., 2018).

Several studies have evaluated the effectiveness of online divorce education programs (Becher et al., 2015; Bowers et al., 2014; Choi et al., 2017; Cronin et al., 2017; Schramm & McCaulley, 2012). In their comparison of an online divorce education program with its face-to-face equivalent, Schramm and McCaulley (2012) found minimal differences between the two delivery methods, as both groups of participants considered their respective program to be worthwhile and effective in demonstrating the importance of developing positive coparenting skills. In other studies where researchers have evaluated the effectiveness of online divorce education programs, the findings have shown that participants have increased their knowledge of divorce-related matters, including how divorce affects children (Choi et al., 2017), as well as financial and legal matters related to child support and custody arrangements (Bowers et al., 2014).
Additional evaluations of online divorce education programs have provided evidence that after completion, participants reported greater confidence in their ability to cope with divorce-related matters (Becher et al., 2015). With research pointing to the positive effects of divorce education programs, scholars are focusing more attention on issues related to program dosage levels and content priorities (Schramm et al., 2018).

Program Dosage and Content Priorities for Divorce Education Programs

In developing their Divorce Education Intervention Model, Blaisure and Geasler (2000) established a three-level model, categorizing divorce education programs based on their goals and objectives, teaching methods, content priorities, and dosage levels. Level 1 programs were shorter in length and required more passive involvement from participants. Level 2 programs were longer and more intensive in terms of skill-building activities. Level 3 programs were more specialized and primarily targeted families with special needs children (Blaisure & Geasler, 2000).

In light of the categories established by Blaisure and Geasler (2000), opinions vary on the most appropriate dosage levels, especially in terms of how much course time should be required to deliver effective divorce education programs (Becher et al., 2015; Brandon, 2006; Fackrell et al., 2011; Salem et al., 2013). The design of brief, low dosage programs may be viewed as a way to reduce the demands on parents who are already feeling the strain of divorce (Blaisure & Geasler, 2000). Some evidence suggests no significant difference between brief and longer divorce education programs in terms of short-term knowledge gain; however, little work has been done to gauge the long-term outcomes of divorce education programs based on course length, and more research is needed to compare brief, low dosage programs with moderate and high dosage programs (Fackrell et al., 2011). Perhaps the most important development related to program dosage levels is that brief programs have gained favor with many courts that mandate divorce education for divorcing couples with children, which could lead to the wider implementation of brief divorce education programs (Brotherson et al., 2010; Douglas, 2004).

In contrast, educators who implement longer divorce education programs have expressed the need for more extensive comparative analyses between longer and brief divorce education programs based on the argument that longer programs can offer more detailed content that brief programs may not be able to address due to time constraints (Becher et al., 2015). Considering this limitation, advocates of longer divorce education programs have voiced concerns over the ability of brief programs to equip parents with the necessary skills to effectively coparent and assist children in adjusting to the divorce process (Salem et al., 2013). Further, despite arguments for the benefits and convenience of brief divorce education programs, some research has documented that participants of brief divorce education programs tend to express dissatisfaction with course length (Brandon, 2006; Stone et al., 2001).
As divorce education programs continue their transition toward shorter and more time-sensitive, online formats, one of the most important matters to address related to appropriate dosage levels is establishing content priorities to ensure that the most relevant and useful divorce-related topics are being addressed within shortened time-frames. Some of the most recent work on establishing content priorities in divorce education has been conducted by Schramm and colleagues (2018), who utilized the divorce-stress-adjustment model (Amato, 2000) to establish three tiers of priority for content selection in divorce education programming. In establishing these tiers, top priority was given to child-centered topics, followed by adult-centered topics, and then supplemental and special topics (Schramm, 2018). The order of priority given to these content areas is consistent with the original intent of divorce education programming, which centers around sensitizing parents to the impact of divorce on children and the positive role that cooperative coparenting can play in the family reorganization process (Brotherson et al., 2010; Geasler & Blaisure, 1999).

Context of the Study

As online divorce education courses become more common, researchers continue to evaluate their effectiveness. Although evaluations generally display an increased understanding among participants of divorce-related matters, especially in the short-term, they generally do not include participant feedback. The research reported here is one of the first studies to evaluate this line of inquiry, with the aim of exploring how participant opinion on dosage levels is related to their overall feedback and general opinions of divorce education. Gaining a better understanding of participant experiences may help family life practitioners and program developers determine whether brief, online curricula cover the most relevant topics and whether these programs leave participants feeling satisfied with their experience and confident that their participation has increased their knowledge of divorce-related matters. For this study, we used qualitative data from Utah’s one-hour online divorce education course, focusing specifically on the views of participants who thought the course was too short. Although these participants may not represent the opinions of the majority, like the other participants, they were mandated to take the course. Through qualitative analysis, we report on lessons learned from listening to the voices of the minority (Creswell, 2013).

Purpose of the Study

In this study, we performed a content analysis of open-ended survey items to report on the experiences of parents who took part in a court-mandated, online divorce education course who were concerned that the course was too short in length. To gain a better perspective on participant experiences, we posed two primary research questions:

1) What did participants who thought their course was too short find most beneficial about the course?
2) What was the nature of the overall feedback from participants who thought their course was too short?

In exploring these questions, the study aims to provide evidence of the ways in which participants’ experiences may inform family life practitioners as they work to improve online divorce education programming.

Method

Program Description

Utah’s online divorce education course was designed to be a one-hour, state-mandated course for divorcing parents with minor children. The course was developed by Extension Specialists at Utah State University through a contract with the Utah Administrative Office of the Courts. The course was available on demand through software linked to the Court’s website.

Per state legislation, divorce education in Utah was signed into law with the goal of sensitizing divorcing parents to the needs of their children both during and after the divorce process. Course curricula consisted of narrated PowerPoint® slides, videos, vignettes, and checkpoint questions to ensure active participation and learning. Failure to respond to the checkpoint questions within 60 seconds triggered the software to restart at the last completed section. Participants were not allowed to skip sections. Participants were allowed to complete the entire course in one sitting, or they could start and resume later. Once all sections and checkpoints were completed, participants could take a survey related to the course. In compliance with legislative requirements, mandated topics covered by the course and the survey included the impact of divorce on child and family relationships, financial responsibilities, domestic violence, coparenting skills, and ways to decrease child exposure to harmful interparental conflict (Utah State Legislature, 2018). Responses were anonymous and demographic data were not collected. Upon satisfactory completion of the course, certificates of completion were generated, which participants submitted to the Court.

Participants

Utah’s online divorce education course was launched in May of 2017. Current analyses are based on surveys collected between May 2017 and October 2018. During this time, a total of 10,715 individuals participated in the online course, and 4,954 individuals completed the program’s associated survey, resulting in a survey completion rate of 46%. Participants were not required to complete the survey to receive a certificate of completion. For purposes of this study, we analyzed qualitative data collected from participants who believed the course was too short (n = 41) and who provided usable qualitative responses. These participants were selected based on their response to a closed-ended survey item presented at the beginning of the survey that assessed participant opinion on course length. In assessing course length, participants were
presented with three options, of which they could only select one: (a) too long, (b) just right, or (c) too short.

**Procedural Measures**

Once all course modules were completed, an online survey was administered. In addition to closed-ended items that assessed participant opinion on course length, perceived improvements in the understanding of divorce-related matters, and participants’ future coparenting plans, the survey also provided participants with the opportunity to respond to two open-ended items. The first item asked participants to describe the most beneficial aspects of the course. The second item provided participants the opportunity to provide overall feedback related to the course.

Content analysis of the text was performed to identify common themes and patterns in the open-ended survey items. This approach was applied due to its flexibility (Bengtsson, 2016) and its documented usefulness in analyzing open-ended survey items (Donath et al., 2011).

**Data Analysis**

Through written responses, we explored the perceptions of participants who indicated that the one-hour course they were mandated to participate in was too short in length. Throughout the content analysis of the qualitative data, an emphasis was placed on describing the perceptions and experiences of participants (Creswell, 2013; Sargeant, 2012). We believe that an improved understanding of participant perception and experiences through content analysis may help inform online divorce education programming.

Data were primarily analyzed by two of the contributing authors with NVivo®, a widely-used qualitative data analysis software program. One author was a postdoctoral fellow with extensive training in qualitative data analysis in both applied, policy-based research and basic-academic research, while the other author was a graduate student with a moderate amount of experience in qualitative data analysis, who was involved in this project as part of a directed individual study. Throughout the analysis, the researchers also consulted with the other contributing authors who served as senior faculty in their respective departments and have a record of publishing qualitative research.

A crucial element of qualitative data analysis is interrater reliability (Gisev et al., 2013). To achieve interrater reliability, the two primary researchers referred to above analyzed data separately to identify statements that provided a description of participant experience, a process known as horizontalization (Creswell, 2013). After the horizontalization process, the researchers grouped statements into categories to determine what themes emerged from the data. The researchers consulted with one another to come to an agreement on the major themes. Each researcher then coded the data separately. Researchers also attempted to identify any occurrences of overlap between major themes. This was considered especially critical to the analysis, considering the freedom participants were given in their responses to the open-ended items.
Interrater reliability was calculated by rating the level of agreement between the two researchers through Cohen’s kappa statistic (Viera & Garrett, 2005).

Data were analyzed by using the two research questions as the major categories. For the first question (benefits of participation), Cohen’s kappa was calculated at 0.86. This process was repeated for the second question (overall feedback), which produced a Cohen’s kappa statistic of 0.96. Both Cohen’s kappa statistics indicated strong levels of interrater reliability (Viera & Garrett, 2005). All discrepancies were discussed until a consensus was reached.

**Results**

The results from the open-ended survey items are presented in two major categories: (a) benefits of participation and (b) overall feedback. These categories were then broken down further into themes. As stated previously, this study’s purpose was to focus intentionally on a subset of parents who, when asked in a post-course survey to provide their assessment of the length of the court-mandated divorce education course, expressed concern that the course was too short \( n = 41 \). Thus, the themes presented in the results section represent the most prominent findings from the analysis of participants who fit this criterion. This allows for the expansion of research in this field by giving voice to a minority of participants whose feedback might shed light on crucial aspects of divorce education related to dosage and content priorities.

Themes mentioned by one or a few participants were not included in the final analysis. In general, the themes that emerged were consistent among the program participants. This consistency suggests that content analysis of open-ended survey items is an effective method in finding ways to improve divorce education programs by identifying what areas of the course participants found most beneficial and what areas of the course participants believed were most in need of improvement.

**Benefits of Participation**

Of the 41 participants who believed the course was too short, a total of 30 participants (73%) offered usable qualitative responses related to the benefits they derived from participating in the course. From these responses, three major themes emerged: (a) impact of divorce on children, (b) increased awareness of divorce-related matters, and (c) coparenting.

**Impact of Divorce on Children.** Half \( n = 15 \) of the participants discussed how the course helped them to better understand the impact that divorce can have on children. Related to this theme, multiple participants found the course helpful in describing how children of different ages typically respond to divorce, especially as it related to the different stages of grief that children might go through and the coping mechanisms that children use to deal with this grief. An example of the course’s helpfulness in educating parents on this topic was found in the statement of one parent who said: “Learning that kids go through different stages of grief and to watch for
those in order to help my kids.” The course also seemed to inform participants that some children may try to take on excessive, adult-level responsibility during the divorce process and that parents need to take the proper measures to prevent this from occurring due to the negative outcomes that can result for the child. An example of how the course helped parents understand how to recognize and address this type of situation was intimated by one participant who stated:

I found the topics of how to ensure children do not become counselors as much as they want to try most helpful. My eldest child was trying to do just that and did end up with some levels of distress because of it.

**Increased Awareness of Divorce-related Matters.** Eleven participants discussed how the course helped increase their awareness of divorce-related matters. In discussing their increased awareness, participants often cited the benefit of being introduced to the breadth of issues related to the divorce process and how the course touched on items they were not aware of before attending the course. Some of the topics that participants were pleased to receive new information on were related to legal matters and coping mechanisms for handling specific situations during the divorce process. In discussing the comprehensive nature of the course, one participant expressed approval by describing the following as being a benefit of the course:

The information provided on all aspects of going through a divorce. There are so many things that need to be done, and trial and error is not the way to figure them out. It is really good to get perspective from research and experience to help guide decisions made.

**Coparenting.** Ten participants discussed how the course helped them to better understand the importance of coparenting. In discussing coparenting, participants consistently noted how the course effectively explained the cooperation and sharing of responsibilities involved in successful coparenting. An example of the course’s helpfulness in educating parents on the topic of coparenting was found in the statement of one parent who said: “I enjoyed the information about roles and relationships when children are involved. I felt there was suitable time spent on various age groups of affected children.” Some participants expressed hope for improvement as a result of their spouse’s participation in the course, knowing their spouse would be exposed to this content. In learning about the importance of sharing responsibility in coparenting situations, one participant expressed the following:

That my husband has to take this. Hopefully, he will understand that I am not the only one who thinks this way about divorce and children. I’m hoping this will help him realize more regarding schedules, keeping promises, financial responsibility, and safety of our child.

Other important lessons participants learned about coparenting were related to the dangers of interparental conflict in terms of putting children in the middle of disputes and the negative consequences that can result from speaking unfavorably about the other parent in front of
children. In describing the benefits of the lessons, the course offered on coparenting skills, one participant stated:

The coparenting module was most helpful. Trying to get along with one another is difficult when ill feelings are present. You can make every attempt to be calm and cooperative, but you will at one time find yourself frustrated. Good tips in this module.

**Overall Feedback**

Of the 41 participants who believed the course was too short, a total of 21 participants (51%) offered usable qualitative responses related to their overall feedback about the course. To address the freedom participants were given in responding to this item, and to construct a more useful analysis, responses were grouped into two major themes: (a) positive feedback and constructive criticism and (b) negative feedback. To distinguish between constructive criticism and negative feedback, researchers separated participant statements based on the perceived nature of their criticism. Statements of constructive criticism were those in which participants discussed the benefits of the course (i.e., positive feedback) while offering solutions related to how the course could be improved (i.e., constructive criticism). Conversely, statements of negative feedback focused more on the course’s shortcomings without offering much in the way of viable solutions for program improvement.

**Positive Feedback and Constructive Criticism.** Seven participants offered generally positive feedback for the course, which was often followed by constructive criticism that included suggestions on course improvement. These participants were satisfied with how informative they perceived the course to be, especially on topics related to coparenting and the importance of keeping the best interests of children in mind during the divorce process. Multiple participants stated that they planned to apply what they had learned in the course to their situation. For instance, one participant stated: “The co-parent information was extremely helpful. I will apply tips to what we are already doing.”

Despite the generally positive nature of their feedback, some participants offered constructive criticism that might be used to improve course delivery and help establish course content priorities. For instance, one participant, who was interested in learning more about the effects of domestic abuse related to divorce stated: “Very informative, although more info on abusive relationships and how that is affected by divorce would be helpful.” Another participant also noted that the course was very informative but expressed concern that the course was too neutral in its discussion about the implications of divorce. In a statement that summarizes the nature of the positive feedback and constructive criticism offered by participants, one individual offered the following: “Great course. Could be more in depth, but what it did relay was great knowledge which I will apply to my situation. Must always do what’s best for the kids.”
Negative Feedback. Fourteen participants who were concerned with the brief nature of the divorce education course offered negative feedback. The majority of these participants believed the major area of improvement was related to course content issues. In this case, participants expressed concern over what they believed the course failed to cover. Some specific examples of omitted topics included infidelity and ways in which parents can help children adjust to the divorce process. With regard to dealing with matters of infidelity, one participant stated:

The course does not mention infidelity much, and I think that is a very common cause of divorce. Some more info on coping with the jealousy and anger that is inevitable when you find out about your spouse’s unfaithfulness is warranted.

In discussing ways in which the course could be improved to aid parents in assisting their children with adjusting to the divorce process, another participant offered the following suggestion:

I wish there was more information about whether or not there are benefits to having children go to therapy. I feel like sometimes therapy shifts the responsibility of helping kids with their problems from parent to therapist. I believe that takes away an important part of parenting and interferes with the relationship between parent and child. Of course, there are cases where the parent is ill-equipped to help the child, but more information on this subject would be helpful.

In addition to the feedback related to course improvement and course content issues, participants also questioned if some of the information was current, while others expressed a desire for more personal and “real world” divorce-related examples to be offered throughout the course. It should be noted that of all the participants who thought the course was too short, only one participant expressed genuine dissatisfaction with the length of the course. This participant stated:

It is insulting to have just an hour to cover about divorce. This is a crucial matter; an hour cannot inform in detail. This course should be done in person, but there is (sic) not enough classes, and it should be much, much longer than an hour.

Discussion and Implications

Through a content analysis of qualitative data collected from Utah’s one-hour online divorce education program, this study examined the views of program participants who thought the course they participated in was too short in length. Specifically, this study was concerned with two main issues related to the experiences of these participants: (a) gain a better understanding of what aspects of the course participants found most beneficial and (b) explore the nature of participants’ overall feedback regarding the course, paying particular attention to both positive and negative feedback. The following sections discuss the study’s major findings and their implications related to these two issues.
Benefits of Participation

Although this study focused on participants who thought the course was too short, when asked about the most beneficial aspects of the course, participants reported that the course helped them better understand the impact that divorce had on children and the benefits of positive coparenting, which is one of the primary goals of divorce education (Braver et al., 1996; Whitworth et al., 2002). This evidence further underscores the importance of including these two topics in divorce education programming (Brotherson et al., 2010; Ferraro et al., 2016). Further, the fact that such a small number of participants believed the course was too short, but still reported benefits, bodes well for the state of online divorce education programming, which is starting to move toward more time-sensitive formats (Schramm et al., 2018). Such findings also provide research-based evidence on the importance of placing a strong emphasis on these topics when establishing content priorities for divorce education.

Overall Feedback

When participants were given the opportunity to provide overall feedback about the course, their responses tended to be less positive, centering on divorce-related matters they believed were missing from the course or not covered in sufficient detail. This is to be anticipated as this study purposefully focused on participants who believed the course was too short. The issues related to the concerns raised by participants over the lack of detail on certain topics is reminiscent of the concerns of family life practitioners who have questioned whether brief divorce education courses can provide the content-rich curriculum that is offered through longer divorce education courses (Becher et al., 2015; Brandon, 2006; Salem et al., 2013).

The concerns of participants over the lack of detail on certain topics may serve as a latent function of the brief nature of the course in which they participated. Alternatively, it could indicate that individuals are looking for more information on topics more relevant to their specific situation. Participants’ concerns over uncovered or abridged topics illustrate the importance of establishing content priorities for divorce education programs.

Based on the results of this study, there is support for a greater priority to be placed on adult-centered and special topics (e.g., domestic abuse and infidelity), in addition to child-centered topics (e.g., when to provide children with therapy) to ensure a more comprehensive approach to divorce education (Schramm et al., 2018). Participants’ desire to learn more about certain topics may present an opportunity for follow-up efforts and initiatives to provide supplemental content on certain topics. Indeed, past evaluations of online divorce education programs have stressed the utility of technological benefits and tools of online divorce education through follow-up efforts to provide parents with additional services and information (possibly through interactive links) to aid families in divorce-related transition processes (Bowers et al., 2011; Dennis & Ebata, 2005). Such efforts may have programmatic and pragmatic implications that policymakers would be well-served to take under consideration, especially in light of research that has shown...
that divorce education programs that incorporate follow-up efforts have reported improvements in post-divorce familial well-being (Becher et al., 2015; Cronin et al., 2017).

It is recognized, however, that covering additional material and adding other interactive features to an online program could pose some challenges, especially in terms of ensuring that the current program, which was designed to be brief in nature and more convenient for divorcing parents, is kept at a satisfactory length for participants. The results of this study also stress the importance of ensuring that courses provide the most current information possible as it relates to matters of divorce, something else that might be addressed by taking advantage of the interactive capabilities of online education programs. Finally, this study’s findings identify the need for attention to detail among those designing brief divorce education courses, especially as it relates to addressing key topics in comprehensive ways within time-sensitive formats.

**Limitations and Future Directions**

When interpreting the findings of this study, several limitations should be considered. First, in selecting participants who thought the course was too short, the sample did not represent most participant experiences. This was by design, as we intentionally concentrated on the minority of participants who indicated the course was too short in an attempt to examine the “less is more” approach that is becoming common in divorce education. Rather than further commenting on course length, the participants were more inclined to comment on course content, paying particular attention to topics they thought were not sufficiently covered in the curriculum.

Another limitation of this study was the lack of demographic data, which could not be collected due to the restrictions placed on implementing the study’s survey instrument. We acknowledge that the lack of demographic data limits the generalizability of the findings. The inclusion of demographic data would open up many possibilities for future research that might help practitioners better understand which individuals could benefit from further intervention after program completion.

In future research efforts, researchers could use demographic data, such as gender, age, and relational factors (e.g., number of marriages), to compare participants’ reactions to course length. Understanding the reasons behind the divorce (e.g., domestic violence or infidelity) and whether the quality of spousal relationships is associated with how participants view the program’s effectiveness would also be informative to future research. Further, from an applied perspective, expansion of the survey instrument could provide an option for participants who believed their course was too short to seek more information or professional services after program completion. Increased interaction with participants could be mutually beneficial, as it might allow practitioners to gain a better understanding of the role that certain issues played in the decision to file for divorce, thus, helping them tailor future programs to the specific needs of participants, while providing participants with additional treatment that might be helpful as they move through the divorce process.
To explore these and other research and programmatic possibilities, programs like Utah’s online divorce education program would need to collaborate with state officials who mandate this course for divorcing parents to collect demographic data and other data related to the situation of participants. Indeed, if such collaboration were to take place, the proposed future research and supplemental resources could be expanded to more effectively serve divorcing parents.

**Conclusion**

Although divorce rates remain fairly steady (Anderson, 2016), they are still relatively high for first marriages and continue to increase for higher order-marriages (DeLongis & Zwicker, 2017). Given these trends and the unfavorable impacts of divorce on children and families, coupled with the increase of mandatory divorce education programs, evaluations of the effectiveness of such programs will continue to be important. Some have proposed that gathering feedback from participants of divorce education programs can help family life practitioners identify the most effective approaches to program delivery and improvement (Choi et al., 2018; Ferraro et al., 2018).

In this study, we have argued that valuable knowledge can be gained from participants who believed their divorce education course was not long enough. Data revealed that brief, online divorce education could inform participants of the effects of divorce on children and increase their awareness of legal matters, coping strategies, and positive coparenting. Perhaps the most important findings from this study were derived from participants’ feedback on content areas they believed were lacking in detail or not addressed during the course. With courts and state legislatures approving (and in some cases requesting the design and implementation of) brief divorce education programs, it is possible that online divorce education courses will become more common. To prepare for this possibility, it will be important to understand participant experiences, and use their voices to refine effective and relevant, research-based divorce education programming that will help families as they adjust to changes associated with the divorce process.

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Assessing Master Gardener Volunteers’ Involvement in and Knowledge of Food Preservation

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Jon Traunfeld
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Accessing science-based practices for safe-home food preservation (FP) can prevent unnecessary foodborne illness. An Extension program called Grow It, Eat It, Preserve It allows trained Extension agents to teach and advise on FP topics. Meanwhile, the Home & Garden Information Center delivers science-based gardening education, supporting the Master Gardener Volunteer Program (MG), increasing community outreach. MGs conduct the Grow It, Eat It, Preserve It partner program, Grow It Eat It, which teaches residents to grow edible gardens. MGs are not legally trained in FP, and a knowledge gap exists regarding how often MGs are asked FP questions during community events and what resources they provide to clients. An online survey was administered to 1,810 active MGs in Maryland, providing insight on MGs’ current knowledge and community interactions pertaining to FP. A total of 586 MGs responded to the survey. Results indicated that MGs were asked FP questions during community events (65.5%) and often went beyond the scope of their training to provide non-Extension resources for FP. Most MGs were unsure whether FP workshops took place in their county Extension office (65.8%). The survey results can improve cross-programming communication and inform future MG training, marketing, and programming.

Keywords: food preservation, Master Gardeners, Family & Consumer Sciences, volunteers

Introduction

Since 1978, Maryland has used Master Gardener (MG) volunteers and the Home & Garden Information Center (HGIC) to extend community outreach on science-based home gardening practices. Grow It Eat It (GIEI) is a subprogram of the MG program that encourages and teaches residents to create and maintain edible gardens (University of Maryland Extension, 2019). The Grow It, Eat It, Preserve It (GIEIPI) program is a partnering program to GIEI, teaching residents science-based practices to safely-preserve food through freezing, dehydration, and canning. Trained employees of the university facilitate the GIEIPI programming.

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Extension has played an important role in advancing home food preservation (herein referred to as FP) in America for over 100 years (U.S. Department of Agriculture National and Agricultural Library, n.d.). Extension employees who teach FP are usually 4-H agents or Family & Consumer Sciences agents (FCS; Stage & Vincenti, 1997; Thomas & Chapman, 2014; US Department of Agriculture National Institute of Food and Agriculture, n.d.). 4-H is a national program for youth and focuses on civic engagement, health, and science (National 4-H Council, n.d.). FCS aims to improve families, farms, communities, and economic dimensions, by focusing on programs aimed at the well-being of families and the community (U.S. Department of Agriculture National Institute of Food and Agriculture, 2018).

The 4-H, FCS, and MGs programs share the outreach and education themes of food, agriculture, nutrition, sustainability, and FP. With the increasing popularity of FP (Andress et al., 2001; Camire et al., 2019; Dickerman, 2010; Lorenz et al., 2016), there are several challenges with how science-based FP information is disseminated among home preservers (D’Sa et al., 2007; Lorenz et al., 2016). In Maryland, the few 4-H and FCS agents who focus on FP have other programmatic responsibilities that limit their commitment to attend community events such as farmers markets to promote and educate on safe FP practices.

A pragmatic solution may be to have MGs help educate residents during community events because of the deep connection between growing produce and preserving produce. There are about 1,810 active MG volunteers who can reach roughly 100,000 residents in a given year (Home & Garden Information Center, 2020). Yet, the current University of Maryland Extension Master Gardener Coordinator Manual (2019) states that MGs should not answer FP questions because they are not legally covered to advise on such topics. If Maryland had the capacity to support a Master Food Preserver Volunteer Program, it would allow trained volunteers to provide science-based information in various community settings (Healthy Canning on the Foodie Pro Theme, 2020), similar to the role of trained MGs providing science-based home gardening information in the community. It is currently unknown how often MGs in Maryland are asked questions about FP, if at all, and what resources they provide clients. This gap is reflected in the lack of publications regarding how often MGs are asked FP questions in other states to support anecdotal accounts and a deficiency of general food preservation studies (Lorenz et al., 2016). Knowing to what extent MGs receive and answer FP questions can help faculty and administrators to make informed decisions regarding Extension outreach and education for FP.

**Purpose of the Study**

The purpose of the study was to better understand (a) how often MGs are asked FP questions during community events, (b) what FP resources they provide to clients, and (c) MG knowledge of FP activities in their county/city office.
Methods

All statewide-active MGs were recruited to participate in this study through their monthly newsletter listserv. Researchers included a brief description of the survey in the newsletter with an embedded survey link. The survey was available for four weeks, from April 16, 2018, to May 16, 2018. After two weeks, a friendly reminder went to all active MGs to encourage them to participate if they had not done so already. There were no monetary or other incentives to complete the survey.

The MG volunteer program requires all MGs to record their volunteer hours on an online platform. Therefore, using an online newsletter and survey platform, Qualtrics™ (Qualtrics, Provo, UT), was an appropriate method to administer the survey. Employing an online survey for all active MGs can maximize the research team’s resources in terms of time, cost, respondent error/omission, and data analysis (O’Neill, 2004; West, 2007). MGs by state policy must be 18 years or older. The Institutional Review Board at the University of Maryland, College Park, approved this study before participant recruitment.

The online survey consisted of five items and four demographic items (Table 1) that took about five minutes for participants to complete. The survey consisted of Likert-type, multiple-choice, and fill-in-the-blank questions. The questions investigated (a) whether MGs were asked FP questions at community events, (b) what FP resources MGs provide to clients, (c) MG knowledge of FP activities in their county/city office, (d) frequently asked FP question, and (e) demographics. Survey items were developed by an FCS agent and MG Advanced Training Coordinator and reviewed by one FCS agent and one HGIC agent for face validity (Reinard, 2006).

Table 1. Survey Items

<table>
<thead>
<tr>
<th>FP questions Master Gardeners are asked at community events</th>
</tr>
</thead>
<tbody>
<tr>
<td>- As a Master Gardener, how often are you asked food preservation questions? (^a)</td>
</tr>
<tr>
<td>- What is the most frequent food preservation question you are asked? (^b)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FP resources Master Gardeners provide to clients</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What resources have you recommended (if any) for safe food preservation? (^b)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MG knowledge of food preservation activities in their county office</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Are food preservation workshops offered by your county Extension office? (^c)</td>
</tr>
<tr>
<td>- Do you know the name of the person teaching food preservation at your local Extension county office? (^b)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demographics</th>
</tr>
</thead>
<tbody>
<tr>
<td>- County of Master Gardeners status (^c)</td>
</tr>
<tr>
<td>- Year of completed Master Gardeners basic training (^b)</td>
</tr>
<tr>
<td>- Age (^c)</td>
</tr>
<tr>
<td>- Gender (^c)</td>
</tr>
</tbody>
</table>

\(^a\) 5-point Likert scale from “Never” to “Constantly”
\(^b\) Fill-in-the-blank
\(^c\) Multiple-choice
Data Analysis

Surveys were analyzed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA) using non-parametric statistics, including frequencies and counts.

Results

The online survey was live from April to May 2018. There were 586 completed surveys, for a 32.4% completion rate by active MGs (N = 1,810). Respondents completed their initial MG training between 1989 and 2018. The majority identified as female (83.3%, n = 482) (data not shown), and most were between the ages of 65-74 years (40.2%, n = 234), followed by 55-64 years (28.7%, n = 167). Out of the 23 counties in the state and Baltimore City, the jurisdictions with the highest participation were Montgomery County (14.3%, n = 79), Howard County (10.9%, n = 60), and Anne Arundel County (9.1%, n = 50).

Food Preservation Questions MGs are asked at Community Events

Only 34.5% (n = 198) of respondents said they were never asked FP questions. More often, MGs did handle FP questions to some extent from the community (65.5%; n = 376). The question regarding their most frequent FP question solicited 265 responses. The primary FP theme focused on tomato-related topics. MGs reported that the community asked how to (a) preserve tomatoes and tomato sauce, (b) freeze and preserve herbs, (c) preserve fruits and vegetables by freezing, (d) preserve without sugar, and (e) preserve meat by canning.

Food Preservation Resources MGs Provide to Clients

Respondents recorded the various FP resources that they gave to clients during community events. There were 218 responses, and resources were grouped into different categories: Extension resources, non-Extension affiliated websites, books and magazines, other resources. Many respondents cited Extension offices and Extension websites (National Center for Home Food Preservation, which includes USDA resources). Respondents also cited a version of the Ball Book of Canning (copyright year and edition unknown), YouTube videos, and blogs as non-Extension-affiliated resources.

Master Gardeners’ Knowledge of FP Activities in Their County/City Office

Table 2 presents responses to FP activities questions. MGs (65.8%; n = 381) stated that they were unsure if canning workshops occurred in their county/city Extension office. Those who responded that canning workshops were held in their county/city office (20.7%; n = 120) were asked whether they knew the name of the agent teaching FP workshops. Only 28 respondents submitted an agent’s name. Some responses included retired faculty and names of faculty that did not teach FP.
Table 2. Responses to FP Activities Questions (N = 586)

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a UME Master Gardener, how often are you asked food preservation questions?</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>198 (34.5)</td>
</tr>
<tr>
<td>Rarely</td>
<td>226 (39.4)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>126 (22.0)</td>
</tr>
<tr>
<td>Often</td>
<td>23 (4.0)</td>
</tr>
<tr>
<td>Constantly</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td>No response</td>
<td>12 (*)</td>
</tr>
<tr>
<td>Are food preservation workshops offered by your County/City Extension office?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>120 (20.7)</td>
</tr>
<tr>
<td>No</td>
<td>78 (13.5)</td>
</tr>
<tr>
<td>Unsure</td>
<td>381 (65.8)</td>
</tr>
<tr>
<td>No response</td>
<td>7 (*)</td>
</tr>
<tr>
<td>If you know the person’s name, please type in the name of the person who is teaching food preservation at your local Extension County/City Extension office</td>
<td></td>
</tr>
<tr>
<td>Their name is…</td>
<td>28 (26.2)</td>
</tr>
<tr>
<td>I can’t remember their name</td>
<td>107 (73.8)</td>
</tr>
</tbody>
</table>

Note. *“No responses” and missing responses were not calculated in the total percentage.

b Calculated as a percent of 574 respondents versus 586 respondents.

c Calculated as a percent of 579 respondents versus 586 respondents.

d Calculated as a percent of 107 respondents, versus 586 respondents.

Discussion

This may be the first study to publish the results of a survey identifying interactions between MGs receiving and responding to unsolicited FP topics during community events. In this study, we documented the extent that MGs received FP questions during community events, the resources MGs provided clients at that point in time, and their knowledge of FP activities in their county/city office. It was found in the present investigation that the majority of MGs were asked FP questions during community events (34.5% were never asked about FP). The majority were unsure (65.8%) if FP activities took place in their county/city office. Very few knew the Extension agent a client would want to contact to learn more about FP. Lastly, some MGs were overstepping the scope of their volunteer role by providing the public unsafe and non-recommended resources that could cause clients long-term complications from foodborne illness (Centers for Disease Control and Prevention, 2019).

While all 1,810 active MGs were able to access the online survey, the response rate of 32.4% fell within the expected response-rate range (Baruch & Holtom, 2008). The study verifies beyond anecdotal evidence that people in the community approach MGs for FP advice.

Before the study, the extent to which MGs were asked FP questions during community events was unclear. With MGs encouraging residents to grow and maintain edible gardens through the Grow It Eat It program and the increasing popularity of home FP (Andress et al., 2001), it is logical to assume clients would ask MGs their advice about various FP topics. The majority
(65.5%) of respondents experienced some FP question(s) from the public. However, the University of Maryland Extension Master Gardener Coordinator Manual (2019) states MGs “should not present training or answer questions” (p. 48) on canning, dehydration, and freezing. MGs are not legally covered to teach and advise on FP. These results may lead to an identification of FP topics and resources that MGs could safely share with clientele. Program leaders and administration may decide to modify MG training and education to address FP because MGs are often asked about FP during community events (65.5%).

A survey item asked what resources MGs provided clients. It is currently advised that MGs direct clients to the university’s food preservation webpage or direct clientele to appropriate Extension professionals (University of Maryland Extension, 2019). Ensuring this mode of communication would stay within legal expectations and ensure that an Extension agent trained in FP and legally covered by the university gives FP advice, thus providing science-based information to the client. MGs identified 218 resources that included non-Extension and non-U.S. Department of Agriculture resources; this highlights a protocol gap in MG training and education. Shifting MG behavior to recommend desirable resources from land-grant universities and the U.S. Department of Agriculture would prevent the risk of providing an unsafe FP method that could cause mild to debilitating foodborne illness symptoms and potential death (Centers for Disease Control and Prevention, 2019).

A recent study specifically investigated Facebook food bloggers averaging 145,952 followers (Savoie & Perry, 2019). Researchers found that recipe adherence for safe salsa processing for home FP omitted key safety mechanisms in the directions (Savoie & Perry, 2019). MGs in our study directed clientele to some non-recommended resources, including digital media platforms, such as online blogs and video platforms. The study by Savoie and Perry (2019) shows the potential danger for the public to access unsafe FP recipes on social media platforms where safe processing mechanisms are missing from the directions. Similar concerns were raised in our study from the resources MGs shared. This study may show a shift from family and friends being the traditional source of canning knowledge (D’Sa et al., 2007) to internet resources, where internet-misinformation is known to occur (Wang et al., 2019), creating a new source of information competition for Extension. Results from the study acknowledge that MGs lack materials that they can share during public events that would reduce misinformation on FP and safeguard MGs from advising outside their legal role as MGs.

Lastly, the investigators explored whether MGs knew if FP activities occurred in their county Extension office. Knowing if FP activities were available at their county/city office might help keep MGs within the scope of their horticulture duties and improve the overall branding of the diverse services Extension offices can provide their communities. However, MG’s knowledge of FP activities at the local level was surprising because the majority of MGs were unsure if canning workshops occurred at their county Extension office (65.8%). Of the MGs who responded yes to knowing canning workshops occurred in their county Extension office (20.7%),
some provided names of retired agents and names of current agents that did not teach FP. Not all Maryland Extension offices have a 4-H or FCS agent trained in FP. Our study demonstrates a potential limitation in FP marketing and communications internally and externally, as well as some MGs exhibiting inattentional blindness by not observing something in plain sight (Mack & Rock, 1998). For example, an FP advertisement in an MG newsletter or Extension office that a MG would see in plain sight but does not notice. The posted but not seen FP flyer or newsletter item may have led some respondents to select no or unsure in the current study. MGs’ unawareness can signal that flyers in a county/city office are unremarkable and need redesigning. Constant communication between agents teaching FP and the MGs is needed to improve this area of branding of services provided to the community.

Recommendations

The research team encourages other state Extensions to administer a similar exploratory survey among their active MG volunteers to identify and address any gaps in communication, resources, programming, and MG training policies on FP. The research team recommends that Maryland Extension administer a similar FP online survey to MGs every few years to monitor progress and new issues. A task force to investigate piloting a Master Food Preserver Volunteer Program to address some of the emerging needs and statewide challenges around FP education and dissemination may be warranted.

Future Implications

The present investigation confirms beyond anecdotal narratives that MGs receive and respond to FP questions during community events, possibly overstepping the legal scope of their volunteer duties. The results have important implications for improving communication and dissemination of FP information to the community. First, program leaders and agents need to reevaluate current community dissemination channels for science-based FP information. Second, exploring how MGs could share science-based FP information and county resources with the community that does not overstep their home garden volunteer role or legal coverage as a volunteer. For example, updating FP print materials and employing social media posts. Third, more communication and visibility of the Extension agent(s) trained on FP, such as attending MG meetings and events to build intra-office rapport. Last, strengthening MG education, training, and policies around FP.

Limitations to the Study

Generalizations from this study may be limited to Extension programs that lack a Master Food Preserver Volunteer Program. The study was unfunded, and time was a limiting resource to allow for extended sampling and incentives to increase MG participation. The nature of an online self-administered survey could make respondents feel obligated to provide socially desirable responses, despite the anonymity of the data collection method (Paulhus, 2017). When MGs self-
identified their frequently asked FP question by the public, the number of responses focusing on tomatoes could be due to the time the survey was disseminated (April and May). Many Extension county/city offices host a plant sale by the MGs in May and start tomato seedlings for the event, so the plant sale and their own grower’s bias could have limited the response on other FP topics. Last, a question asking MGs their risk perceptions of FP to foodborne illness would provide more insight to an FP-foodborne illness association because MGs may not perceive FP as being a food safety risk, as Camire et al. (2019) showed among Maine consumers. Thus, emphasizing the need for education and information dissemination (D’Sa et al., 2007).

The present study offers a tool for similar investigations in the future to determine what types of questions MGs are receiving about FP during community events. An online platform to administer the survey was time and cost-effective (O’Neill, 2004; West, 2007), guaranteeing that all MGs had access to participate in the survey, with an acceptable response rate (Baruch & Holtom, 2008). Future studies should increase the amount of time to participate in the study and provide an incentive to increase MG responses. Results from the survey highlighted weaknesses around effective communication between Extension agents and volunteers that will help program leaders and agents adapt and create materials, policies, and programming to fill community gaps concerning food preservation in Maryland and continue to modernize and advance home food preservation in Extension.

References


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Assessing Master Gardener Volunteers


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Lessons from Two States with Extension Programs for Managing Stress

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Recognizing the need for education that addresses social emotional and mental health issues faced by adults, Extension developed two different types of programs. Michigan State University (MSU) Extension developed the RELAX: Alternatives to Anger program (RELAX) to address anger management, and West Virginia University (WVU) Extension created Stress Less with Mindfulness (SLM) to build stress management skills among adults. At a national conference, the two states independently shared their programs’ objectives and delivery implementation and then later cross-trained each other’s Extension team. The research reported here shares the designs of both stress-reduction health programs and the results of a combined two-state SLM evaluation with 1,304 participants. The benefits of SLM included skill learning and practice.

Recommendations for practice include state Extension services sharing curricula resources, training teams from each other’s states, and jointly implementing evaluation protocols. Extension professionals looking for established programs that help people gain skills to promote emotional health and stress-reduction may consider implementing one of these community-based programs in their states.

*Keywords:* anger management, emotional health, mindfulness, stress reduction, community health program

Introduction

Extension family consumer science and health educators have long recognized the need to help individuals make health-related behavioral changes through increased ability to self-regulate responses to stress. Extension educators in two states decided to address stress-related health
because each state was in need of research-based interventions. In the Gallup-Healthways Index (2018), Michigan scored 43 on Life Evaluation (U.S. mean: 46.8) and 25 on the Emotional Health indicator (U.S. mean: 78.6). West Virginia scored lower than the national mean (39.8) on Life Evaluation and slightly below the national mean (74.1) on the Emotional Health indicator.

Mental Health America (MHA) ranks states by the occurrence of mental illness in the population based on measures of prevalence and access to care. MHA ranked Michigan 17th overall and West Virginia 42nd out of 50 states and the District of Columbia (MHA, 2017). Moreover, Extension educators in both states recognized that stress and anger lead to higher levels of the stress hormone cortisol, which can have negative physical effects such as heart disease, high blood pressure, and diabetes (Kandhalu, 2013). Leaders from both states concluded they needed programs to address emotional and mental health, so Extension educators at Michigan State University (MSU) Extension developed and offered “RELAX: Alternatives to Anger” (RELAX) and Extension educators at West Virginia University (WVU) Extension developed and offered “Stress Less with Mindfulness” (SLM).

**Descriptions of Two Extension Stress Management Health Programs**

**RELAX: Alternatives to Anger Program**

RELAX was designed to give adult learners a way to deal with anger. The program goals are to help participants express emotions, navigate stress, resolve interpersonal conflict, take another’s perspective, feel capable and whole, and build skills to form and maintain satisfying relationships. The training is intended to be implemented as a series of four sessions that last 60 to 120 minutes each, for four weeks. The core concepts of RELAX include recognizing anger signals, empathizing with others, listening and hearing others, accepting anger, and learning to forgive the past and live in the present. RELAX is available as a face-to-face series in small or large group settings and as an online self-paced course offered through MSU Extension. The RELAX Parent Caregiver module was created from a demand for a one-time workshop on anger management with a focus on communicating with children and youth. In addition, a Spanish version of RELAX called *Relajarse* is available (Reck et al., 2019; Tiret et al., 2018).

Between 2013 and 2018, 3,060 adults in MSU Extension completed the RELAX four-week, face-to-face series. Program evaluation results demonstrated changes in behavior on the individual and group or program level (Pish et al., 2016). Improving communication skills was a significant outcome of the RELAX program, which showed how education could help individuals deal with toxic and persistent stress in daily life to support positive emotional health. Extension educators collected program evaluation data, and it was found that (a) 61% of participants reduced their frequency in yelling and screaming, (b) 62% worked hard to be calm and talk things through, (c) 61% talked things through until they reached a solution, and (d) 58% learned what triggered their anger at others.
Stress Less with Mindfulness Program

Mindfulness is an effective treatment in decreasing anxiety and depression (Hofmann et al., 2010) and reducing stress symptoms (Galla et al., 2015). Meta-analytic review of controlled studies of mindfulness-based programs has shown widespread emotional and medical benefits in primary care populations (Demarzo et al., 2015) and for individuals without a prior interest in meditation. In 2009, after studying the University of Massachusetts program, a Family Life Specialist at WVU Extension began working on mindfulness health educational materials that could be used by Extension professionals in community-based programs. The result was a five-module curriculum titled Stress Less with Mindfulness (SLM). Many of the concepts taught in SLM are based on training developed by Kabat-Zinn (2003). The SLM program objectives include identifying personal stress and learning mindfulness techniques such as breathing, movement, eating, walking, and other ways to calm the mind and body (Smith & Nichols, 2020).

Implementation of Extension Stress-Related Health Programs in Two States

Partnership Between Extension in Michigan and West Virginia

In 2013, staff from MSU Extension and WVU Extension met at a national conference and discussed the benefits of each stress reduction program. This resulted in an evolving partnership with the Social Emotional Health team of MSU Extension and the Family Relationship team at WVU Extension. A decision to implement SLM in Michigan was made because SLM concepts complimented the concepts in the existing RELAX program but moved beyond anger control by training participants in mindfulness skills. A description of the complementary concepts follows.

Cortisol is a hormone released when humans are stressed, angry or afraid (Kandhalu, 2013). Cortisol has negative physical effects such as increasing or worsening chronic conditions, including heart disease, high blood pressure, and diabetes. RELAX teaches the effects of cortisol and suggests ways to calm down and de-stress.

SLM also taught about cortisol but provided a deeper understanding and outlined practical ways to implement mindfulness practice into everyday life as a way of managing stress (Manenschijn et al., 2013; Schoorlemmer et al., 2009). In addition, SLM presented five lessons, each with details on using mindfulness techniques to reduce stress, including breathing (Kabat-Zinn, 2015), mindful movement (Hanh & Vriezen, 2008), mindful eating (Bays, 2017), walking (Jung, 2014), thought surfing (Kabat-Zinn & Hanh, 2009), being kind to your mind (Hanson, 2009), and laughter (White & Winzelberg, 1992).

The concept of awareness was taught in both RELAX and SLM. People can learn to manage their anger by becoming aware of their physical reactions to anger and then applying calming techniques (Peirce et al., 2013). RELAX helped participants become aware of personal anger triggers. This concept was taught in SLM by using mindfulness as a way to practice being aware,
in the present moment, with a non-judgmental attitude (Kabat-Zinn, 2015). In addition, both programs included walking as a proven way to calm down (Jin, 1992; Kaye, 2000). RELAX taught that not everything that makes one angry is in one’s control and suggests ways to change thinking. SLM went deeper into learning about what can and cannot be controlled with facilitated discussions on acceptance (Forsythe & Eifert, 2007). RELAX taught about eating as a response to stress and elevated cortisol levels (Adam & Epel, 2007; Groesz et al., 2012). SLM has an entire lesson on how to eat mindfully and more slowly as a way to interrupt stress eating (Bays, 2017). Finally, an introduction to forgiveness was addressed in RELAX lesson four, focusing on steps to forgiving (Luskin, 2003). SLM introduced the practice of mindful thought-surfing, which can decrease thought rumination and increase interpersonal forgiveness (Karremans et al., 2019; Rusting & Nolen-Hoeksema, 1998).

Although both programs focus on stress management concepts and complement each other, the research reported here focused on the collective evaluation results for the SLM programs implemented in two states to provide evidence for other Extension units to consider implementing health programs for managing stress in their states. There was insufficient data collected from WVU Extension on RELAX to include in this research. The significant amount of SLM data collected from both states provided an opportunity to combine results.

**SLM Program Series**

From 2013 to 2017, the combined participation in the SLM series in Michigan and West Virginia was 3,760 adults (Table 1) at 83 locations. Attendees included a variety of audiences such as employees, early childhood providers, school-age educators, parents, and caregivers. At MSU Extension, the program was implemented as adult community education and as professional development at worksites, senior centers, and substance use disorder treatment facilities. In West Virginia, SLM was primarily offered as a worksite wellness program.

**Table 1. Number of SLM Series Participants in Michigan and West Virginia by Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Michigan Participants</th>
<th>West Virginia Participants</th>
<th>Total Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>--</td>
<td>153</td>
<td>153</td>
</tr>
<tr>
<td>2014</td>
<td>322</td>
<td>164</td>
<td>486</td>
</tr>
<tr>
<td>2015</td>
<td>375</td>
<td>613</td>
<td>988</td>
</tr>
<tr>
<td>2016</td>
<td>461</td>
<td>593</td>
<td>1,054</td>
</tr>
<tr>
<td>2017</td>
<td>707</td>
<td>372</td>
<td>1,079</td>
</tr>
<tr>
<td>All years</td>
<td>1,865</td>
<td>1,895</td>
<td>3,760</td>
</tr>
</tbody>
</table>

Demographic characteristics of program participants in Michigan and West Virginia included self-reported information on their age category, gender, race, ethnicity, and educational level (Table 2). Most participants were women, White, and college-educated; however, there was some variability across demographic characteristics. Collectively this information shows a typical audience reached over several programming years.
Table 2. Program Participant Demographic Characteristics for Michigan and West Virginia

<table>
<thead>
<tr>
<th>Variables</th>
<th>Michigan (%)</th>
<th>Number of Participants (N)</th>
<th>West Virginia (%)</th>
<th>Number of Participants (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>72</td>
<td>774</td>
<td>87</td>
<td>309</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>2.5</td>
<td>19</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>American Indian</td>
<td>1.5</td>
<td>12</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>15</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Black, African American</td>
<td>9</td>
<td>71</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>White, Caucasian</td>
<td>85</td>
<td>643</td>
<td>87</td>
<td>308</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30 years</td>
<td>25</td>
<td>199</td>
<td>11</td>
<td>38</td>
</tr>
<tr>
<td>31 to 40 years</td>
<td>18</td>
<td>142</td>
<td>19</td>
<td>68</td>
</tr>
<tr>
<td>41 to 50 years</td>
<td>17</td>
<td>119</td>
<td>21</td>
<td>75</td>
</tr>
<tr>
<td>51 to 60 years</td>
<td>20</td>
<td>162</td>
<td>31</td>
<td>113</td>
</tr>
<tr>
<td>61 to 70 years</td>
<td>13</td>
<td>112</td>
<td>16</td>
<td>59</td>
</tr>
<tr>
<td>Over 70 years</td>
<td>7</td>
<td>57</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Educational Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>26</td>
<td>165</td>
<td>29</td>
<td>78</td>
</tr>
<tr>
<td>Some College/Associates</td>
<td>34</td>
<td>209</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>College degree</td>
<td>40</td>
<td>250</td>
<td>57</td>
<td>153</td>
</tr>
</tbody>
</table>

*Note.* Missing data was removed from the calculation of percentages.

Methods

In both states, participants were asked to complete a retrospective evaluation survey on the last day of the program. When completing the survey, participants were told to think back to before they participated in SLM and indicate whether they were knowledgeable of the seven mindfulness-related tasks on a Likert-type scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree). Then, on the same scale, participants were asked to indicate their disagreement/agreement regarding whether they practiced the seven tasks at the end of the program.

The seven survey items matched the SLM program objectives and included (a) I was able to identify three mindfulness tools to help me manage stress, (b) I was able to identify my personal stress barometers, (c) I was able to use mindful breathing to calm myself in the face of stress, (d) I was able to practice mindful movement as a way of calming the mind and body, (e) I was able to use mindful awareness when I am eating, (f) I was able to describe how mindfulness perspective can change my reaction to daily stressors, and (g) I was able to be more positive about dealing with stress in my life by using mindfulness tools. Using the Likert-type rating scales, a mean score was calculated for each objective (before/now) to compare and provide
Lessons from Two States

evidence of program effectiveness. Outcomes were classified as knowledge or behavior as a way to describe the benefits of the program for participants.

In three open-ended questions, participants described what they will do differently as a result of participating in the SLM program, what they liked or disliked about the program, and provide a final comment. A census sample was attempted by administering the survey to all participants at each SLM location in both states. A total of 1,304 participants from MSU Extension and WVU Extension completed evaluation surveys for a 34.6% response rate. State evaluators entered the data into databases. Participant completion of evaluation surveys was voluntary. For this paper, all data were entered into two SPSS data files to analyze results by state.

SLM Program Evaluation Results

Descriptive analyses indicated participants perceived that they learned about mindfulness and increased their capacity to practice mindfulness skills. As seen in Table 3, positive outcomes from the before/now responses indicate that participants reported increased knowledge and/or changed behavior on all objectives. For example, before attending SLM, 31% of participants reported that they were able to use mindful awareness when eating, and after the program, this increased to 93.5%. Likewise, 51.1% agreed that they were able to use mindful breathing to calm themselves in the face of stress before the program, and 97% reported they could do this after the program, for a 47.3% increase in agreement. The two highest increases in agreement were related to behavioral impacts, that is, the use of mindful awareness when eating and practicing mindful movement as a way of calming the mind and body.

Table 3. Percent of Participants Who Agreed or Strongly Agreed on the Before and Now/After Retrospective Survey Statements and the Percentage Increase for Each Program Objective

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Program Objective</th>
<th>Before: % Agree or Strongly Agree</th>
<th>After: % Agree or Strongly Agree</th>
<th>% of Increase in Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior</td>
<td>I was able to use mindful awareness when I am eating</td>
<td>30.9</td>
<td>93.5</td>
<td>66.9</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to practice mindful movement as a way of calming the mind and body</td>
<td>31.1</td>
<td>93.7</td>
<td>66.8</td>
</tr>
<tr>
<td>Knowledge</td>
<td>I was able to describe how a mindfulness perspective can change my reaction to daily stressors</td>
<td>34.8</td>
<td>96.4</td>
<td>63.2</td>
</tr>
<tr>
<td>Knowledge</td>
<td>I was able to identify three mindfulness tools to help me manage stress</td>
<td>36.2</td>
<td>97.5</td>
<td>62.9</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to be more positive about dealing with stress in my life by using mindfulness tools</td>
<td>38.6</td>
<td>96.7</td>
<td>60.1</td>
</tr>
</tbody>
</table>
Means for each survey statement (program objective) were calculated, and the difference between the before mean and the now/after mean was calculated and tested for significance with a *t*-test (Table 4). Although the difference in means scores for all objectives was at least 1.0, one knowledge gain rose to the top of the list, identifying three mindfulness tools to help manage stress. The next two greatest gains were behavioral, practicing mindful movement to calm the mind and body, and being more positive about dealing with stress by using mindfulness tools.

**Table 4. Before and After Mean Scores and the Difference**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Program Objective</th>
<th>Before Mean</th>
<th>After Mean</th>
<th>Difference</th>
<th>t</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>I was able to identify three mindfulness tools to help me manage stress</td>
<td>2.25</td>
<td>3.55</td>
<td>-1.305*</td>
<td>-51.150</td>
<td>1,267</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to practice mindful movement as a way of calming the mind and body</td>
<td>2.14</td>
<td>3.42</td>
<td>-1.275*</td>
<td>-47.962</td>
<td>1,219</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to be more positive about dealing with stress in my life by using mindfulness tools</td>
<td>2.29</td>
<td>3.55</td>
<td>-1.267*</td>
<td>-48.130</td>
<td>1,266</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to use mindful awareness when I am eating</td>
<td>2.10</td>
<td>3.36</td>
<td>-1.263*</td>
<td>-46.331</td>
<td>1,206</td>
</tr>
<tr>
<td>Knowledge</td>
<td>I was able to describe how a mindfulness perspective can change my reaction to daily stressors</td>
<td>2.22</td>
<td>3.47</td>
<td>-1.255*</td>
<td>-49.177</td>
<td>1,252</td>
</tr>
<tr>
<td>Knowledge</td>
<td>I was able to identify my personal stress barometers</td>
<td>2.37</td>
<td>3.46</td>
<td>-1.096*</td>
<td>-44.975</td>
<td>1,267</td>
</tr>
<tr>
<td>Behavior</td>
<td>I was able to use mindful breathing to calm myself in the face of stress</td>
<td>2.47</td>
<td>3.42</td>
<td>-1.069*</td>
<td>-40.847</td>
<td>1,254</td>
</tr>
</tbody>
</table>

*Note. Results of comparing means as a paired sample. * p < .000.*

Open-ended survey replies were compiled and categorized into themes, as is common in qualitative content analysis (Hsieh & Shannon, 2005). Two evaluators reviewed 1,426 statements across all surveys, using techniques such as pawing or eye-ball ing and marking similar comments with different colored markers, and then organizing them into patterns or themes...
As seen in Table 5, nine main themes emerged about what participants plan to do after taking the program: practice mindful breathing, become more aware of one’s environment and life stressors, practice mindful eating, laugh more, practice mindful walking or movement, relax more, teach and share skills, practice techniques and incorporate techniques into daily life. Mindful breathing was the technique that was mentioned most often. Twenty-eight comments were coded as “other,” as they did not fit a theme or were often personalized goals.

**Table 5. Actions Participants Plan to Do by Theme**

<table>
<thead>
<tr>
<th>Themes from Open-Ended Survey Questions</th>
<th># of Comments</th>
<th>% of Total Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice mindful breathing</td>
<td>366</td>
<td>26</td>
</tr>
<tr>
<td>Become more aware of my environment and the stressors in my life</td>
<td>332</td>
<td>23</td>
</tr>
<tr>
<td>Practice mindful eating</td>
<td>214</td>
<td>15</td>
</tr>
<tr>
<td>Laugh more or use humor to relieve stress</td>
<td>201</td>
<td>14</td>
</tr>
<tr>
<td>Practice mindful walking/movement</td>
<td>128</td>
<td>9</td>
</tr>
<tr>
<td>Relax more</td>
<td>82</td>
<td>6</td>
</tr>
<tr>
<td>Teach and/share skills</td>
<td>31</td>
<td>2</td>
</tr>
<tr>
<td>Practice techniques/incorporate them into life</td>
<td>31</td>
<td>2</td>
</tr>
<tr>
<td>Practice meditation</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Total comments</td>
<td>1,426</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note.* Twenty-eight comments were coded as “other,” as they did not fit a theme (2%).

As seen in Table 5, participants who entered the program unfamiliar with the practice of using mindful awareness while eating gained appreciation for this activity by the time they finished the program. Their comments reflect different ways in which participants approached this new practice: “I use lunch time (without working) to come back to earth and enjoy food.” “I think and rethink eating as an experience.” “I mindfully eat without looking at [my] phone.”

Changes in behavior shared by participants, such as mindful walking and movement, were illustrated by the following comments: “I have incorporated more mindful movement.” “I walk more and with intention.”

Participants indicated they were going to be more aware of stressors in their lives and deal with them more positively. Participants acknowledged that a simple thing like laughter helps relaxation. Comments illustrate this: “I find laughter resources and use them.” “I find as many excuses as possible for humor that can be shared.” “I teach others to laugh.” “I laugh at myself.”

Participants said that they were planning to use other mindfulness tools to deal more positively with stress by adding more relaxation time to their day. “I will slow down and use mindfulness training.” “I will be aware of stress triggers and react differently.” “I will be in the moment and be aware of surroundings.” “I will not get upset with myself when feeling sad or emotional.”
Other relaxation techniques included taking time out of workdays to relax and be more mindful and creating a space to practice mindfulness.

**SLM: One-Time Workshops as an Unexpected Outcome of the Partnership**

Though the preferred method to teach SLM was by offering a five-week series of lessons, many partners and stakeholders requested one-time presentations. MSU Extension adapted the SLM series format into individual one-time presentations, which offer partners/sponsors the opportunity to choose one or more presentations from the SLM series (Table 6). MSU Extension offered one-time workshops as a result.

Since 2014, 3,890 adults have participated in one-time presentations in Michigan. The most popular lessons requested are: “Begin with the Breath,” which teaches the basic tools of mindfulness, and “Laughter is Good Medicine.” “Mindfulness with Children” targets parents and caregivers in a one-time workshop. This new module authored by MSU Extension was adapted from SLM series materials. Mindfulness with Children is often requested at national trainings and conferences.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin with the Breath</td>
<td>1,220</td>
</tr>
<tr>
<td>Mindfulness with Children</td>
<td>1,176</td>
</tr>
<tr>
<td>Laughter is Good Medicine</td>
<td>628</td>
</tr>
<tr>
<td>Be Kind to Your Mind</td>
<td>369</td>
</tr>
<tr>
<td>Mindful Eating</td>
<td>345</td>
</tr>
<tr>
<td>Mindful Movement/Thought Surfing</td>
<td>152</td>
</tr>
</tbody>
</table>

**Limitations**

The evaluation of the SLM series program was done in real-life community settings. Evaluators used a census sample; that is, all participants were invited to complete evaluation surveys. A retrospective survey design allowed participants to reflect on what they knew or felt prior to participating in the training and compare that with what they knew or felt at the end of the training. The retrospective survey design is used to address problems with traditional pre/post-designs related to respondents not being familiar with terms or concepts prior to participating in an educational experience (Pratt et al., 2000). Conversely, this design does not measure actual observed change; rather, it is intended to measure participant perception of change that is self-reported. This is a potential limitation because self-reported information can have social desirability bias where people tend to overrate positive qualities and under-rate negative behaviors either consciously or unconsciously (Paulhus, 2002).
Discussion

We found that participants in SLM showed an increase in their knowledge of mindfulness skills, were able to identify stress cues, and gained an understanding of how mindfulness can help them deal with everyday stress. Participants also showed behavior impacts related to mindfulness by increasing their capacity to practice mindfulness skills such as mindful breathing, mindful eating, and mindful movements. Finally, participants showed an increase in being more positive about dealing with stress by incorporating these mindfulness techniques.

We also found that participants perceived that the SLM program improved their knowledge and use of mindfulness techniques. On a retrospective questionnaire, participants indicated that they could identify three mindfulness tools to help manage stress, identify personal stress barometers and describe how a mindfulness perspective can change reactions to daily stressors. Participants who took part in the SLM series reported they were able to identify the four mindfulness tools taught: mindful breathing, mindful eating, mindful walking/movement, and laughter/humor. Participants reported being more knowledgeable of mindfulness techniques and using them more often in their daily lives (Basso et al., 2019; Demarzo et al., 2015).

Mindful breathing was a practice that participants reported knowing more about when they began the program; therefore, showing the lowest percentage of change; however, mindful breathing was the skill most participants said they would continue to practice. Two mindfulness skills—mindful eating and mindful walking and movement—showed the greatest increase in agreement over the course of the SLM program because they were likely new concepts for many participants (Frayn et al., 2018; Kerin et al., 2019). Participant comments reflected different ways in which individuals intend to practice mindful eating after they leave the program. In addition to the stress-reduction benefits of mindful eating, we assumed that the technique might have many other health benefits. For example, individuals who practiced mindful eating center their thoughts on the food itself, slowing down and enjoying every bite. This technique might lead to healthier food choices and slower eating patterns. Learning about mindful walking and movement (Demarzo et al., 2015; Teut et al., 2013) was a key program outcome.

Participants seemed to enjoy knowing that a simple thing like incorporating humor and laughter into one’s day can help with relaxation. By using mindful laughter, participants perceived that they were adding more relaxation time to their day (Galla et al., 2015; Hofmann et al., 2010). By using laughter and the other mindfulness techniques, participants reported being able to relax more and better enjoy life with family and friends (Hofmann et al., 2010; Jimenez et al., 2010). They indicated that, from now on, they were going to be more aware of stressors in their lives and deal with them more positively (Hede, 2010; Mora-Ripoll, 2011). Another important benefit of SLM was that participants wanted to share the techniques with others (Grossman et al., 2004; Kabat-Zinn, 2003). Some of the participants were teachers or administrators at organizations that want to help their employees adopt mindfulness techniques to lower health risks.
Conclusion

Benefits of the Partnership

Two state Extension teams recognized the need to address mental/emotional health needs in their states. Independently, they each developed a program: MSU Extension developed the RELAX program, and WVU Extension developed the SLM program. Before partnering with WVU Extension, MSU Extension evaluated the RELAX program and found that participants improved the communication skills essential for dealing with toxic and persistent stress in daily life. Specifically, RELAX participants said that they reduced yelling and screaming, improved their ability to stay calm, talked things through and reached a solution, and improved their ability to recognize the triggers that made them angry. MSU Extension offered SLM to participants to add mindfulness techniques to the suite of programs designed to improve stress management. The result of the partnership between MSU Extension and WVU Extension was that a formal evaluation of SLM was conducted with a larger and more varied audience than would have been possible if WVU Extension had done it on its own. The evaluation results showed that, based on the perceptions of participants, the program makes individuals more knowledgeable of mindfulness tools, which led to practice of the skills. Our data confirm that both RELAX and SLM programs were effective; however, a randomized control-treatment design study would be necessary to establish cause and effect.

Implications for Practice and Evaluation

The most important implication for practice is that there is value in state Extension services sharing curricula resources, training teams from each other’s states, and jointly implementing evaluation protocols. Although not the purpose of this study, each state could have analyzed the data separately and reported differences by state and/or target audiences—work site, referral, and community. Additionally, the partnership allowed MSU Extension to adapt the delivery method (series) of the content to five separate workshops in order to make the program more accessible to new audiences. It was also able to strengthen the anger management education it was already providing by adding stress management to its program portfolio.

Future efforts should focus on more systematic ways to easily share multi-state data through a collective database (Hardison-Moody et al., 2011; Payne & McDonald, 2015; Schmieder et al., 2018). Further, research could be done to test the efficacy of RELAX and SLM with unique audiences and with individuals who participate in both programs.

References


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Assessing Rural and Urban Community Assets and Needs
to Inform Extension Program Planning

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A needs assessment is a useful tool for prioritizing community needs and allocating resources. Prioritizing community needs helps ensure Extension programs are relevant and targeted towards specific audiences. This study prioritized normative needs of urban and rural Utah residents using a needs assessment framework. Convenience data were gathered from 1,043 adult Utah residents, and the raking method was used to weigh the sample by selected population characteristics. Descriptive statistics (frequencies and nonparametric statistics) were used for data analysis. A calculated Point-Score represented the difference between residents’ perceived importance and satisfaction of various community assets. Results showed affordable housing, affordable medical clinics, well-paying jobs, quality public schools, and affordable internet were the top five needs in urban areas. Utah rural residents ranked well-paying jobs, quality public schools, steady jobs, emergency healthcare, and affordable housing as high priority needs in their communities. Utah State University Extension should tailor existing programs to address urban and rural community needs, allocate resources to create new programs aligned to those needs, facilitate collaborations with local organizations, and conduct timely needs assessments to monitor changing community needs.

Keywords: Extension, needs assessment, normative need, rural, urban, relevance, impact

Introduction and Literature Review

The overarching role of Cooperative Extension (Extension) is to extend university-generated and evidence-based research to the public (Rasmussen, 1989). This remains a core mission of land-grant universities in the U.S. Webster and Ingram (2007) indicated traditional Extension programming was geared towards meeting the needs of rural populations. However, reflecting on Extension’s Centennial, Henning et al. (2014) discussed the need for Extension to be responsive to demographic and societal changes. Henning et al. indicated Extension should adapt its programming to serve all audiences to remain relevant and competitive. Extension can be expected to meet the needs of a diverse clientele by adjusting its educational methodologies, programming focus, and program delivery methods to appeal to different target audiences.

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Utah State University (USU) Extension focuses on five major programming areas defined by the U.S. Department of Agriculture (USDA). These areas are (a) global food security and hunger, (b) climate change and natural resource use, (c) sustainable energy, (d) food safety, and (e) childhood obesity, nutrition, and community. Extension programs vary considerably in scope, complexity, audience, educational activities, and desired outcomes and impact. While a livestock management program in global food security and hunger can focus on improving livestock health, a program in childhood obesity can target healthy eating habits in low-income communities. Given the diversity of program areas, USU Extension aims to meet the needs of all audiences.

With a broad range of programming, Extension has demonstrated its ability and flexibility to respond to needs of different audiences. For example, the Extension Disaster Education Network (EDEN) of Extension is a nationwide collaborative effort focused on emergency management programming for audiences affected by natural disasters. Meanwhile, the National Urban Extension Leaders (NUEL) was formed in 2013 to strengthen responsive programming that meets the needs of clientele in metropolitan areas. Another example is the Expanded Food and Nutrition Education Program (EFNEP) which operates through Extension and provides nutrition education programs to low-income families. Such examples demonstrate the value of Extension services to different audiences. However, it presents an ongoing challenge – how can Extension address the urgent needs of diverse audiences with limited financial and human resources?

With complex program planning models and diverse clientele, Extension professionals commonly differentiate between the needs of urban and rural communities when tailoring programs (Fox et al., 2017; Webster & Ingram, 2007). The changing demographics and recognized differences between urban and rural clientele led to the creation of National Urban Extension Leaders (NUEL). In 2015, NUEL presented a National Framework for Urban Extension to the Extension Committee on Organizational Policy (ECOP). This report outlined the need for Extension to be responsive to changing audiences and the potential value of urban Extension programming; urban Extension is now a high priority for ECOP (Fox et al., 2017). As a result, Extension in several states developed strategic plans specifically to serve urban clientele. For example, Harder et al. (2019) outlined organizational priorities for the University of Florida’s Extension to serve audiences in urban areas. Strategic actions taken by Extension signaled the importance of meeting the needs of both urban and rural audiences. However, Fox et al. (2017) noted metropolitan areas are unique due to the diversity in cultures, beliefs, and norms of those populations. In serving urban audiences, Ruemenapp (2017) indicated Extension must understand priority issues in urban areas to create impactful programs.

Boone et al. (2002) argued that program planning in Extension is complex given such variety in programming. Extension uses several program-development models to guide program planning (Franz et al., 2015). As discussed by Franz et al. (2015), Boyle (1981) developed a 15-step program planning development model, Caffarella and Ratcliff Daffron (2013) introduced a
nonlinear planning model with ten interdependent concepts, and Conklin (1997) illustrated a model with three distinct components, each comprised of multiple subcomponents. Regardless of complexity, most program planning and development models appear to converge and agree on the importance of conducting needs assessments.

With new survey technology platforms becoming more accessible and affordable, Extension adapted elements of different program planning models. One such adaptation focused on the strategic application of needs assessments; Boyle (1981) argued a needs assessment was the first step of the program planning process. This adaptation allowed Extension to readily improve participatory program planning through stakeholder involvement in the needs assessment process (Garst & McCawley, 2015). For example, with better survey platforms, improved questionnaire designs can capture rigorous data on stakeholder and clientele issues (Garst & McCawley, 2015). Franz (2013) also recognized the potential of improved participatory research methods such as focus groups to encourage community engagement. Increasing stakeholder input helps secure support and acceptance for community development programs and continued funding for Extension services (Garst & McCawley, 2015).

A needs assessment involves a set of procedures that informs program planning and resource allocation based on identified needs (Witkin & Altschuld, 1995). This is an important step in program planning activities because it helps to prioritize resources. According to Altschuld and Watkins (2014), once needs are identified, “there are limited resources for improvement, so priorities must be set” (p. 6). As reflected in this statement, a needs assessment in Extension is valuable because it provides administrators with much-needed insights to strategically prioritize and meet the critical needs of diverse clientele, even with limited resources. Therefore, it was essential for USU Extension to incorporate needs assessments as a part of their program planning process to address critical issues facing a diverse and changing clientele.

Extension must provide relevant programming to fulfill the land-grant mission of improving the lives of people (Rasmussen, 1989). Thus, maintaining relevance is a critical priority for USU Extension; how useful are research-based Extension programs if it fails to provide practical and timely information for its intended audience? One way of maintaining program relevance is through continuous interactions with and feedback from target audiences. For instance, USU Extension recently developed educational programs addressing the opioid epidemic and rural unemployment for communities based on participatory community forums with stakeholders. Extension should remain responsive and adaptive to a changing landscape and ensure resources are set around high-priority community issues (Cummings & Silliman, 2019; Gagnon et al., 2015; Garst & McCawley, 2015; Harder et al., 2009).

Extension successfully led the U.S. agricultural revolution when leaders worried the food supply would eventually fail to match urban demands (Garst & McCawley, 2015). This achievement highlighted Extension’s unique position to develop relevant programs and services for rural and
urban communities. It is important for Extension to communicate the public value of its impacts to citizens and stakeholders. With public support, Extension programs can generate profound public trust and community-supported relationships (Gagnon et al., 2015). However, perceived programming impact and value depend on Extension’s ability to assess, monitor, and focus on persistent and emerging needs of target audiences. Therefore, this study assessed the needs of urban and rural Utah residents to inform resource allocation and programming at USU Extension.

**Theoretical Framework**

Extension programs exist to address societal problems (Henning et al., 2014; Rasmussen, 1989). With limited resources, Extension must prioritize its efforts to target urgent needs of its clientele. USU Extension should effectively allocate resources to respond to persisting and emerging social, environmental, and economic problems facing Utah. A comprehensive and valid needs assessment is an appropriate method to guide the allocation of resources to address critical issues of a given audience (Witkin & Altschuld, 1995).

By definition, a needs assessment is “a systematic set of priorities undertaken for the purpose of setting priorities and making decisions about program or organizational improvement and allocation of resources” (Witkin & Altschuld, 1995, p. 4). Within this context, a need is defined as the difference between an existing and desired state; it represents the gap between “what is” and “what should be” (Boyle, 1981; Witkin & Altschuld, 1995). Similarly, Kaufman (1988) stated a need is a discrepancy between desired and actual results. Boyle (1981) described a normative need as value judgments of primary users (i.e., Extension clientele), bounded by resources of a system (e.g., Extension). Thus, by focusing on normative needs, the primary purpose of the needs assessment is to inform measures for system improvement based on clientele’s perceptions of current and desired societal conditions.

Lewin’s (1939) field theory of motivation provides an indication of the consequence of a need within a system. The theory states a system is naturally in equilibrium. However, tension within the system results in a deviation from the natural state; Lewin notes tension is the cause of disequilibrium within a system. Similarly, Weiner (1971) stated disequilibrium is reflected by a state of unpleasantness (i.e., dissatisfaction). As a result, there is a strong tendency to restore balance by addressing the need or tension. A movement away from equilibrium due to tension motivates actions by individuals within the system (Burnes & Cooke, 2012; Wheeler, 2008). Therefore, individuals within the system seek the cause of disequilibrium, express it as a need or gap, then seek solutions to close the gap. Steps taken to address an identified need will restore system equilibrium. Hence, a needs assessment allows shared involvement in the identification and prioritization of normative needs of an audience while providing suitable measures for addressing those needs (Witkin & Altschuld, 1995). A needs assessment guided this research in understanding the high priority needs of clientele to inform resource allocation in USU Extension program planning.
Witkin and Altschuld (1995) identified three levels of needs in a system. Needs exist for the (a) primary user, (b) service provider, and (c) system resources. The three levels are interdependent; system resources affect the capacity of the service provider to serve the primary user. Within the context of this study, system resources refer to the greater Extension system, USU Extension is the service provider, and residents of Utah are the primary users. A needs assessment (NA) focused on the primary user examines “those for whom the system ultimately exists; they are at the heart of the NA process” (Witkin & Altschuld, 1995, p. 11). The primary users of USU Extension are clientele. Therefore, this study assessed the normative needs of Extension clients in Utah. The present situation or current condition is the current use of resources for Extension programming, while the desired situation is optimally allocating resource programming that meets high priority needs of target audiences. Results of this study are geared towards assessing the high priority needs of Utah residents to inform the efficient allocation of Extension resources.

**Purpose**

The purpose of this study was to describe the normative needs of residents in Utah. As pointed out in the literature, Extension aims to respond to the needs of a diverse clientele in both rural and urban areas (Fox et al., 2017; Harder et al., 2019; Ruemenapp, 2017; Webster & Ingram, 2007). Therefore, the objectives were to (a) assess normative needs of residents in urban Utah counties and (b) assess normative needs of residents in rural Utah. The results are intended to inform Extension program planning and provide a rationale for resource allocation in Extension.

**Methodology**

This study followed a correlational design (Ary et al., 2014) and gathered primary data from residents of Utah. The target population was the adult residents of Utah. Data were collected through a convenience sampling technique, and the final sample size was 1,043 respondents \((n = 1,043)\). The raking, or iterative proportional fitting, method was used to weigh the sample data to reflect the target population characteristics (Cohen, 2011; Lamm & Lamm, 2019). Cohen (2011) indicated the iterative proportional fitting method is a stratification procedure post-data collection to correct for sample weights, so sample characteristics add up to known population parameters. In this study, sample data were weighted based on age, sex, and county population size according to the 2018 census data for Utah (U.S. Census Bureau, 2019). As a result, sample characteristics were identical to population parameters with respect to age, sex, and county of residence. Data were collected using an online survey company, Qualtrics®. After the study was deemed exempt by USU Institutional Review Board, Qualtrics® was hired to recruit participants of the target population using their existing research opt-in panels (Warner et al., 2017). A closed-ended questionnaire was used to gather data in June 2019.

Urban and rural county designations were determined by the Federal Office of Rural Health Policy [FORHP] (2016). FORHP developed Rural-Urban Commuting Area Codes (RUCAs) to assign rural and urban counties based on population density. For example, a county with RUCA
codes two or three has at least 400 square miles and a population density of approximately 35 people (FORHP, 2016). The sample proportion of rural to urban respondents was consistent with the FORHP designations in Utah; there were 915 respondents from urban counties (88%) and 128 from rural counties (12%). The urban to rural ratio of the sample is also somewhat consistent with U.S. Census Bureau Population and Housing Unit Counts of 2010, which designated 91% of the Utah population as urban and 9% as rural (U.S. Census Bureau, 2010).

An expert panel provided detailed feedback on the questionnaire design. The panel consisted of three Extension program directors, two Extension specialists, and the Associate Vice President for Extension at USU Extension. The expert panel had combined experience in Extension administration, nonformal education, program evaluation, agriculture, family and consumer sciences, and youth programming. The final 30-item list of community assets and services in the researcher-made questionnaire was selected after an extensive literature review and expert panel input. First, secondary data from governmental and nongovernmental organizations, such as the Utah Department of Health, Utah Foundation, and Utah Community Action, were reviewed to develop an exhaustive list of community services and localized issues across Utah. Additional items were then adapted from needs assessments conducted by the University of Wisconsin-Extension and North Carolina State University Extension. Finally, the list was reviewed by the expert panel and reduced to 30 items. The final 30-item list was also reviewed by the panel for content validity. Questionnaire development followed Dillman et al.’s (2014) discussion on the basics of crafting effective questions and constructing close-ended questions. A pilot test was conducted with 50 participants of the target population. Questionnaire revisions included minor rewording of statements, the addition of two new items, and minor changes to response options.

Data were analyzed using descriptive frequencies and nonparametric statistics. Respondents were provided the 30-item list of community assets, services, and issues and asked to indicate on a scale of 1 to 5, their perception of the importance of the asset (i.e., perceived importance) and their satisfaction with the current state of the asset (i.e., perceived satisfaction). Since ordinal data were gathered on perceived importance and satisfaction, original data were reduced to standardized scores, referred to as a Point-Score (PS), that ranged from 0 – 1. The PS represents a modified index of the net difference between items within subsections of the assessment (Lieberson, 1976). The PS was calculated using the frequency distribution of responses to each item instead of means, and as a result, does not rely on any parametric assumptions. Therefore, the PS allowed a direct comparison and ranking across community assets examined. The standardized PS was interpreted as 0 – 0.20: Not Important or Very Dissatisfied, 0.21 – 0.40: Of Little Importance or Dissatisfied, 0.41 – 0.60: Moderately Important or Moderately Satisfied, 0.61 – 0.80: Important or Satisfied, 0.81 – 1.00: Very Important or Very Satisfied.

This study focused on residents’ perceptions of the importance of community assets and their level of satisfaction towards the current state of these assets in urban and rural counties, respectively. The difference between an individual’s perceived importance and satisfaction
towards a community asset represents a normative need. If an individual believes a community asset is very important, and he/she is satisfied with the state of that asset in their community, then there is no need to improve the state of the asset. In contrast, if a resident believes the asset is very important, and he/she is dissatisfied with the current state of the asset, then there is a need to improve the state or condition of the asset. Ideally, residents’ perceptions towards the importance of a community asset should match their satisfaction with the asset; this represents a state of equilibrium as described in Lewin’s (1939) field theory of motivation. Therefore, perception of the asset’s importance is a proxy indicator for the “desired” condition (i.e., “what should be”). Residents’ satisfaction with the asset is a proxy indicator for the “current” state of the asset (i.e., “what is”). Table 1 demonstrates the conditions necessary for a normative need.

**Table 1. Matrix Describing a Normative Need**

<table>
<thead>
<tr>
<th>Community Asset</th>
<th>Dissatisfied</th>
<th>Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Important</td>
<td>Need does not exist</td>
<td>Need does not exist</td>
</tr>
<tr>
<td>Important</td>
<td><strong>Need exist</strong></td>
<td>Need does not exist</td>
</tr>
</tbody>
</table>

The matrix in Table 1 shows the combination of perceived importance and satisfaction that results in a normative need within a community. The priority of a need is determined by the quantitative gap between perceived satisfaction and perceived importance (i.e., satisfaction – importance). That is, the gap between the current and desired state, or gap between “what is” and “what should be.” A wide negative gap between the current and desired state indicates a high priority need, a narrow negative gap indicates a less urgent need, and a positive gap suggests a need does not exist. The Wilcoxon signed-rank test was used to estimate the difference or gap between perceived importance and satisfaction for each item assessed in the survey. This test is a nonparametric alternative to the paired *t*-test and is used to compare two related samples with repeated measurements (e.g., pre-test and post-test scores). The Wilcoxon signed-rank test was preferred to the paired *t*-test since all items were measured on an ordinal five-point Likert-type scale and were not ratio or scale variables. The Wilcoxon test statistic (*z*) was used as an indicator for the magnitude of the difference or gap between the current and desired state. Therefore, a negative *z*-statistic indicates a need exists for the respective item; an item with a lower negative *z*-statistic is of greater priority compared to other items, and those with a positive *z*-statistic were not described as a need.

There are several limitations to this study. First, the final questionnaire consisted of 30 pre-defined community assets and services; an optional open-ended question was not included for respondents to describe additional concerns. Therefore, it is unlikely this study assessed all needs of residents in Utah. Second, while the raking method was used to weight the sample data based on population parameters, the data was gathered using a convenience sampling approach. As such, this study does not claim to provide irrefutable and generalizable findings; results are intended to add to the decision-making process in Extension resource allocations. Lastly, Utah demographics are rapidly changing, and as a result, urban and rural issues are not static; this study only presents a snapshot of community needs in 2019.
Results and Discussion

With respect to objective (a), Table 2 shows the normative needs of residents in urban Utah counties, ranked from most urgent to least urgent based on the z-statistic of the Wilcoxon signed-rank test. The top five needs in urban counties were affordable housing options, affordable medical clinics, well-paying jobs, quality public schools, and affordable internet connection. While residents indicated affordable housing options were very important, they were dissatisfied with the state of this issue. In addition, though residents of urban counties indicated affordable medical clinics, well-paying jobs, quality public schools, and affordable internet connection were all very important, they were moderately satisfied with the current state of these services. Emergency healthcare facilities, affordable food options, and steady jobs were also very important to residents of urban counties and assessed as high-priority needs. While there were distinct differences between perceived importance and satisfaction for the top ten needs, there was room for improvement in most areas, as shown in Table 2.

The list of needs in Table 2 presents a wide range of opportunities for impactful Extension programming. USU Extension can demonstrate impact by creating programs to close the hypothetical gap between perceived importance and perceived satisfaction (i.e., current and desired states). For example, a program on home mortgages for first-time homeowners can be connected to the issue of affordable housing options, which was ranked as the most urgent need in urban areas. Another program on health savings accounts and health insurance is related to affordable medical clinics. It is critical for Extension programs to connect to a societal need; to have an impactful program suggests it closes the gap between “what is” and “what should be” with respect to societal conditions (Boyle, 1981).

### Table 2. Community Assets in Urban Counties (n = 915)

<table>
<thead>
<tr>
<th>Rank by Priority</th>
<th>Community Asset/Service/Issue</th>
<th>Point-Score (PS)</th>
<th>[Need]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Importance</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>1</td>
<td>Affordable housing options</td>
<td>0.83</td>
<td>0.39</td>
</tr>
<tr>
<td>2</td>
<td>Affordable medical clinics</td>
<td>0.86</td>
<td>0.48</td>
</tr>
<tr>
<td>3</td>
<td>Well-paying jobs</td>
<td>0.85</td>
<td>0.50</td>
</tr>
<tr>
<td>4</td>
<td>Quality public schools</td>
<td>0.85</td>
<td>0.54</td>
</tr>
<tr>
<td>5</td>
<td>Affordable internet connection</td>
<td>0.81</td>
<td>0.53</td>
</tr>
<tr>
<td>6</td>
<td>Emergency healthcare facilities</td>
<td>0.86</td>
<td>0.62</td>
</tr>
<tr>
<td>7</td>
<td>Affordable food options</td>
<td>0.82</td>
<td>0.57</td>
</tr>
<tr>
<td>8</td>
<td>Community shelters for domestic violence</td>
<td>0.77</td>
<td>0.53</td>
</tr>
<tr>
<td>9</td>
<td>Community services for mental health</td>
<td>0.76</td>
<td>0.50</td>
</tr>
<tr>
<td>10</td>
<td>Steady jobs</td>
<td>0.82</td>
<td>0.61</td>
</tr>
<tr>
<td>11</td>
<td>Community shelters for natural disasters</td>
<td>0.70</td>
<td>0.51</td>
</tr>
<tr>
<td>12</td>
<td>Community services for alcohol or drug abuse treatment</td>
<td>0.70</td>
<td>0.54</td>
</tr>
<tr>
<td>13</td>
<td>Healthy food options</td>
<td>0.76</td>
<td>0.65</td>
</tr>
<tr>
<td>14</td>
<td>School lunch programs</td>
<td>0.70</td>
<td>0.58</td>
</tr>
<tr>
<td>15</td>
<td>Family counselling services</td>
<td>0.67</td>
<td>0.56</td>
</tr>
<tr>
<td>16</td>
<td>Individual counselling services</td>
<td>0.67</td>
<td>0.56</td>
</tr>
</tbody>
</table>
For objective (b), Table 3 shows the community needs of residents in rural counties. The top five needs of rural residents were well-paying jobs, quality public schools, steady jobs, emergency healthcare facilities, and affordable housing options. Residents indicated well-paying jobs and affordable housing options were very important; however, they were dissatisfied with these services. Similarly, residents perceived quality public schools, steady jobs, and emergency healthcare facilities were very important, but they were moderately satisfied with the current state of these issues. Affordable medical clinics, food options, and internet connections were also very important to residents of rural counties and were assessed as high-priority needs.

The negative $z$-statistic across many items shows a need to address almost all items listed in Table 3. USU Extension programs can target any need specified in Table 3. Impactful programs can focus on creating jobs for rural residents, providing professional development training for K-12 teachers, afterschool activities for students, or conducting workshops on individual and family financial management.

### Table 3. Community Assets in Rural Counties ($n = 128$)

<table>
<thead>
<tr>
<th>Rank by Priority</th>
<th>Community Asset/Service/Issue</th>
<th>Point-Score (PS)</th>
<th>Importance</th>
<th>Satisfaction</th>
<th>Need $z$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Well-paying jobs</td>
<td>0.86</td>
<td>0.38</td>
<td></td>
<td>-9.14</td>
</tr>
<tr>
<td>2</td>
<td>Quality public schools</td>
<td>0.87</td>
<td>0.51</td>
<td></td>
<td>-8.47</td>
</tr>
<tr>
<td>3</td>
<td>Steady jobs</td>
<td>0.83</td>
<td>0.44</td>
<td></td>
<td>-8.31</td>
</tr>
<tr>
<td>4</td>
<td>Emergency healthcare facilities</td>
<td>0.88</td>
<td>0.55</td>
<td></td>
<td>-8.15</td>
</tr>
<tr>
<td>5</td>
<td>Affordable housing options</td>
<td>0.80</td>
<td>0.40</td>
<td></td>
<td>-8.02</td>
</tr>
<tr>
<td>6</td>
<td>Affordable medical clinics</td>
<td>0.86</td>
<td>0.45</td>
<td></td>
<td>-7.29</td>
</tr>
<tr>
<td>7</td>
<td>Affordable food options</td>
<td>0.84</td>
<td>0.52</td>
<td></td>
<td>-7.10</td>
</tr>
<tr>
<td>8</td>
<td>Affordable internet connection</td>
<td>0.84</td>
<td>0.50</td>
<td></td>
<td>-6.18</td>
</tr>
<tr>
<td>9</td>
<td>Employment opportunities for youth</td>
<td>0.72</td>
<td>0.43</td>
<td></td>
<td>-5.87</td>
</tr>
<tr>
<td>10</td>
<td>Healthy food options</td>
<td>0.78</td>
<td>0.55</td>
<td></td>
<td>-5.53</td>
</tr>
<tr>
<td>11</td>
<td>Community shelters for domestic violence</td>
<td>0.74</td>
<td>0.47</td>
<td></td>
<td>-5.44</td>
</tr>
<tr>
<td>12</td>
<td>Community services for mental health</td>
<td>0.73</td>
<td>0.48</td>
<td></td>
<td>-5.20</td>
</tr>
</tbody>
</table>
This study sought to assess and describe community needs in Utah. The findings provided evidence on gaps in social, economic, and environmental conditions of rural and urban communities. The study categorically defined a need as the gap between current and desired conditions (Witkin & Altschuld, 1995). This study quantitatively measured both conditions as a basis for identifying the normative needs of urban and rural residents. Identified needs demonstrate various societal issues exist, some of which may be considered beyond the scope of Extension programming in Utah. However, it presents opportunities for USU Extension to partner with community and grassroots organizations to tackle emerging and persisting problems affecting communities. Such organizations can include local community groups or social development nongovernmental organizations. These collaborations are especially important when dealing with complex issues that require multi-tiered programming efforts. Collaborations can also keep Extension professionals up to date on critical issues affecting rural and urban communities, and even vulnerable populations. This is one way for Extension to remain relevant by adapting programming to serve diverse audiences, as emphasized by Henning et al. (2014). Overall, results allow USU Extension to understand critical community needs and allocate resources to address those needs of Utah residents.

Results indicated affordable housing options, affordable medical clinics, well-paying jobs, quality public schools, and affordable internet connection were the top five needs of urban counties. While this may appear outside the scope of Extension at first, these needs fall into the USU Extension programming area of childhood obesity, nutrition, and community. Furthermore,
there are several current examples of Extension efforts that align with these urban needs. USU Extension provides a statewide online course on personal financial management. The course provides participants with the knowledge and skills to budget, save, and create long-term financial goals. It also addresses credit scores, loans, and planning for emergency situations. Given the top needs of urban residents, such a program can be tailored to cover additional topics such as mortgages and health savings plans to address affordable housing options and medical clinics.

Another example of a relevant program for urban audiences is found in the USU Extension 4-H program. The 4-H program works with schools throughout the state to deliver afterschool programs and organize extracurricular events. This 4-H initiative can be tailored to help improve the overall quality of public schools. Here, Extension professionals can work closely with parents and school educators in urban communities to determine steps for quality improvement of afterschool events. One example is for schools to integrate problem-solving and STEM skills into 4-H extracurricular activities to support positive youth development. These examples demonstrate the creativity and possibilities for Extension professionals to adapt existing programs to the needs of urban audiences. While new programs will be necessary to address emerging problems, program planners and administrators can allocate resources to align existing efforts to critical urban needs.

Results of this study also supported the notion of changing rural issues. The top five needs of rural counties were well-paying jobs, quality public schools, steady jobs, emergency healthcare facilities, and affordable housing options. Thus, rural needs should not only be contextualized as traditional agricultural issues. These top five needs also fall under the USU Extension programming area of childhood obesity, nutrition, and community. Given that two of the top five needs in rural counties related to employment, Extension is already well-positioned to provide relevant programming to address those needs. USU Extension piloted a program in 2018, the Rural Online Initiative, to provide rural residents with the skills to seek and maintain remote work opportunities. This was a direct response to rising unemployment and rural-urban migration in rural counties. The value of such programs is further supported and justified with results from this needs assessment. Other Extension programs pertaining to rural needs include personal financial management and 4-H afterschool activities. As urban and rural needs continue to change, it is important for Extension professionals to consider new ways of connecting with different target audiences.

Overall, the results of this study showed urban and rural counties exhibited common high-priority needs. This study recommends USU Extension: (a) tailor existing programs to tackle revealed needs in urban counties, (b) allocate resources to creating new programs that align to community needs, (c) facilitate strong internal partnerships between rural and urban county Extension offices to develop programs that addresses both rural and urban needs, (d) seek external partnerships with community-led organizations to share resources, create programmatic
goals, and implement collective impact initiatives, and (e) conduct timely county-level and state-level needs assessments to monitor changing needs.

Results reflected and further supported the changing social landscapes of urban and rural counties. They show the importance of a responsive Extension system that monitors community needs. This study provided necessary information for USU Extension to allocate resources to creating impactful and relevant programming for residents. While there are many examples of innovative and impactful Extension programs, Cummings and Silliman (2019) argued Extension must leverage its role as a convener of people to affect high-priority issues. This suggests a need for strong partnerships with local organizations and county agencies to increase the presence of Extension in local communities. Gagnon et al. (2015) also emphasized the importance of communicating public value to citizens for community engagement and support.

Extension frequently feels pressure to do more with less (Harder et al., 2009). As change agents, Extension professionals can assume a leadership role in being responsive and adaptive in a changing landscape. For example, they can proactively seek to implement innovative ways to monitor clientele needs and deliver relevant programs (Gagnon et al., 2015). Extension must also pursue approaches beyond traditional forms of outreach and engagement (e.g., public television, radio, face-to-face workshops, and printed newsletters). By embracing current and future technologies (e.g., podcasting, live streaming, group messaging apps, and video conferencing), Extension can better connect with new and existing clientele. Moreover, Extension professionals must be involved in or informed by the needs assessment process to ensure the creation, implementation, and delivery of relevant, timely, and impactful Extension programming.

This study has implications for the future of Extension. It demonstrates an urgency to respond to changing needs and community issues by planning, implementing, and delivering relevant and timely Extension programs. While the study provides evidence to support existing Extension efforts, it also shows opportunities for Extension to collaborate with rural and urban counties to find solutions to address normative needs. The list of community assets and needs presented provides targeted information on resource allocation to relevant program areas. Gagnon et al. (2015), Cummings and Silliman (2019), Garst and McCawley (2015), and Henning et al. (2014) all offered robust discussions on the impending role of Extension. These authors urged Extension to be responsive, adaptive, and predictive to respond to the changing needs of rural and urban audiences. This directly relates to the mission of Extension as discussed by Rasmussen (1989). This study builds on the ongoing dialogue within Extension to collectively find solutions as a leader in community capacity-building efforts by creating relevant and impactful programs.

References

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First Things First: Assessing Needs, Comfort, and Role Clarity for Physical Activity Promotion

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*Virginia Tech*

*Extension has recently begun delivering physical activity programs, but delivering evidence-based interventions is a challenge. To increase adoption of evidence-based interventions, a better understanding of agents’ perceptions and needs is necessary. The purpose of this research was to conduct a readiness assessment to identify organizational factors and agent perceptions that speed or impede uptake of evidence-based physical activity programs. Data were gathered from agents through a sequential mixed-methods design informed by the RE-AIM (reach, effectiveness, adoption, implementation, maintenance) framework. A survey assessed current work status, demographic variables, physical activity levels, and time spent on programming tasks. Semi-structured focus group questions included current physical activity programs, integration of physical activity into current programs, and barriers and facilitators of physical activity programming. Agents were willing to adopt physical activity programs into their schedule but experienced barriers. Notably, agents perceived a lack of training and evaluation tools for measuring impact. As for organizational factors, “physical activity” was not in their job descriptions, and integrating physical activity with nutrition programs was perceived as a better fit within the USDA-funded system. Understanding the factors that impede adoption is critical for ensuring physical activity program uptake to influence public health behaviors.*

*Keywords:* physical activity, adoption, Extension, mixed-methods, needs assessment

**Introduction**

Implementing and evaluating evidence-based interventions in community-based organizations is challenging (Bach-Mortensen et al., 2018). However, it has become a necessity as funders and

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stakeholders ask for accountability for their investments (Fetsch et al., 2012). One system that has recently been tasked with ensuring that the interventions they deliver are evidence-based is the land-grant university Cooperative Extension System (herein: Extension) (Dunifon et al., 2004; Fetsch et al., 2012). While Extension’s roots are in agriculture and home economics (U.S. Department of Agriculture, n.d.-b), the system has recently been charged with addressing chronic disease prevention (Braun et al., 2014). Extension has previously delivered nutrition programs (U.S. Department of Agriculture, n.d.-b) but did not strategically focus on physical activity promotion until 2014 (Harden, Lindsay, et al., 2016; U.S. Department of Agriculture, 2015). To date, individual state Extension systems have successfully implemented physical activity programs (Harden, Lindsay, & Gunter, 2018; Harden, Balis, et al., 2020), but challenges remain in ensuring that programs delivered are evidence-based (i.e., findings published in a peer-reviewed journal; Balis, Strayer, Ramalingam, Wilson, & Harden, 2018; Harden, Ramalingam, et al., 2019; National Cancer Institute, 2020).

One barrier to implementing evidence-based interventions in Extension is that the system struggles with scaling-out programs (i.e., delivering to a new population and/or through a new system) (Aarons et al., 2017) between states (Balis, Strayer, Ramalingam, Wilson, & Harden, 2018; Harden, Ramalingam, et al., 2019). Both specialists and Extension educators/agents (herein: agents) often develop their own unique programs rather than collaborating to adopt effective programs from other states. For example, a systematic review reported that there were currently over 17 different older adult physical activity programs implemented across 15 state Extension systems, and most of these programs were not evidence-based (Balis, Strayer, Ramalingam, Wilson, & Harden, 2018). Indeed, agents have reported preferring to create their own programs (which may not be evidence-based) rather than adopt specialists’ programs (which may not work in the real world) (Ressler, 2017). To avoid program duplication and inefficient use of resources, specialists and agents need to work together to adopt and adapt programs that are evidence-based and meet the needs of those who will ultimately deliver them.

One way to support the interactivity of agents and specialists in determining state-level needs is to conduct needs assessments, develop advisory boards, and adapt existing interventions to fit the needs of the system. Part of the needs assessment must include Extension agents’ personal and professional characteristics, as they are key determinants in program uptake (Damschroder et al., 2009; Rogers, 2003). For example, an agent’s academic preparation, on-the-job training, and comfort with physical activity programs influence physical activity program uptake (Downey et al., 2012; Estabrooks et al., 2004). Other factors related to perceptions of physical activity that may affect programming adoption, implementation, and system-level maintenance are unknown. In addition to understanding perceptions of physical activity interventions, the proportion of time Extension agents spend on specific intervention tasks (e.g., program identification, adaptation, delivery) is generally unknown and may influence the capacity to adopt new programs.
Therefore, the purpose of the study was to conduct a readiness assessment for concerted efforts for physical activity intervention and identify organizational factors and agent perceptions that speed or impede uptake of evidence-based physical activity programs. The approach, lessons learned, and implications have generalizability to other state systems and other systems interested in integrating evidence-based programming that is novel to their system.

Methods

Study Design

The RE-AIM (reach, effectiveness, adoption, implementation, maintenance) framework (Glasgow et al., 1999) was used to inform the iterative approach to integrating evidence-based physical activity interventions into the state system. RE-AIM is used to improve the planning and process of translating research to practice (Balis, John, & Harden, 2019; Gaglio et al., 2013), and it includes perceptions of both individual and system-level factors related to physical activity programming. The needs assessment included Extension agents’ attitudes toward physical activity programs, current physical activity programming status, amount of time spent on program components, and factors that affect physical activity programming adoption, implementation, and system-level maintenance. A mixed-methods approach (i.e., equal emphasis on the quantitative and qualitative findings; Creswell, 2013) was used.

Participants and Recruitment

An email was sent to all Extension agents of the state within Family and Consumer Sciences and 4-H (N = 129), inviting them to take part in the online survey and focus groups. The Extension agents had responsibilities ranging from nutrition education to human development and finance. The final question of the online survey asked participants if they would be willing to participate in a focus group. Those who were willing were invited to attend one of two focus groups held in their local districts. The study was approved by the institutional review board at Virginia Tech; all participants provided implied consent with the return of the survey and written consent before focus groups.

Procedures

Survey. The survey contained multiple-choice, rating-scale, and open-ended questions that addressed current work status, educator demographic variables, participant physical activity levels, and time spent in RE-AIM dimensions. For current work status, participants were asked to specify the number of years they had worked in Extension, their comfort level delivering physical activity programs (5-point Likert scale), and their intention (based on the stages of change model; Prochaska & DiClemente, 1992) to deliver physical activity programs. In addition to standard demographic items, other questions were asked about current health status and self-efficacy in meeting physical activity guidelines. As for physical activity levels, the Godin
Leisure Time Physical Activity Questionnaire (Godin & Shephard, 1985) was used for participants to self-report the frequency and duration of strenuous, moderate, and mild exercise performed within the preceding seven days. Finally, participants were surveyed regarding their time spent with reach, adoption, implementation, and maintenance. These RE-AIM dimensions were selected to understand agents’ tasks that may influence the overall impact of programs (e.g., to assess implementation, the survey asked about the amount of time spent developing and/or refining program materials).

**Focus Groups.** Two one-hour focus groups of four participants each were conducted by two coauthors with focus group experience. The focus groups were semi-structured with a predefined set of questions and were recorded on a digital sound recorder. The participants were asked for their insights on types of physical activity programming currently delivered, physical activity guidelines for youth and adults, physical activity objectives sought after in current programs, ways in which physical activity objectives can be integrated into current programs, barriers for physical activity programming, facilitators and resources for physical activity programming, cross-programming opportunities, and program evaluations.

**Data Analysis**

**Surveys.** Surveys were analyzed using SPSS (IBM, Version 25). Descriptive statistics of all variables were calculated. Participants’ time spent performing physical activity was converted into whether or not they met national physical activity guidelines (150 minutes of moderate physical activity per week or 75 minutes of vigorous physical activity or an equivalent combination; U.S. Department of Health and Human Services, 2018). Representativeness of those who participated in the survey only to those who participated in both the survey and focus group was calculated through independent samples $t$-test (age and years in Extension) and Fisher’s exact test (categorical variables).

**Focus groups.** Dependability and confirmability were established using independent coders, a sound audit trail (Cutcliffe & McKenna, 2004), and third-party moderators. Focus group data were transcribed verbatim by research assistants and cross-checked. For qualitative approach rigor, the research team established a thematic coding system based on the RE-AIM framework (Kessler et al., 2012; Shanks & Harden, 2015). Six researchers independently coded the transcripts. Coders were put in pairs of novice and more veteran RE-AIM researchers. All authors were trained to identify and resolve meaning units (Elo & Kyngäs, 2008). Meaning units were collapsed into category, subtheme, and RE-AIM dimension theme.
**Results**

**Quantitative**

Sixty-nine Extension agents of the 130 eligible (53%) participated in the online survey. The dominant demographic was White (85%) female (87%) with an average age of 43 (±13) years. A majority (90%) of participants rated their health between good and excellent. Eighty-three percent of participants were not comfortable delivering physical activity programs. Eight Extension agents participated in the focus groups; they were primarily White (88%) females (88%) with an average age of 46 (±15) and health rated as good or better (100%); they were all comfortable (or neutral) delivering physical activity programs. Comparing the survey respondents to those who also participated in the focus groups, there was no significant difference \( p < .05 \) in terms of age \( (p = .505) \), average years in position \( (p = .993) \), gender \( (p = 1.00) \), race \( (p = 1.00) \), comfort delivering physical activity programs \( (p = .342) \), current programming status \( (p = .708) \), self-reported health status \( (p = 1.000) \), confidence in meeting physical activity recommendations \( (p = .337) \), or physical activity index \( (p = .717) \). See Table 1 for demographic work-related item variables from the survey and focus group participants.

### Table 1. Extension Agent Demographics and Work Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Survey Only ( n = 61 )</th>
<th>Survey and Focus Group ( n = 8 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic and Work Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, years, ( M (SD) )</td>
<td>42.52 (±12.8)</td>
<td>46.13 (±14.8)</td>
</tr>
<tr>
<td>Average years in position, ( M (SD) )</td>
<td>10.0 (±14.10)</td>
<td>10.63 (±11.02)</td>
</tr>
<tr>
<td>Gender N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>51 (85)</td>
<td>7 (88)</td>
</tr>
<tr>
<td>Male</td>
<td>9 (15)</td>
<td>1 (12)</td>
</tr>
<tr>
<td>Race N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>58 (88)</td>
<td>7 (88)</td>
</tr>
<tr>
<td>Other race</td>
<td>8 (12)</td>
<td>1 (12)</td>
</tr>
<tr>
<td>Comfort delivering PA programs N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very uncomfortable to uncomfortable</td>
<td>52 (83)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Neutral to very comfortable</td>
<td>11 (17)</td>
<td>8 (100)</td>
</tr>
<tr>
<td>Current programming status, N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precontemplation to contemplation phases</td>
<td>41 (65)</td>
<td>6 (75)</td>
</tr>
<tr>
<td>Preparation to maintenance phases</td>
<td>22 (35)</td>
<td>2 (25)</td>
</tr>
<tr>
<td><strong>Health Behaviors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health status, N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor to fair</td>
<td>6 (10)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Good to excellent</td>
<td>53 (90)</td>
<td>8 (100)</td>
</tr>
<tr>
<td>Confidence for meeting PA recommendations, N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all to somewhat</td>
<td>13 (22)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Moderately to very</td>
<td>47 (78)</td>
<td>8 (100)</td>
</tr>
<tr>
<td>Meeting PA guidelines, N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>30 (58)</td>
<td>4 (50)</td>
</tr>
<tr>
<td>Yes</td>
<td>22 (42)</td>
<td>4 (50)</td>
</tr>
</tbody>
</table>

*Note. PA = physical activity.*
Regarding task distribution, participants reported spending the most time in an average week (21 hours) with implementation tasks (Table 2). Participants also reported spending approximately 11 hours on adoption-related tasks, 10 hours on reach, and 6 hours on tasks related to maintenance.

### Table 2. Average Time per Week Extension Agents (N=69) Spend on Program Tasks

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Task</th>
<th>Average time/ week M (±SD) hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach</td>
<td>Recruiting participants</td>
<td>5 (± 4.37)</td>
</tr>
<tr>
<td></td>
<td>Tailoring program materials for specific groups of people</td>
<td>4 (± 4.43)</td>
</tr>
<tr>
<td></td>
<td>Determining whether those in most need of intervention were recruited</td>
<td>1 (± 1.33)</td>
</tr>
<tr>
<td>Adoption</td>
<td>Attending training sessions for new programs</td>
<td>3 (± 2.72)</td>
</tr>
<tr>
<td></td>
<td>Attending training sessions for programs previously delivered</td>
<td>1 (± 1.09)</td>
</tr>
<tr>
<td></td>
<td>Training others to deliver programming</td>
<td>4 (± 5.42)</td>
</tr>
<tr>
<td></td>
<td>Traveling related to Extension program training</td>
<td>3 (± 2.22)</td>
</tr>
<tr>
<td>Implementation</td>
<td>Traveling related to Extension program delivery</td>
<td>4 (± 2.58)</td>
</tr>
<tr>
<td></td>
<td>Delivering programs</td>
<td>10 (± 8.27)</td>
</tr>
<tr>
<td></td>
<td>Developing and/or refining program materials</td>
<td>5 (± 4.37)</td>
</tr>
<tr>
<td></td>
<td>Ensuring that the program is delivered as intended (e.g., completing</td>
<td>2 (± 2.07)</td>
</tr>
<tr>
<td></td>
<td>a checklist at the end of a program session)</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Maintaining partnerships for program delivery (e.g., attending</td>
<td>4 (± 2.85)</td>
</tr>
<tr>
<td></td>
<td>community forums, networking, attending meetings)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adapting programs for future iterations</td>
<td>2 (± 2.23)</td>
</tr>
</tbody>
</table>

### Qualitative

Twelve individuals volunteered to participate in the focus groups, with eight available for the district-based in-person focus groups. However, data saturation was met across the two focus groups (e.g., similar items with no new insights) with these eight individuals, so an additional focus group was not sought. The thematic coding of the focus group transcripts yielded 464 meaning units. These meaning units provide clarity and insights on the factors that influence reach, effectiveness, adoption, implementation, and maintenance of physical activity programming. See Table 3 for details.
Table 3. Qualitative Results of Extension Agents’ (N = 8) Perceptions of Physical Activity Programming

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subtheme</th>
<th>Example Meaning Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach (32)</td>
<td>Barriers to programming (17)</td>
<td>The populations that most need this [Extension programming] they literally, at least in my community, can’t afford it.</td>
</tr>
<tr>
<td></td>
<td>Recruitment strategies (15)</td>
<td>Marketing and promoting, but once we get it going...Once we know that this is a program that we as Cooperative Extension agents can promote it in the community.</td>
</tr>
<tr>
<td></td>
<td>Current evaluation practices (45)</td>
<td>For the two programs that I do that incorporate physical activity, I can use the validated [evaluation] tools that come from Tufts [to measure the success of the programs I do].</td>
</tr>
<tr>
<td>Effectiveness (140)</td>
<td>Barriers to evaluation (37)</td>
<td>We [agents] don’t have criteria which we should be or told to be evaluated.</td>
</tr>
<tr>
<td></td>
<td>Perceptions of evaluation (33)</td>
<td>And I’ve learned after many years of doing this [delivering programs through Extension] that never assume something like that [participants understanding concepts taught during programs] because you say you think you did a really good job of explaining something and people don’t understand it.</td>
</tr>
<tr>
<td></td>
<td>Technology (25)</td>
<td>I’ve used clickers before [as a tool to evaluate programs].</td>
</tr>
<tr>
<td>Adoption (179)</td>
<td>Barriers (85)</td>
<td>I don’t really know if there is any curriculum for us.</td>
</tr>
<tr>
<td></td>
<td>Cross-programming integration opportunities (33)</td>
<td>It’s a good opportunity because they get the nutrition and the cooking piece that could easily be tied into educational pieces that accompany physical activity.</td>
</tr>
<tr>
<td></td>
<td>Facilitators (27)</td>
<td>I agree - I think of it as 30 minutes a day, 5 days a week, but it adds up to the same [150 minutes].</td>
</tr>
<tr>
<td></td>
<td>Roles and responsibilities (20)</td>
<td>I think, too, there might be a feeling that our job is not to be exercise leaders, that that’s not what we are trained and paid for.</td>
</tr>
<tr>
<td></td>
<td>PA programming status (14)</td>
<td>I think it’s, certainly when you’re teaching nutrition, it’s a marriage of the two [exercise and physical activity]; you have to exercise, and you have to watch your diet.</td>
</tr>
<tr>
<td>Implementation (87)</td>
<td>Facilitators to PA programming (38)</td>
<td>I follow the guidelines that come with the curriculum and with the aerobic and nutrition program. The purpose of the program is to reduce risk for heart disease.</td>
</tr>
<tr>
<td></td>
<td>Barriers to PA programming (31)</td>
<td>So there are some activities out there, but it’s not a full curriculum.</td>
</tr>
<tr>
<td></td>
<td>Current PA programming status (18)</td>
<td>I do two physical activity programs in my counties.</td>
</tr>
<tr>
<td>Maintenance (26)</td>
<td>Barriers to program maintenance (13)</td>
<td>When a specialist leaves, especially if the position is vacant [after the specialist leaves STATE], the programs [overseen by the state specialist] fall apart.</td>
</tr>
<tr>
<td></td>
<td>Individual maintenance data (7)</td>
<td>I think a lot of these curriculums, unfortunately, involve people, and then they [the programs themselves] stop; and it’s very hard to track if you’ve made a long-term impact.</td>
</tr>
<tr>
<td></td>
<td>Ensuring sustainability (6)</td>
<td>I also think there needs to be a buy-in from the leadership team at Extension to do so.</td>
</tr>
</tbody>
</table>

Note. Numbers of meaning units for themes and subthemes are shown in parentheses. Example meaning units have been edited for mechanical correctness and readability. PA = physical activity.
Reach. Thirty-two meaning units around program reach were identified and divided into barriers and recruitment strategies. Participants noted the importance of marketing their programs, particularly to the appropriate audiences. To improve program reach, the participants suggested involving master food volunteers and using social media and place-based recruitment. One barrier to physical activity programming was clients’ range of physical activity abilities: the perception was that some clients are not fit enough to engage in 10-minute-long exercise. Another barrier was resources; clients may have financial challenges that prevent them from accessing physical activity resources outside Extension programs (i.e., while they have access to low-cost programs through Extension, they lacked other resources to meet physical activity recommendations).

Effectiveness. The theme of effectiveness was the second most discussed (140 meaning units), with subthemes of current evaluation practices, barriers to evaluation, perceptions of evaluation, and technology. Many participants expressed that program evaluation was crucial for programming. However, there were barriers reported related to the lack of standardized evaluation tools and guidelines. As a result, some participants skipped evaluations, as they often express distrust of evaluation tools with no validation and found it challenging to create their own evaluations. Another issue was the complexity of certain evaluation tools that participants perceived as requiring advanced technical savvy or knowledge of statistics. Despite all the obstacles, many participants still employed various evaluation tools.

Adoption. The theme of adoption was the most common, having 179 meaning units. Several participants viewed their lack of training and credentials in physical activity as barriers to providing physical activity programming and expressed willingness to obtain necessary certification. One salient barrier to providing physical activity programming was the lack of “physical activity programming” explicitly listed in the Extension agents’ job descriptions. Nevertheless, the participants demonstrated sufficient knowledge of current physical activity recommendations. Several participants mentioned the (previous) lack of a specialist as a barrier to physical activity program adoption. Regarding cross-programming opportunities, participants offered examples of how physical activity programming can be integrated into various existing programs, leading to resource sharing and staff collaboration.

Implementation. Eighty-seven meaning units aligned with implementation, resulting in three subthemes: facilitators, barriers, and current physical activity programming status. The facilitators to delivering physical activity programs included resources such as equipment (hula hoops, jump ropes, etc.), volunteers, and funds. The barriers to delivering programming included a need for a specialist, lack of equipment storage, and insufficient resources (financial and human). Current physical activity programming status meaning units were related to both delivering physical activity programs and integrating physical activity with other programs.
Maintenance. Twenty-six meaning units were related to maintenance. Regarding continuation of physical activity programming, the participants provided several examples of programs with physical activity components that ended due to either halting of financial support or discontinuation of the program. The participants suggested stronger involvement and commitment from Extension leadership (e.g., state specialists, program leaders, and administrators).

Discussion

Integration of physical activity objectives or physical activity programming in community-based settings may increase the proportion of people meeting the Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services, 2018). This may have a downstream impact on reduced risk for chronic disease and improved chronic disease management. However, packaged evidence-based programs are not readily translated into sustained practice (Brownson & Jones, 2009). The adaptability and fit of interventions within the targeted system are paramount. Therefore, this study aimed to understand current practices related to program selection, adaptation, and delivery – such as recruitment, tailoring, and evaluation efforts – so that the state-level specialist could match training offerings with current roles, responsibilities, and expectations. Overall, the results suggest that Extension agents have positive perceptions of physical activity promotion, but notable barriers remain in integrating physical activity programming within the system.

The quantitative results showed that most agents, while supportive of physical activity in general, were not delivering physical activity programs. This is also reflected in the qualitative results, as agents discussed many barriers to adoption, implementation, and maintenance. Three salient barriers reflected in the qualitative results are a lack of formal training and certification in physical activity programming, a lack of feasible and validated evaluation tools, and “physical activity programming” not being included in their job descriptions.

The absence of “physical activity programming” in Extension agents’ job descriptions was one of the core obstacles preventing physical activity programming in Extension. Lack of physical activity in the job descriptions offers little motivation to Extension agents to adopt and deliver physical activity programs. Increasing the number of Extension agents having “physical activity programming” in their job descriptions may encourage adoption and delivery of physical activity programs. A change in job titles (e.g., from Family and Consumer Science Agent to Health and Wellness Agent) would also be more inclusive of physical activity. This lack of role clarity is reflected in the fact that many state systems do not include physical activity programming goals in their state strategic plans (Harden, Lindsay, et al., 2016). An overall shift is needed for physical activity to be a priority for the state, its agents, and its community members.

Once physical activity is integrated as a priority area, state-level specialists can deliver training in core competencies for public health physical activity practitioners (Dallman et al., 2009) as
well as intervention-specific capacity building (Wandersman et al., 2008). The competencies progress from planning to implementing to evaluating physical activity interventions (Dallman et al., 2009). Intervention-specific capacity building could include information on the program’s core elements and experiential learning on program delivery and evaluation. Specialists could also provide ongoing consultation in physical activity programming, as research suggests that continued training, as opposed to one-time training, improves implementation fidelity (Beidas et al., 2012). Future research is needed on the intensity of training needed to build capacity for Extension agents to deliver evidence-based physical activity programs.

Related still, Extension agents need to be able to report against broader impacts in the community (Franz, 2014). Participants in the focus groups indicated that there are difficulties with program evaluations as there are no standardized and validated evaluation tools, and those that are available often require advanced knowledge of statistics and technical savvy. Thus, programs that come bundled with standardized and simplified evaluation tools may appeal to Extension agents.

Extension agents also mentioned a need for integrating nutrition objectives in physical activity programs. Extension is housed in the U.S. Department of Agriculture (USDA); its mission is to “provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues” (U.S. Department of Agriculture, n.d.-a). Incorporating nutrition education in physical activity programs may adapt these programs to better fit USDA’s mission. Palmer-Keenan and Corda (2014) explored Extension in New Jersey and noted that despite the effectiveness of educational efforts at improving participants’ nutrition intake, participants often suffer from obesity. To address this problem, the authors integrated physical activity into existing nutrition programs by reallocating 15-20 minutes of nutrition education time toward physical activity and found physical activity improvements without any negative dietary impacts. Until “physical activity” is included as a more prominent focus area, including nutrition education may better align programs with Extension’s mission and increase adoption by delivery agents.

It is noteworthy that the barriers to adoption and continued implementation of physical activity that we identified via the survey and focus group interviews are similar to those that other Extension agents face across the nation. For example, a study of barriers to professional competencies among 110 North Carolina Extension agents suggested lack of time and funding as the most constraining barriers (Lakai et al., 2012). Additionally, the nationwide survey by Peña-Purcell et al. (2012) revealed that Extension agents have concerns with various aspects of physical activity programming, including availability of lessons and staff training. The survey also indicated that the majority of respondents are eager to obtain training, suggesting a nationwide opportunity to increase Extension agents’ involvement in physical activity interventions, which potentially could contribute to a positive population wellness impact across all states.
As for the amount of time spent on program components, agents spent the most time in an average week with implementation tasks. This is not surprising, as this is agents’ primary job responsibility. However, a lack of resources (both time and staff) was mentioned in the focus groups and barriers to adoption and implementation. This is not uncommon in implementing evidence-based interventions in community settings (Bach-Mortensen et al., 2018). In Extension, agents experience many demands on their time as they respond to community needs in broad areas of program responsibility. For example, Extension agents reported delivering programs across 22 unique health-related areas, including everything from human development to food safety to nutrition (Strayer et al., 2020). When new programming areas—like physical activity—are introduced, agents report feeling that they cannot add a new programming focus area without letting go of existing programming (Balis, Strayer, Ramalingam, & Harden, 2018). Prioritizing programming areas on which agents could focus, as well as programs that are evidence-based (as opposed to one-time sessions), may increase the time available to deliver physical activity programs.

Limitations

A limitation of the findings is that they are representative of one state system. Also, it appears that there is no comprehensive, nationwide demographic data on Extension agents, thus limiting the ability to make formal claims regarding generalizing our findings to other states’ Extension systems, as we cannot measure similarity to Virginia agents’ demographics. As with any mixed-methods approach, response bias must always be considered as what individuals report through research may not always be what is practiced in the field (McCambridge et al., 2014).

In addition, while there was no significant difference in terms of comfort delivering physical activity programs between the Extension agents who participated in the focus groups and those who completed the survey, there was a practical difference. A large proportion (83%) of the respondents were not comfortable delivering physical activity promotion. However, none of the individuals who were less comfortable delivering physical activity were willing to take part in a focus group. This study took place in a pragmatic setting, and this lack of participation may represent organizational issues related to lack of focus on physical activity.

While this represents a limitation to the research, it was used as a strength in practice. Borrowing from the Diffusions of Innovation Theory and other dissemination and implementation strategies, the specialist and research team viewed those who were willing to participate in the focus groups as potential innovators and early adopters who could lead their peers to increased physical activity program adoption (Damschroder et al., 2009; Rogers, 2003). The eight individuals who provided focus group information were asked to be champions of physical activity in the state and serve on a newly formed integrated research-practice partnership (IRPP; Estabrooks et al., 2019). Members of the IRPP worked together to problem prioritize, select and adapt potential solutions, test those solutions, and inform large-scale decision making (Estabrooks et al., 2008;
Harden, Johnson, et al., 2017). This approach led to the selection of two physical activity interventions for statewide delivery: FitEx (Harden, Johnson, et al., 2017; Harden, Ramalingam, et al., 2019) and LIFT (Balis, Strayer, Ramalingam, & Harden, 2018; Wilson, Strayer, Davis, & Harden, 2018a, 2018b). Based on the results presented here, these interventions were selected because they were perceived as easy to implement and fit the needs of educators, including being offered as packaged programs with options for adaptation, robust and experiential training, and evaluation components.

Conclusions

This work reveals changes in policy that may increase the adoption of evidence-based physical activity programs in community settings. Extension agents may be more likely to adopt physical activity programs if physical activity becomes a more prominent focus of the USDA-housed Extension system. Additionally, this work demonstrates the value of encouraging understanding of delivery agents’ perceptions and needs and including them in the program adaptation process to facilitate adoption and translation of evidence-based programs. The needs assessment approach used in this study may serve as an example for other state Extension systems, and the barriers to physical activity program adoption, implementation, and maintenance noted by these educators may have implications for improving scale-out within the national Extension system.

References


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Facilitators and Barriers to Implementation of Community-Based Socio-Ecological Approaches to Obesity Prevention Among Cooperative Extension Agents

Denise Holston  
Jessica Stroope  
Melissa Cater  
Louisiana State University, LSU AgCenter

Perceptions, knowledge, and attitudes of Cooperative Extension Service (CES) Family and Consumer Science (FCS) agents related to the planning and implementation of community-based multi-level ecological obesity prevention strategies were identified through qualitative, exploratory research. Focus group discussions (FGD) were conducted in the five regions of the Louisiana State University CES (LSU AgCenter). Participants included CES FCS Extension agents (n = 35; 97% of agents). Participants were female and responsible for conducting programming in parishes (counties). Thematic analysis of data found principal factors that influenced FCS Extension agents’ perceived ability to plan and implement community-based multi-level obesity prevention approaches to include knowledge of the socio-ecological model, beliefs about roles of CES, funding, human resources, community connectedness, community buy-in, guidance, and internal support. Assessing what FCS agents perceived as barriers and facilitators to implementing community-based obesity prevention approaches provided valuable direction to the state FCS office. Understanding gaps in knowledge, professional development needs, and existing strengths will help make the transition to community-based obesity prevention initiatives more effective. These findings may be beneficial to other CES and public health agencies implementing multi-level, community-based obesity prevention programs in partnership with community coalitions.

Keywords: community-based obesity prevention, focus group discussions, Cooperative Extension Service, community coalitions

Introduction

In 2014, the Extension Committee on Organization and Policy Health Task Force released the Cooperative Extension System (CES) National Framework for Health and Wellness, signaling a shift in Extension to prioritize multi-level ecological approaches to obesity prevention (Braun et al., 2014). Because of the limitations of direct education for individual-level behavior change (Frieden, 2010; Golden & Earp, 2012), the National Framework for Health and Wellness...
encouraged engagement across all levels of the Socio-Ecological Model (SEM) for Health. The SEM recognizes the importance of individual-level factors on behavior change but emphasizes the influence of factors beyond individual choice on health outcomes, including community resources (e.g., availability of healthy and affordable foods, accessibility of safe places for physical activity) and policies at the local, state, and national level (workplace breastfeeding policies, school lunch guidelines, school recess standards; Golden & Earp, 2012).

More significantly, multi-level strategies reach people who are not active participants in CES programming, satisfying the overall goal for both the National Framework for Health and Wellness and the National Prevention Council, to “increase the number of Americans who are healthy at every stage of life” (Braun et al., 2014, p. 23). While most CES nutrition agents are comfortable delivering education programs, agents need strategies beyond direct education to engage in multi-level ecological methods (Smathers et al., 2018; Smathers & Lobb, 2015).

To impact higher levels of influence on health behavior, such as policies and the availability of community resources, strategic partnerships are needed (Green et al., 2001). Agents may be able to leverage a key relationship at a particular institution, such as a school, to bring about policy changes such as Smarter Lunchrooms (Thomas et al., 2016), but to increase the potential to reach an entire community, a broader community-based approach is needed (Israel et al., 2010). Community-based participatory research (CBPR) engages a community, inviting all to have a seat and a voice at the table. CBPR can gather community input and direction in various ways; some projects use neighborhood focus groups, community forums, photovoice, coalitions, or a conglomeration of methods that involve listening to the community and building community capacity (Hacker, 2013).

In response to the 2014 CES National Framework on Health and Wellness, LSU AgCenter Family and Consumer Science (FCS) agents were encouraged to partner with an existing coalition or form a new one if none existed in order to secure community input, foster partnerships, and guide project implementation. Previous research has found partnering with local coalitions to be an effective strategy for CES agents to implement community-based ecological approaches to obesity prevention. Local community coalitions in rural Tennessee were able to increase physical activity opportunities, improve the school nutrition environment, and improve produce availability at food pantries (Wallace, 2019). Working through Alabama FCS, community coalitions focused on increasing physical activity, including projects such as improved walking/biking trails and playground repair (Carter, 2019). Coalitions extend the reach of CES agents, build community partnerships, and can enable access to impact upper tiers of multi-level ecological approaches (policy, systems, and environmental changes).

Coalitions can also increase access to community groups previously unreached by a local Extension agent, particularly if a coalition is built with community representation in mind (Anderson et al., 2015). As lower-income community members frequently live in the areas of
town with the least access to safe places to walk and healthy foods (Suglia et al., 2016), it is critical for them to not only be represented within the coalition but to have agency in coalition decision making.

Because the skills needed to lead coalition-driven interventions are not necessarily the same skills agents use to conduct direct education, the authors initiated the current study to assess readiness and potential barriers for LSU AgCenter CES nutrition agents to engage in multi-level community-based obesity prevention approaches.

At the time of the study, no LSU AgCenter CES agent was working with a community coalition. The authors used the PRECEDE-PROCEED planning model (Crosby & Noar, 2011). PRECEDE-PROCEED is a widely used tool designed to help program planners start with the end in sight, working backward to determine initial and ongoing steps. The study used the constructs from the first half of the model: predisposing, reinforcing, and enabling. Predisposing factors include an individual’s beliefs, knowledge, and attitudes that influence personal readiness for change. Enabling factors include resources (personal or systematic) and skills available to make change possible. Reinforcing factors serve as a feedback loop, providing an individual with either positive or negative support following an initial change. These constructs are intended to inform the first steps of program planners before implementation. Together, the constructs indicate a need for further training, ongoing programmatic guidance, and greater clarity in how LSU AgCenter nutrition agents and programs will be evaluated.

Methods

Study Design and Participants

Five focus group discussions (FGD) were conducted with CES FCS in Louisiana. All study procedures and documents were approved by the Institutional Review Board of the University. All FCS agents in the state were invited to participate in a focus group, with 35 out of 36 total agents participating. Focus group size ranged from 4-9, with an average size of seven agents. Each of the five regional Louisiana CES offices hosted an FGD. Participants provided informed consent and completed a demographic survey before participation in the FGD.

This study used recommendations by Krueger and Casey (2000) to guide question development and sequence, including the use of common, easily understandable language; one-dimensional, open-ended questions; a limited number of questions; and probes and positive questions placed before those that may provoke a negative response. Krueger and Casey’s recommendations for question sequence and progression were followed, including the use of opening, introductory, transition, key, and ending questions. Seven open-ended questions were constructed based on the objectives of the study and guided by the PRECEDE-PROCEED (Green & Kreuter, 2004). Recent literature on ecological and multi-level approaches to obesity prevention was also
considered during question development (Gantner & Olson, 2012; Lu et al., 2014; Smathers & Lobb, 2015; Stark et al., 2011, 2017).

The face validity of the revised questions was established by asking the opinions of two experts in the field of nutrition, community outreach, and formative evaluation. Seven open-ended questions were included in the final version of the focus group protocol (Table 1) and placed into a semi-structured moderator guide that included a scripted study description and question prompts to enable clarification of participant responses as necessary. The author (DH) is a trained facilitator and moderated all five focus groups using recommendations from Krueger and Casey (2000). The author/facilitator received training through the LSU AgCenter’s Department of Organizational Development and Evaluation and has moderated FGD before this project.

Data saturation was achieved when data obtained from the FGD yielded no new ideas or themes as determined by the lead researcher (DH), with a total of five FGD conducted. Other researchers utilizing FGD have also found that data saturation typically occurs between three to five FGD (Coenen et al., 2012; Guest et al., 2017).

**Data Analysis**

After the FGD, audio recordings were uploaded to a professional transcription agency through a file hosting service, transcribed verbatim, and carefully read and checked for accuracy by the lead researcher (DH). Focus group discussions were then coded and subsequently themed by a CES nutrition specialist and lead researcher (DH) using a constant comparative approach (Glaser, 1965). For each FGD, responses were combined under each corresponding question for analysis, and a summary of each FGD question was then constructed using participant responses. During initial analysis, large categories of text were identified and coded using an In Vivo process. The second cycle involved deductive pattern coding using the PRECEDE-PROCEED constructs. Codes were identified and placed in a codebook by DH and were reviewed by a co-author, an Evaluation Specialist (MC), for consistency. Once all codes were compiled, they were applied to each FGD. Content analysis of each FGD question was then conducted to identify recurring dominant themes, trends, and ideas that emerged. Through this approach, themes were used to identify predisposing, reinforcing, and enabling factors for implementing multi-level obesity interventions. Qualtrics, an online survey program, was used to analyze and summarize participant demographic characteristics based on survey data.

**Table 1. Focus Group Discussion Questions for FCS Agents Based on the PRECEDE-PROCEED Model**

<table>
<thead>
<tr>
<th>#</th>
<th>FGD Question</th>
<th>Factors Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What do you believe is the purpose of the state FCS programming? Probe: What are the primary focus areas?</td>
<td>Predisposing</td>
</tr>
<tr>
<td>2</td>
<td>What do you think is meant by community-based approaches to obesity prevention?</td>
<td>Predisposing, Reinforcing</td>
</tr>
</tbody>
</table>
Facilitators and Barriers to Implementation

<table>
<thead>
<tr>
<th>#</th>
<th>FGD Question</th>
<th>Factors Identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>What are your thoughts regarding this approach? Is a community-based approach realistic? Why or why not?</td>
<td>Predisposing, Enabling, Reinforcing</td>
</tr>
<tr>
<td>4</td>
<td>What barriers have you had or do you anticipate encountering when you begin to plan and implement a community-based obesity prevention program?</td>
<td>Enabling</td>
</tr>
<tr>
<td>5</td>
<td>What types of support or training have you received that is relevant to community-based obesity prevention program planning and implementation? Probes: What was helpful? What needed improvement?</td>
<td>Enabling, Reinforcing</td>
</tr>
<tr>
<td>6</td>
<td>What topics relative to delivering community-based obesity prevention interventions would you like to see covered in future training opportunities? How would you like to receive this information?</td>
<td>Enabling</td>
</tr>
<tr>
<td>7</td>
<td>Of all the things we discussed today, is there anything else you would like to add that was not covered?</td>
<td>Dependent on responses</td>
</tr>
</tbody>
</table>

Results

A total of 35 FCS agents participated in the study, with an average of seven agents per FGD (range 4-9). Participants were all female, and the majority had Master’s degrees. Over half of the agents were non-Hispanic white (54%), and about a third were non-Hispanic black (34%). Most (66%) worked in more than one parish (county); however, 26% of agents worked in three or more parishes (Table 2). The most requested training topics included evaluation (56%), behavior change theory (44%), best practices (39%), evidence-based practices (36%), and coalition building (33%).

Table 2. Focus Group Discussion Participant Characteristics, Job-Related Information, and Modalities of FCS Agents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>N = 35</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>35</td>
<td>100</td>
</tr>
<tr>
<td>Race</td>
<td>Non-Hispanic white</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Highest Degree</td>
<td>Bachelor’s</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Master’s</td>
<td>24</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>Doctoral</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Registered Dietitian</td>
<td>Yes</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>No. of counties agents conducts programming in</td>
<td>0 = (regional coordinator)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>4 or more</td>
<td>6</td>
<td>17</td>
</tr>
</tbody>
</table>
Identified predisposing, enabling, and reinforcing factors to planning and implementing multi-level approaches to obesity prevention through community coalitions are summarized in Figure 1 at the end of the Results section.

Predisposing Factors

Predisposing factors include an individual’s knowledge, beliefs, and attitudes that influence a person’s readiness for change.

Beliefs Regarding Role of CES in Communities. Agents believed that their role was to deliver research-based information and expertise to the communities they served. They also believed that the LSU AgCenter was considered a trusted source of information for the community. One agent elaborated, “I think it goes back to us being a part of that community and that people know they can rely on us, but whatever we start, we’ve got to be willing to finish.” Another shared, “we are trusted in the community. I think the LSU AgCenter has that advantage, in terms of trying to implement something like this.” Participants also shared the view that they were facilitators in the community because of their role as an FCS Agent. One agent said,

We are facilitators in the community, identifies [sic] their problems, or things that they want to make better in terms of health, and then we kind of act as a resource to connect them to people who can help them reach those goals.

Agents viewed their role as being a trusted community connector.

Knowledge of Socio-ecological or Community-based Obesity Prevention. Respondents indicated that the purpose of FCS outreach was to deliver research-based information to teach people how to be healthy to improve their lives. Responses tended to focus on individual-level factors rather than those that impact broader influences of an individual’s behavior, such as factors identified in the SEM model. All agents were able to describe at least one aspect of the socio-ecological model or community-based approaches to prevention.

The majority of responses focused on community input and ownership as a key aspect of a community-based approach. One agent advised, “It has to be generated by the community. We have to get their input and buy-in to start this.” Although participants understood what was broadly meant by community-based obesity prevention programming, they did not understand specifically what that entailed or what they would be required to do as part of the effort. For example, participants indicated, “I don’t feel that I have a clear understanding of what we’re supposed to be doing, of what’s expected of us, or where are we even supposed to start.” Overall, agents had a limited understanding of the SEM model.
Enabling Factors

Enabling factors include resources (personal or systemic) and skills available to make change feasible.

Human Resources. Most study participants indicated that collaboration and partnerships were essential to plan, implement, and sustain community-based obesity prevention programs. One agent shared, “I think that it comes to a point where you have to collaborate, and you have to partner, and you have to figure out, well, what do we do best. What do we bring to the table, and what does another entity do best?” Another agent emphasized the need for healthy partnerships, sharing, “We have to build stronger partnerships and collaborations to…be sustainable.” While participants highlighted the need for partnerships and collaborations, the majority further indicated that these relationships and human capital are needed because of the work capacity of FCS agents and the perceived magnitude and complexity of the initiative. An agent reflected, “Our capacity to meet community need is very, very lacking.” Participants also viewed establishing partnerships as daunting, as they did not feel they had the capacity, saying, “Huge undertaking, we are thinly staffed.” Another agent felt more staffing would be needed to be successful, sharing, “Everybody will feel a sense of community when you have the community involved, but I think the FCS agents, we’re going need more human resources.” Even though some did not feel they had the capacity to expand partnerships, most agents viewed the need for partnerships as critical.

Funding. Study participants indicated that funding would need to be made available to sponsor some of the projects the community would request as part of the community-based obesity prevention initiative. One agent cautioned, “If we don’t have any kind of monetary resources, then we can make all the plans in the world, but we’re not going to be able to implement them.” Another agent voiced her concern, saying,

Everybody has these great ideas; let’s do this, let’s do that, but if you’ve got a couple of people just from the community, a couple of pastors, some government people, the local people, nobody has any money to implement any of these plans.

Additionally, a perception that community-based approaches do not fit into federally-funded programmatic guidelines was identified as a barrier by a small number of participants. One participant indicated, “I’m 90% SNAP-Ed, so of course, that 10% is overfull…’cause a lot of this doesn’t even fit within the SNAP-Ed guidelines.” Agent perception of funding restrictions was viewed as a barrier to implementation of community-based obesity prevention initiatives.

Autonomy and Guidance. Agents indicated that they wanted autonomy to make decisions about how projects would be planned and implemented based on the characteristics of their target community. Study participants also wanted flexibility in how they define community, whether by geographical area or by other factors.
Almost all agents indicated that they would like to receive an implementation guide that would outline steps needed to plan and implement a community-based or healthy communities program, with the freedom to deviate in response to community needs. This manual would also provide agents with guidelines, expectations, and reporting requirements. One agent requested “a plan or guidance as to how do we do this with limited staff.” Another agented wanted the guide to specifically “outline everyone’s part or role,” saying “we do what people tell us to do.” All FCS agents were very clear that they needed training and technical assistance to enable them to plan for and implement a community-based prevention project. Training topics included coalition or action group building, facilitation, socio-ecological model study, collaboration and partnership development, and examples of community-based programs from other states. For example, one participant indicated, and others agreed that,

Maybe what works…like an urban model in a healthy community that works in another state, and then a rural model and what works somewhere else. Might be nice to see, you know, their stumbles and their stalls, and what works for them.

Although agents indicated that they wanted autonomy in most aspects of the project, they also requested to receive specific guidance as to how to plan and implement the program.

**Community Connectedness.** While being employed by the LSU AgCenter CES was a predisposing factor for planning and implementation, connection to the community was described as a factor that may have impeded or facilitated implementation and planning among participants. For example, understanding or being connected to the community was described as a factor that could facilitate implementation of the approach. However, if agents did not consider themselves part of the community due to working in several parishes, community connectedness was viewed as a barrier to successful planning and implementation. An agent explained, “you have to be in that community to determine the vibes of what people want, what might motivate them.” Another said, “in order for us to be effective, you have to be part of that community.” This tension of multi-parish work was captured by an agent who said,

When you’re living in one parish, but you’re assigned work in several others, then you have to figure out how to engross yourself as part of those communities, so that people see you as not just an outsider, they see you as, as a valued member of that community.

Two-thirds of agents served two or more parishes, which can make connecting to the community a salient challenge.

**Community Support.** Perceived lack of interest in health or changing health-related behaviors among community members and stakeholders was suggested as a negative enabling factor or barrier to a community-based approach. Frustration was expressed by an agent who shared, “how do we get those other people who really could just care less about what we’re talking about?” Another expressed the difficulty of starting a project like this, stating, “it says a lot if
you can get that group together to set some goals because [if] you can’t get that off the ground, then there is probably not an interest in it.” It could be that perceived disinterest is the result of limited community connection, as discussed in the previous factor.

**Reinforcing Factors**

Reinforcing factors provide an individual with positive or negative support following a change.

**Internal Support.** Based on a majority of participant responses, internal support from other program areas within the institution (e.g., parish or state administrators and CES agents in other program areas) was identified as a reinforcing factor that could encourage or deter agent implementation of community-based obesity prevention efforts. One agent expressed skepticism, saying,

We’ve talked community buy-in, but do you have parish staff buy-in to the point of somebody getting in there and working with you, and not just saying, oh, well, I support this effort, but then not assisting or helping in any way, because every area that we have in a parish staff, 4-H, Ag, they all can play a role, and should be playing a role in building a healthy community.

Communication (or lack thereof) across LSU AgCenter CES program areas about the shift in FCS to community-based obesity prevention may have impacted internal support.

*Figure 1. Facilitating Factors to the Planning and Implementation of Multi-Level Approaches to Obesity Prevention Through Community Coalitions by FCS Agents in one Southern State*
Discussion

This is the first study that has attempted to understand FCS Nutrition agents’ underlying beliefs and perceptions related to planning and implementing a community-based approach to obesity prevention. The results suggest that several factors may influence an FCS agents’ ability to plan and implement this approach, including beliefs about the role of CES, knowledge of the socio-ecological model, human resources, funding, community connectedness, community buy-in, autonomy and guidance, and internal support for the initiative.

Community-based partnerships are necessary to enable change at the community level, and as a result, are a key aspect of multi-level community-based approaches to prevention (Sliwa et al., 2011). In this study, agents reported being thinly staffed and recognized the need for community partnerships to help plan and implement this effort. Due to state budget reductions, LSU Agcenter CES was reorganized, and in 2011, all FCS programs were eliminated except nutrition. State budget reductions are not unique to Louisiana; nationally, the number of full-time equivalents of CES faculty have decreased since 1980, with the Southeast region dropping by 45% (Wang, 2014). Beyond CES, other public health agencies have reported that staffing and skill levels to plan and implement a community approach are inadequate; the skills needed to establish and sustain these partnerships are critical (Schwarte, 2010; Schwarte et al., 2010).

In this study, agents described their role as facilitators, which included developing relationships with new non-traditional partners. Partnerships are inherently difficult to manage and can be time-consuming to develop, especially among new, non-traditional partners, which are necessary for community-based obesity prevention efforts (Middleton et al., 2014; Weiss et al., 2002). This activity can be time-consuming for field faculty. However, if agents only work through existing partnerships, resulting priorities will be reflective of those relationships. The time-consuming work of building new collaborative partnerships with equity in mind is essential for community-based obesity prevention efforts to have the possibility of reaching all people in a community.

At the time of this study, no agent was involved with a community coalition. However, agents felt that in their role at CES, they were a trusted source of research-based information and a facilitator within the community. Because of this history, especially in rural settings, FCS agents are well-positioned to help lead these efforts. The majority of FCS agents in this study were conducting programming in more than one parish, and 26% were working in three or more. If an agent is not visible within the community due to working in multiple parishes or other reasons, their ability to lead the coalition, facilitate community partners, and garner community support may be hindered.

Further research is needed to determine the extent to which FCS agents are engaged in their communities, whether this is impacted by the number of parishes served, and whether serving in multiple parishes leads to an agent being viewed as an outsider. This will enable state specialists to develop strategies and tools to improve levels of engagement. Additionally, because
demographic data was not tied to responses, it is unknown if any comments made about being viewed as an outsider were tied to racial identity. With 34% of the agents identifying as black and 54% identifying as white, it is almost certain that all agents work in some communities in which they are a minority. Understanding how race impacts FCS agents as they implement community-based multi-level interventions is an important avenue for further research.

Program funding source was also perceived as a barrier among participants. Most FCS positions in Louisiana have multiple funding streams—positions may be split 90% between a federally funded program, such as SNAP-Ed, with the remaining 10% allocated for general nutrition programming (funded through the state). Only five FCS agents at the LSU AgCenter are fully funded by state funds. Agents’ time is expected to reflect their funding, thus, limiting allowable activities to what is specified by grant requirements. Most participants indicated their job responsibilities were largely guided by federally-funded program requirements implemented through CES, such as Supplemental Nutrition Assistance Program—Education (SNAP-Ed) and the Expanded Food Nutrition Education Program (EFNEP). Agents viewed this as a barrier because they believed that a community-based approach is not just limited income audiences, which are the targets of the EFNEP and SNAP-Ed programs. Agents did not think a community-based approach would fit into SNAP-Ed and EFNEP programmatic guidelines. Additionally, some agents adhere to previous grant guidelines, either unaware that changes have been made or unwilling to adapt to new responsibilities. While agents in this study were not aware of guidance allowing for community-based approaches and multi-level strategies, a recent study (Stark et al., 2017) found that agents with ≥ 50% funding in either SNAP-Ed or EFNEP were more likely to use ecological approaches to prevention than those who were not.

Program guidance for SNAP-Ed includes provisions to use multi-level outreach delivery mechanisms that include direct education, social marketing, and the promotion of policy, systems, and environment (PSE) change (U.S. Department of Agriculture and the Food and Nutrition Service, 2016). Additionally, EFNEP has provisions that include collaborating with community partners to improve the food and physical activity environment (USDA and the National Institute of Food and Agriculture, 2017a). More recently, the Regional Nutrition Education and Obesity Prevention Centers of Excellence Policy, Systems, and Environmental Change Center (RNECE-PSE), has “committed to training, equipping, and empowering SNAP-Ed and EFNEP networks to effectively implement PSE approaches to support healthy lifestyles for limited-resource audiences where they live, work, and play” (University of Tennessee, 2016). Future training should focus on how federal programmatic guidance supports community-based multi-level interventions, regardless of the source of CES funding. The development of a state-specific PSE took kit for FCS agents, along with guidance and tools provided by RNECE related to PSE efforts in SNAP-Ed or EFNEP, will help to alleviate confusion as to allowable and nonallowable activities and outreach for both programs. This complements the development of a multi-level menu of intervention options of direct education opportunities combined with PSE approaches described above.
Most of the FCS agents in this study indicated a need for autonomy in working with their communities to determine the focus and plan for their community-based project. Agents should be given autonomy in selecting strategies and guiding their community through this effort while still using evidence-based practices. Providing agents with success stories from similar communities along with a menu of evidence-based strategies could empower coalitions to decide what would work best in their settings without having to recreate the wheel. Contrary to those wanting autonomy, others indicated a need for an implementation guide, as this approach is different from the individual-level outreach CES traditionally uses. In recognizing the need for autonomy, flexibility within the structured guidance provided to agents will allow for this approach to meet the needs of the agent and the targeted community and members.

Internal support was identified as a reinforcing factor to agent planning and implementation of community-based obesity prevention approaches. Working on communities-based projects may decrease agents’ direct outreach numbers because they will spend more time on relationship development with a limited number of individuals. Agents need to know they are supported by their supervisors in this. Reporting within CES typically relies on outputs and short-term outcomes related to individuals (numbers reached, perceived skills acquired) and not outcomes related to community and policy-level change (USDA and the National Institute of Food and Agriculture, 2017b). The focus on direct contact with individuals through informal education programs and workshops, which typically result in large outreach numbers, may deter agents from fully engaging in a multi-level, multi-sector community-based intervention. Relationship building, a hallmark of sustainable community-based obesity prevention approaches, takes time and consists of far fewer individuals than agents would typically reach in traditional Extension outreach modalities and projects. This transition needs to be recognized in agent evaluations, so that agents who do an excellent job building key community relationships and facilitating multi-level community interventions will be recognized for excellence in performance evaluations. New ways to capture agent effort, including those that measure equity, need to be developed.

Making a shift from direct education to community-based approaches alongside those that target individual behavior change is a significant undertaking, both for individual FCS agents and the state office. Through assessing agent perceptions, key issues have emerged, which further work will need to address. How can the state office help FCS agents gain skills to better connect with their communities, especially for agents serving more than one parish? How can equity become embedded in the fabric of what we do after the first steps of including measures for equity are included in performance evaluations? How do we communicate the value of community-based approaches to those within Extension outside of FCS? As the direct supervisors of most LSU AgCenter FCS agents are from other branches of the CES, examining supervisor perceptions of community-based obesity prevention efforts may yield key insights.
Limitations of the Study

There are several limitations to this study. This study was conducted among FCS agents in one southern state, and generalization to other state FCS agents or public health professionals may not be possible. Further, FCS agents in this state only focus on nutrition and health instead of other FCS initiatives such as family resource management and community development; therefore, these results may not be representative of all FCS agents. Secondly, most LSU AgCenter FCS agents are funded through federal programs that target low-income audiences, which may not be the case in other CES agencies.

Implications for Practice

One of the hallmarks of CES is that it uses evidence-based practices and programs to provide informal education and outreach to the communities they serve in a variety of contexts. Evidence suggests the environment, not individual-level factors, is largely responsible for a person’s health-related motivations and behaviors (Story et al., 2008). As such, CES now requires provision for the promotion of socio-ecological approaches in the federally-funded nutrition education program administered through CES.

The findings from this study are novel because they may provide insight as to what training and support are needed for FCS agents as ecological community-based approaches to prevention become incorporated in programming and outreach. Because community-based multi-level ecological approaches require a different type of outreach and delivery approach, and to some extent, a different nature of professional development and training (Stark et al., 2011, 2017), understanding FCS agents’ perceptions is critical to guide training and development opportunities. Findings suggest that several factors need to be addressed through professional development opportunities to give agents the confidence and tools they need to successfully tackle a complex multi-level yet potentially impactful approach to prevent obesity. These include programmatic, implementation, and reporting guidance surrounding this approach. Professional development is needed in the following areas: facilitation skills, coalition building, action planning, technical assistance surrounding evidence-based practices that address multi-level interventions, evaluation, and reporting.

The 2014 National Framework for Health and Wellness provides the foundation for states to incorporate community-based approaches to obesity prevention. Assessing agent perceptions can help guide the transition from an exclusive focus on direct education to a more representative, community-based approach. Given the strong presence of CES in counties throughout every state, the agency is uniquely positioned to engage and convene partners, assess community needs and challenges, and promote and facilitate positive community changes to enable community members to make healthy choices, all of which are necessary to facilitate community-based approaches to obesity prevention.
References


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Creating Learning Environments to Support Students Experiencing Stress: Qualitative Insights from an Extension-Community Partnership

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For children experiencing chronic stress, succeeding academically in the face of other obstacles can be daunting. Many efforts focused on supporting students fail to address nonacademic aspects of well-being that can impact their ability to succeed. Working to bridge the gap between research and practice, here we describe the results of an Extension-Community partnership that sought to design learning environments to support elementary students’ healthy bodies and minds. Project leaders took an ecological systems approach, intervening with students at a local elementary school across multiple contexts. This entailed creating a calming room in the school, building a community garden on the school grounds, and providing wrap-around educational programming for teachers, staff, and families. Interviews were conducted with teachers and school staff (*N* = 20) to measure their perceptions of the impact of this intervention. Results are presented within the framework of the socio-ecological model, accounting for the multilevel nature of the project impacts. Interview themes revealed the program’s success in supporting positive outcomes for students, staff, the school, and the surrounding community. Discussions center around the program’s impact on students and on lessons learned that could inform future efforts.

*Keywords:* calming room, school garden, partnership, elementary students, stress, qualitative interviews
Introduction

Exposure to adverse childhood experiences, including chronic stress, can be detrimental for young children, leaving lasting impacts into adulthood (Blair et al., 2011; Evans & Schamberg, 2009; Felitti et al., 1998; Kim et al., 2013). For students who experience chronic stress (e.g., trauma, racism, food insecurity, and community violence), the prospect of succeeding academically in the face of such obstacles can be daunting. Indeed, research consistently shows a pervasive achievement gap for children who experience chronic stress (Pungello et al., 1996; Sirin, 2005; Wagmiller et al., 2006). Even with a multitude of efforts to boost students’ academic achievement, the presence of overwhelming opportunity gaps can limit opportunities for success. Contextual factors linked to chronic stress, particularly poverty and racism, can further restrict access to fulfilling educational opportunities and subsequently worsen students’ experiences of chronic stress (Alaimo et al., 2001; Evans, 2004).

A number of individual and environmental protective factors can buffer the negative impacts of chronic stress on children, including positive, nurturing relationships with caring adults, such as teachers (Baker 2006; Johnson, 2008), and a child’s ability to regulate emotions and behavior (Masten, 2001, 2004; Zhang et al., 2019). Positive experiences in school can serve as a protective factor for children under stress (Liebenberg et al., 2016; Sharkey et al., 2008), though students’ experiences of chronic stress can also restrict their educational attainment (e.g., Sirin, 2005).

From a socio-ecological perspective (Bronfenbrenner, 1979), addressing the contextual, economic, and community factors that create barriers to academic success are essential to creating environments that support student wellness and success (Basch, 2011; Lewallen et al., 2015). Leveraging strengths beyond the individual child to support students across multiple contexts can be key in efforts to build resilience (Bryan, 2005; MacDonald & Green, 2001). Indeed, efforts that seek to support student success will inevitably fall short if the chronic stress in students’ homes, schools, and communities presents an obstacle too immense to overcome (Delaney-Black et al., 2002; Schraml et al., 2012; Thompson & Massat, 2005).

The School Environment

How can schools effectively engage students, families, and community members to create learning environments that mitigate the effects of stress and support student well-being? The school environment serves as an ideal place for interventions to support children, as it provides a point of access for large groups of students and is a primary environment in which students spend time. Schools are uniquely suited to support resilience in students experiencing stress and can have impacts above and beyond other protective factors (Sharkey et al., 2008). Creating trauma-sensitive learning spaces that meet the needs of students experiencing chronic stress can provide immersive, holistic supports for these students (Chafouleas et al., 2016). Key features of such spaces are promoting the physical and psychological safety of students (SAMHSA, 2014) and fostering connected relationships between students and teachers/staff (Cole et al., 2013).
Schools also have the unique opportunity to connect interventions to the other contexts that impact students’ well-being outside the school environment (e.g., families and communities). Due to the complexity of social and community challenges that create and widen opportunity gaps, creating meaningful change requires multifaceted interventions that actively involve children, families, schools, and surrounding communities (Bryan, 2005); indeed, such active collaboration is key in school-based programs’ successful implementation (MacDonald & Green, 2001). Given Extension’s presence in communities across the country and expertise in bridging the gap between evidence-based practice and community needs, Extension is uniquely suited to develop and implement such interventions (Fetsch et al., 2012; Olson et al., 2015).

**Extension-Community Partnership**

In seeking to build a school community to support students experiencing chronic stress, and in seeking to further bridge the gap between community needs and research-based practice, the University of Minnesota Extension Children, Youth, & Family Consortium (Extension CYFC) began a partnership with a local elementary school serving grades Kindergarten through 5th grade, with the goal of reducing the many opportunity gaps facing its students. This Extension-Community partnership sought to meet community needs by supporting one elementary school in implementing school-wide, grassroots efforts to support student well-being.

Students and families served by the school face a host of barriers to academic success, including poverty, lack of access to healthy foods, traumatic experiences, and mental health needs. At this school, attendance is comprised of 97% students of color (52% Asian, 35% Black, 2% American Indian), 93% low-income students, and 53% English language learners. By targeting the school environment to address the chronic stressors and resulting behavioral dysregulation exhibited by students and building positive connections between the school and its surrounding community, this partnership sought to enhance student well-being and bolster student engagement.

Through this partnership, Extension CYFC project leaders leveraged the strengths of the school, families, and surrounding community to support student success. A key factor in this partnership’s successful implementation was buy-in from school staff, particularly the school’s principal. Project leaders worked closely with school administrators and staff to identify the largest areas of need that the collaboration should address. These discussions resulted in three initial signature efforts to create learning environments that would support the school’s students: creating a calming room in the school to help students regulate emotional or behavioral outbursts, creating a community garden on school grounds to support learning and access to healthy foods, and initiating wrap-around educational programming for teachers and families.

**Calming Room.** A calming room (also called a comfort or sensory room) is a space designed to soothe and relax, often designed with calming colors, relaxing music, and comfortable furniture (Cummings et al., 2010). Though specific evidence reporting the success of calming rooms in schools is more limited, some have reported anecdotal evidence of school-based calming rooms’
success in improving students’ behavioral regulation (Morois et al., 2016). Although they differ greatly in context, evidence from residential psychiatric facilities suggests that calming room spaces can support children and youth in learning to self-regulate emotions and behavior (Bobier et al., 2015; Warner et al., 2013). Other research demonstrates significant positive impacts of calming room spaces on children with developmental disabilities (Houghton et al., 1998).

For this project, the calming room was created as a therapeutic space for students to use with the support of a school social worker when they became agitated or emotionally dysregulated. Students could be directed to visit the room by a teacher or staff member, or in some cases, the students themselves asked to visit it if they felt themselves becoming agitated. Extension CYFC partnered with University of Minnesota College of Design faculty and students to design the calming room, taking a minimalist approach to the space. College of Design students facilitated the design and implementation of the calming room through a service-learning project. The design incorporated patterns and images on the walls to foster regulation, such as a labyrinth that students could trace with their hands and a stop/go design that would prompt students to monitor their emotional states. The room also included small cubbies to act as a safe space where students could retreat (see Figure 1).

Importantly, the calming room was not a space where children would be left alone or secluded: such seclusion or isolation rooms are harmful and are not recommended for use with students (LeBel et al., 2012). The calming room implemented at this school was specifically designed for students to use with the support of a trained adult, typically a school social worker. Thus, the calming room in this school afforded students a safe and calming space to work with school social workers individually, helping them to learn behavioral regulation strategies and to calm down when feeling agitated – practices regarded as critical in providing trauma-informed support to students (Chafouleas et al., 2016).

School Garden. School gardens are frequently used with the goal of enhancing or supplementing academic instruction (Graham et al., 2005). Previous work has found that experiential learning in school gardens is related to improvements in students’ academic achievement and consumption of healthy foods (Blair, 2009; Ratcliffe et al., 2011). Some work
also finds that time spent in garden spaces can support children’s social-emotional development, leading to increased cooperation and feelings of calm (Robinson & Zajicek, 2005; Swank & Shin, 2015). In adults, access to community gardens is related to increases in consumption of fruits and vegetables, social involvement, and social connectedness (Kingsley & Townsend, 2006; Litt et al., 2011). To that end, the school garden was developed both to be used by teachers and students during the school day as an enhancement to traditional classroom learning, as well as by students’ families and members of the surrounding community.

**Wrap-Around Educational Programming.** Wrap-around educational programming included efforts focused on supporting students and their families, such as cooking classes and free food distribution days. Efforts also included programming for the school’s teachers and staff, such as trainings on trauma-sensitive care.

Over time, the partnership flourished and spread in unpredictable ways, resulting in connections with local law enforcement to support more positive relations with the community and mental health providers to provide on-site mental health services to students. In implementing this program, project leaders employed a developmental approach due largely to the fluid nature of the work. Project leaders focused on three primary short-term program outcomes: 1) increasing student learning and engagement through use of the garden and calming room spaces, 2) increasing community engagement and positive perceptions of the school, and 3) increasing access to healthy foods (see Figure 2). For the results presented here, the evaluation team primarily focused on assessing the first outcome via teacher/staff perceptions.

**Figure 2. Original Program Logic Model of Project Plan, Outcomes, and Impacts**

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**Process Assumptions**

- Cultivating Communities – Through civic engagement and Cross-Cultural Engagement process, creating value, respect and facilitation of community leadership, ownership and decision-making power to ensure sustainability of change is necessary for project success

- Interdisciplinary Influence – Interdisciplinary approaches that influence multiple contexts (e.g., family, school, community) in which children live are necessary to successfully cultivate healthy bodies and minds.
Methods

The goal of the present evaluation was to assess teacher/staff perceptions of this project’s success. Based on the complex, multitiered efforts of this project, program evaluators employed a qualitative approach to assess teacher/staff perceptions of the project’s success. A qualitative approach was most appropriate for this evaluation for two primary reasons. First, given the size of the school, it would have been difficult to reach statistical power using quantitative methods. Second, project leaders were specifically interested in answering the evaluation questions using qualitative means, an important consideration in designing a program evaluation (Patton, 2008). Specific questions for this evaluation included:

1) To what extent and in what ways did teachers/staff use the garden and calming room?
2) What, if any, were perceived impacts on student’s ability to regulate their emotions and behavior?
3) What, if any, were perceived impacts on instructional time and student engagement?
4) What were teacher/staff perceptions of how the implementation of the garden impacted community members’ engagement with the school?
5) What barriers, if any, did teachers/staff experience in the use of the garden and calming room?
6) What recommendations did teachers/staff have for future practices?

It was expected that teachers would report increased student learning time due to the use of the two new spaces and increased positive engagement with parents and the community.

Participants

All teachers and staff (approximately 50 people) were invited to participate in brief interviews during the school day across three days. Interviewees were recruited via email invitation and were each offered a $10 Target gift card as compensation for their participation in the evaluation. A total of 20 school staff chose to complete interviews, 16 were female, and four were male. Interviewees included teachers (n = 11), behavioral staff, such as school social workers (n = 5), and other school staff, such as the school nurse, school librarian, and office staff (n = 4).

Data Collection

Semi-structured interviews were conducted with teachers and staff by the first two authors, with one serving as the primary interviewer and the other serving as the note-taker. In these interviews, teachers and staff were asked to reflect on how the calming room and school garden changed the school’s atmosphere and impacted students. Interview questions were developed by the evaluation team in collaboration with Extension CYFC program staff, with teachers/staff answering one set of questions related to the calming room and another related to the garden (see Table 1). Interviews lasted roughly 15 to 20 minutes in length and were conducted in-person.
during the school day. Interviews were audio-recorded and were subsequently transcribed by an independent service.

**Table 1. Teacher and Staff Interview Questions**

<table>
<thead>
<tr>
<th>Question Category</th>
<th>Interview Questions</th>
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| Calming Room       | 1. Were you able to use the calming room with students?  
|                    | a. IF YES: How often do students visit the calming room? What is the approximate duration of their visit? What do students typically do in the calming room? What were some of the challenges or barriers you encountered in using the calming room?  
|                    | b. IF NO: Do you have any plans to use the calming room in the future? What barriers have prevented you from using the calming room?  
|                    | 2. To what degree has the calming room been effective in addressing behavioral challenges faced by students? How has the use of the calming room affected how you intervene with students?  
|                    | 3. In what ways has using the calming room affected student engagement in classroom learning?  
|                    | a. For the individual using the calming room?  
|                    | b. For the other students in the class?  
|                    | 4. What, if any, behavioral changes or patterns have you witnessed in students who use the calming room?  
|                    | 5. What other factors aside from the calming room have affected how students are learning to regulate their emotions and behaviors?  
|                    | 6. What suggestions do you have for future calming room practices? |
| School Garden      | 1. Were you able to use the garden in your classroom lessons?  
|                    | a. IF YES: How did you integrate the garden into your classroom?  
|                    | b. IF NO: Do you have any plans to use the garden in the future? What barriers have prevented you from using the garden?  
|                    | 2. What were some of the successes you experienced while implementing the garden into your curriculum?  
|                    | 3. What were some of the challenges or barriers you encountered in using the garden?  
|                    | 4. How did your students respond to the idea of learning in the garden? What was the enthusiasm of students for gardens in general prior to using the garden and after using the garden?  
|                    | 5. Have you used the garden as a calming or therapeutic space with students when they are having emotional or behavioral issues?  
|                    | a. IF YES: To what extent has the garden been effective in addressing behavioral challenges faced by students? What, if any, behavioral changes or patterns have you witnessed in students who use the garden?  
|                    | 6. To what degree did you see parents, family members, or others from the community involved in the garden?  
|                    | 7. What suggestions do you have for future community garden projects in schools? |
Data Analysis

Detailed records of interviews were maintained through notes, audio recordings, and transcripts. Interview transcripts were then analyzed for themes using NVivo qualitative research software, using an iterative approach akin to consensual qualitative research (Hill et al., 2005). Two coders (the first and second author) established inter-rater reliability and strict coding procedures: coders first independently reviewed a subset of interviews (25% of the sample) for major themes that repeatedly arose across multiple interviews. Next, coders discussed these themes, established coding procedures, and reached a consensus for themes to be coded moving forward. Once coders reached consensus and agreed upon major themes for this subset of interviews, coders analyzed all the interview transcripts for the established themes.

Results

Interview themes were analyzed in two groups based on the subject area of the interview: the calming room or the garden. From the teacher/staff interviews, a total of seven themes were identified related to the calming room: (a) the role of staff in helping students calm themselves, (b) students returning to class, (c) improvements in the school environment, (d) students asking to go to the calming room, (e) improved emotional regulation, (f) increases in student safety, and (g) the importance of simplicity in the calming room itself. Overall, teachers and staff reported the calming room as useful and beneficial to supporting students, as well as the broader school community.

A total of 10 themes were identified related to the school garden: (a) student enthusiasm for the garden, (b) getting garden exposure or experience, (c) community involvement in the garden, (d) a need for more resources, (e) using the garden as a calming space, (f) the role of the garden in promoting respect, (g) teachers incorporating the garden into their curriculum, (h) lack of time as a barrier to using the garden more, (i) lack of knowledge as a barrier, and (j) students bringing existing knowledge to their garden experience. Broadly, teachers and staff reported that the school garden was a beneficial addition to the school environment.

Given this project’s focus on intervening with students across multiple levels (i.e., the students, school staff, school environment, and surrounding community), results are presented here within the framework of the socio-ecological model (Bronfenbrenner, 1979). This model demonstrates how child development is influenced by many levels of the environment (see Figure 3). Presenting evaluation results within this framework acknowledges both the multilevel nature of the intervention and the many contextual factors that worked together to impact and improve student well-being.
Figure 3. Qualitative Themes Arranged within Bronfenbrenner’s Ecological Systems Model

The individual level of themes relates to the students, particularly with regard to changes in their behavior and their engagement in learning. The interpersonal level incorporates the role that staff play in intervening with students. The organizational level describes changes to the school-wide environment as a result of the program. The community level touches on outcomes related to community engagement. Finally, though not a part of the ecological systems framework, themes that touch on challenges and barriers to success are discussed.

Student Behavior and Engagement in Learning

This first level of change contains those themes that relate to impacts on individual students. For the calming room, the space helped students get back to class sooner, regulate their emotions, and increase student safety. The calming room was a place that students asked to go when they needed help calming down, and its simplicity helped facilitate that process. In the garden, students showed great enthusiasm for the space, where they gained experience in the gardening process. The garden helped promote students’ respect for each other and was also used by some staff as a calming space.

Students Return to Class. Many teachers and staff reported that the use of the calming room supported students in getting back to class. After returning from the calming room, students were better regulated and ready to engage in the classroom. One teacher said, “I’ve noticed that kids
Creating Learning Environments to Support Students

“...seem to calm down and come back a little bit more relaxed and ready to work.” One staff member noted that having the calming room space also supported creating a calmer learning environment for other students, saying,

Having a space to take the students to in order for them to calm down…also helps the rest of the class so the learning can continue for the other 27 students….It’s been a lot better than trying to deal with it all in the classroom.

**Students Ask to Visit the Calming Room.** A marked aspect of the calming room is that students asked to go to the room when they felt they needed to use it. One staff member noted that “They know it’s a good space that they can go to, and some of them have even said, you know, ‘I need a break, can I go to that room?’ They know the calming room is there.” Another teacher said,

I know that students are being a little more proactive. They’re asking to go to the calming room if they kind of starting to get… a little agitated or escalating behavior, and they’re asking to go there before like: ‘I just need a break can I go there?’

**Improvements in Emotional Regulation.** Many teachers and staff described how the calming room was successful in its designed purpose to support students in their emotional regulation. One teacher said, “They like their quiet and the calmness of the room. That really settles them down a lot, and the fact that they’re away from everybody.” One staff member mentioned the importance of the new space in supporting emotional regulation. They said, “Before it was there... we would take them to a room and just calm them down, but... it didn’t have the same calming effect.”

**Increases in Student Safety.** Teachers and staff reported that the calming room space promoted student safety. They referred to the space itself as being physically safe for students. One teacher said, “Especially compared to the way it was before the renovation; it’s safer now….Because it’s a safer space, we don’t have to keep them safe once they’re in there.” Teachers and staff also reported that students considered the space safe for them to retreat to, with one teacher remarking, “It’s a safe space. The kids know it’s a safe space.” Another important finding is that because the students considered the calming room safe and asked to visit it, they required fewer physical escorts during the school day, also increasing student safety. One teacher said, “I’ve seen one student go from being restrained to [being] able to walk in there.”

**Simplicity Supports Students’ Regulation.** A few teachers and staff reflected on how the simplistic design of the calming room helped to support students’ regulation. The room’s simplistic design was inherent in its success because when a student is agitated, they need to “get away from the stimuli,” as one teacher said. One school staff member reported that “[students] try to find something to break and there’s nothing to break, which is great.” One staff member
described the relationship between emotional regulation and a simplistic space, saying, “Less is more, so the more things in the room, the more distractions, the more heightened alertness.”

**Student Enthusiasm for the Garden.** Many teachers and staff noted that students were excited about using the garden, engaged in the process, and eager to participate in gardening activities. Though some were hesitant initially, their interest grew once they were able to actively participate in the garden. One teacher said,

> When it started last year, there was some excitement, but not as much until after we actually got up there and started doing things. Like when we were talking about it in the classroom, it was sort of this idea for them. But once they realized they actually get to do something, their interest and enthusiasm just skyrocketed.

One teacher even noted that students specifically requested to participate in the garden: “They asked me. Like, I’m so busy teaching them, then getting sidetracked, and they’re like, ‘Can we do something with the garden?’”

**Student Gains in Garden Exposure or Experience.** The presence of the garden in the school allowed students to gain experience in gardening. One teacher remarked, “A lot of the kids knew about gardens, but they had never worked on one, partaken in one, seen one.” Teachers and staff described the variety of activities students have performed in the garden, including watering, planting, pulling weeds, and digging. One staff member said, “It was wonderful to see the students; they’re just such eager beavers...[They’re] digging dirt, picking it up, moving it, working together, seeing things grow.” Even younger students were able to gain garden exposure. One teacher commented, “Some of the kids were in preschool...and we were actually able to like pick some of the flowers and bring them in so we can have them in the classroom as well.”

**Garden as a Calming Space for Students.** In addition to the calming room, several staff mentioned using the garden as a calming or therapeutic space with students. One staff member noted, “When some students are escalated, I go, ‘Let’s go sit on the front steps’ and we’ll sit on the front steps, we’ll talk about the garden. We’ll walk through the garden; it is a nice calming activity.” The garden also acted as a space for children to relieve excess pent-up energy. One teacher said,

> We brought them out to the garden, and they’re able to lift dirt. I mean, that’s amazing what that does to release that stress, so they were moving dirt, they were lifting dirt....For the kids that were dysregulated to go out and to lift some of those heavy objects....Just to lift the shovel and lift the dirt or get that motion going, how much tension that relieved for them.
Others reported that students who struggled to focus in traditional classroom settings were able to effectively engage in the garden. One teacher said, “It’s really neat. I think it’s able to take kids who can’t really focus well...and then, depending on the teacher, they can bring them in smaller groups and really focus their attention.”

**Garden Promotes Respect.** A few teachers and staff noted that the garden elicited increases in cooperation, feelings of community, teamwork, peacefulness, and respect among students. One teacher reflected, “What I’ve also noticed is that the kids respect it. It’s not torn up. They don’t go through it; they don’t step on it. They literally walk around it. They’re paying attention to it.” Students also respected each other when they were in the garden. One teacher noted, “I’ve seen a lot of cooperation increases and students that cannot work together in the classroom can work together outside, so the different environment really helps there.”

**Pre-existing Knowledge.** A few teachers and staff noted that some students had pre-existing knowledge of or experience with gardens. One teacher commented, “One of our kids actually has a farm, so he has gone to his farm and taken pictures, and he’s very interested in what we’re doing here.” Some students were even able to share their knowledge with teachers and staff. One teacher said, “Some of our kids that have gardens, it was like, ‘Oh, we can show our staff members what to do.’”

**Role of Staff**

School staff played a key role in the success of the project in supporting student well-being, specifically in the use of the calming room. Beyond the room itself, staff played a key role in facilitating students’ regulation.

**Staff Help Calm.** Although the calming room had important aspects that supported students, school staff were an important component to helping students calm down. The calming room was an instrument that improved the way the staff were able to support students. One staff member said, “[The room] gets them back on task again. When they’re ready, we can tell, and then the student’s able to talk….We [are] able to process with them a little bit and see what’s going on.” Staff also supported students in staying calm outside of the calming room. One teacher noted, “The social workers in our building have been training the entire staff on trauma and how that affects students, and what [we] can help students do to self-regulate when they’re in the classroom.” Beyond just the implementation of the calming room, the role that staff played in working with students was a key component of the calming room’s success.

**School-Wide Environment**

The intervention resulted in positive changes to the school environment, specifically that it is calmer overall. Teachers also incorporated the garden into their class curriculum, indicating that the program enhanced learning opportunities for students.
**More Calm School Environment.** Teachers and staff reported that the calming room not only benefited the students who used it but also improved the overall school environment, even beyond the classroom. One teacher commented that they saw less “chaotic movement throughout the building.” Another teacher noted that “it seems to be a lot calmer in the building” now. One staff member reported a noticeable change in the overall school environment from previous years, saying,

> When I first started working in this building, there was a lot of chaotic movement… within the classrooms, between classrooms and the hallways, and there was a lot of running. A lot of distraction behavior happening in the hallways, especially in addition in the classrooms, and that’s really calmed down since then.

**Incorporated Garden into Curriculum.** A few teachers recounted how they incorporated the garden into their class’s curriculum, enhancing students’ learning opportunities. Teachers used the garden space with their students across several different content areas, making connections to science, math, and social studies. One teacher said, “I remember we did the writing like a scientist and observed – went out and observed all the plants and [wrote about] them.” The garden also facilitated teachers introducing new vocabulary to students. One teacher said, “The kids have learned some new vocabulary words around the context of gardening, but not just words that relate to gardening, but to other things in general.”

**Community Engagement**

This final level of change falls at the community level, noting the program’s success in engaging community members, parents, and guardians in the school garden.

**Community Involvement in the Garden.** The garden was utilized by community members, including parents of the school’s students and those who live in the surrounding area. Teachers and staff reported that community members picked produce to take home and also cared for the garden (e.g., watering, weeding). Several teachers and staff reported that students mentioned planning to visit the garden with their families during the summer months when school was not in session. One teacher said, “I’ve heard kids this year say, ‘I’m going to be here all summer. I’m going to come and check out the garden all summer.’” One staff member even noted that using the garden with parents helped facilitate conversations, despite language barriers, noting,

> The most difficult job that I had in this school is the language barrier because I can’t work with most of our families because of the language barrier, but when you’re in the garden, you don’t need words, and that’s been really a neat experience. They learn a word or two here and there, and a lot of them have been able to practice their English, and it’s been nice that way.
Notably, several teachers and staff commented that a select few community members, in particular, were most prominent in caring for the garden during the summer months. One teacher said, “Last year, there was one parent that was heavily involved in any kind of upkeep in maintaining the garden, watering, weeding, and those kinds of things.”

**Barriers and Challenges**

Several barriers and challenges were also noted throughout the course of the interviews with teachers and staff, particularly in relation to the school garden.

**Need for More Resources.** Several school staff and teachers mentioned a need for more resources in the garden itself. A desire for more space was a common request. One teacher commented that “Not everybody can be there at the same time. When you’ve got one bed for a grade level, and there’s four classes in a grade level, it’s a challenge. Everybody wants to plant, and not everybody can.” Concerns were also raised about the amount and quality of tools available. One teacher said, “More is better because sometimes we find ourselves like...do we have enough equipment? And then sometimes it’s the quality of the equipment, like our broom broke this morning. So, the kid that had the broom was like, ‘oh no, I can’t do anything.’”

**Time as a Barrier.** Several teachers and staff noted that a lack of time was a barrier in preventing their use of the garden. One teacher commented, “We have another month [left in the school year]....When you actually get something coming out of the ground, I mean, that’s got to be pretty exciting….I hope they can actually see some results. I wish they can, but I don’t know when everything comes up.”

**Knowledge as a Barrier.** A few teachers and staff also noted that their own lack of knowledge surrounding gardening acted as a barrier in using the garden, noting that having specific direction about what to do in the garden might help overcome this. One teacher said, “I’m not a gardener, so...planting and what not isn’t really my forte, and I didn’t know. I would really need some direction like ‘plant this here and here’s how to do it.’”

**Discussion**

Through this Extension-Community partnership, Extension CYFC project leaders created learning environments that teachers and staff described as supporting student well-being and increasing community connections to the school. Using a socio-ecological perspective (Bronfenbrenner, 1979), positive program outcomes were discovered at the individual, interpersonal, organizational, and community levels.

At the individual level, teachers and staff noted positive changes in individual students’ emotional regulation, enthusiasm for the garden, and time spent in the classroom. Akin to prior findings, teachers and staff reported the calming room as being successful in promoting
improved regulation in young people (Morois et al., 2016; Warner et al., 2013). Teachers and staff also stated that many students recognized the use of the calming room and asked to visit it when they felt themselves becoming agitated, which suggests that students learned to use the space as a strategy to help themselves calm down when they started to feel out of control. Teachers and staff also reported that the calming room supported students in getting back to class, which increased their own time in the classroom and potentially created a less disruptive learning environment for other students.

Teachers and staff successfully integrated the school garden into emotion regulation work for students, aligning with previous work demonstrating the success of gardening spaces on affect (Swank & Shin, 2015). Similarly, in alignment with previous research, teachers and staff reported that students demonstrated a higher level of cooperation with one another while working in the garden (Robinson & Zajicek, 2005). Students not only gained exposure to new topics and skills through the school garden, but as noted by teachers and staff, also learned cooperation, respect, and emotion regulation, providing positive school experiences which may act as protective factors against adversity (Liebenberg et al., 2016; Sharkey et al., 2008).

At the interpersonal level, teachers and staff played an integral role in supporting student emotional regulation both inside and outside the calming room. At the organizational and community levels, teachers and staff reported that the implementation of the calming room and school garden not only benefited individual students in their learning engagement and behavioral regulation but also improved the overall school environment and promoted community involvement.

These results demonstrate the multilevel positive impacts of this partnership. By taking a socio-ecological approach (Bronfenbrenner, 1979) and intervening with children across multiple levels, the program was successful in supporting positive school experiences for children and creating a more supportive school learning environment. Interviews with teachers and staff suggested that the partnership was broadly successful in supporting positive school experiences for children. Though this was not measured as part of the present study, previous research demonstrates that such experiences can promote resilience in children experiencing stress (Liebenberg et al., 2016; Sharkey et al., 2008). Interviews also suggested that the partnership supported other conditions that can serve as protective factors for children, such as more positive interactions with teachers and school staff (Baker, 2006; Johnson, 2008) and improved emotional and behavioral regulation (Masten, 2001, 2004; Zhang et al., 2019). Taken together, these findings suggest that the project was successful in supporting resilience in the school’s students.

Beyond the evaluation results presented above, there is also anecdotal evidence that the partnership supported students’ and families’ access to healthy foods. Apart from the teacher and staff, several key community partners were also interviewed. While not part of a formal analysis, their comments add insight into the impact of this partnership. One staff member involved in the
cooking classes that were offered with both parents and children noted, “[Parents] absolutely love it….They really like to be involved and to be engaged.” Similarly, a local police officer who helped with the garden during the summer noted that the garden provided community members with fresh vegetables and allowed her to make positive community connections. She said,

I’m one of the officers that reach out a lot to the community to get involved….I’d stop in [the garden] and pull some weeds every once in a while…[or to gather] kids and parents throughout the community, telling them about the garden, ‘cause they weren’t aware of this garden here, and bringing them here, either giving them a ride or meeting them here. I’d give them brown paper bags that I carry with me…and say, you know, ‘Pick the vegetables and the fruits. Just fill up your bag.’ And that’s what they did. I told them, ‘You’re welcome to come back throughout the summer and keep picking…’ It seems like every interaction I had was very beneficial.

The wrap-around programming and partnerships at the school have supported parents and guardians in becoming more involved in the school community.

**Implications**

The results described here have a number of implications. First, these results support the potential impact of school-based intervention efforts that address multiple aspects of child development. According to teacher and staff reports, this partnership was successful in supporting children’s well-being and increasing school-community connections. Other schools facing similar challenges may also benefit from creating trauma-sensitive learning spaces outside of the traditional classroom environment to meet diverse learning needs. Additionally, teachers and staff reported benefiting from opportunities to work with students in environments outside of the traditional classroom.

Future research should examine how the creation of physical spaces to promote other types of learning opportunities for students and teachers may shift the overall school climate in a way that can create more supportive learning environments. Addressing nonacademic aspects of well-being can remove barriers that may prevent children from succeeding academically, further supporting their resilience.

Second, this partnership sought to enact change across multiple levels to best support students, yielding perceived outcomes with students themselves, their teachers, the school environment, and the broader community. These broad impacts speak to the benefits of targeted, multilevel interventions that support students across multiple domains. Administrators and policymakers should direct resources toward similarly targeted, in-depth interventions to effect change across multiple levels.
Finally, the success of this partnership likely lies in large part with the fact that the areas of need were largely driven by the school, not by Extension CYFC. In implementing the calming room, garden, and wrap-around programming, the partnership addressed those areas of need identified by those most familiar with the school and its students, building upon the strengths of the school, families, and communities. Equipping the schools with the resources needed to meet the diverse needs of their students is critical in best supporting students.

**Limitations**

While the data presented here provide compelling evidence of the impact of this partnership from the perspective of teachers and staff, the perspectives of parents, students, and community members are largely lacking. Unfortunately, time and financial demands prevented the evaluation team from expanding formal data collection efforts beyond teachers and school staff. It should be noted that informal parent interviews were also conducted as part of the internal evaluation of this program; however, those data are not included here due to concerns over parents’ understanding of the questions (i.e., translators were used, and the evaluation team discovered that some questions were confusing or misphrased when translated) and the lower level of methodological rigor with which those interviews were conducted (i.e., without recording/formal transcription). In the future, similar efforts would benefit by formally collecting evaluation data with other groups of stakeholders (e.g., parents, community members, students themselves).

Additional limitations concern the reliability of the data collected from teachers and staff. Although a structured internal reliability process was followed with this data, strategies typically used to externally validate qualitative interviews were not used (e.g., triangulation of sources, member checks). A further benefit of collecting data from additional program stakeholders is that this would have provided the opportunity to triangulate findings across multiple sources. Future work would benefit from incorporating multiple data sources and member checks of coded themes in analyzing community-based program impacts.

**Conclusion**

This work describes the interplay between three main activities: (a) the creation of a calming room for students to regulate emotional or behavioral outbursts; (b) the creation of a community garden for use by students, staff, and the surrounding community; and (c) wrap-around educational programming for teaching staff and families. Results suggest that the activities carried out at the school with Extension CYFC created impacts across multiple levels. The partnership developed engaging, creative learning environments that supported student well-being to reduce barriers to academic success. As one school administrator noted, “Between the trauma work, [the mental health services], and the grant, it’s just been really powerful for our kids.”
References


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Extension’s Potential to Respond to Suburban Food Insecurity

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Between 2000 and 2013, the suburbs in the country’s largest metro areas saw their low-income population grow twice as fast as primary urban cities. In 2018, the Pew Research Center reported that poverty increased more sharply in suburbs than in urban and rural counties (Parker et al., 2018). The rise in suburban poverty coincides with an increasing prevalence of food insecurity. The social and physical environments of suburban communities pose unique food-related challenges for the suburban poor. Awareness and stigmatization of food assistance programs, lack of transportation options, access to food pantries, and limited community gardens are examples of challenges that many families face. With a growing suburban population facing poverty and food insecurity, Extension is positioned to address the complex problem of suburban food insecurity through community-engaged research and education involving the areas of family and consumer sciences, community development, agriculture and natural resources, and 4-H youth development.

Keywords: suburban food access, food deserts, food oasis, food access, community development, nutrition education, community capital framework, community engagement

Introduction

Suburban food insecurity and healthy food access continue to be a growing problem in America. However, there is little in the way of published reports, case studies, or peer-reviewed manuscripts that describe best practices for Extension to address the issue in the suburban context. More broadly, there remains a dearth of work published in Extension about suburban communities. Many published manuscripts dichotomize Extension work in terms of urban and rural. This practice and pedagogy article suggests ideas on how Extension can adapt best practices from rural and urban communities to address the unique issue of suburban food insecurity. More details on terms such as urban, suburban, and rural can be found in Appendix A.

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The Rise of Poverty and Food Insecurity in the Overshadowed Suburbs

To explore Extension’s interdisciplinary engagement and educational role in food insecurity, it is essential to begin with an understanding of how the suburbs emerged and what is unique about these communities. Following World War II, suburban sprawl has characterized the growth patterns of many cities (Hanlon, 2010; Nelson, 1992). Reasons for suburbanization include an effort to address a severe post-war housing shortage, concerns about Black in-migration to midwestern and western central cities, school desegregation, home values, fear of racial integration, and the desire for more open space (Clotfelter, 2001; Nelson, 1992; Rothstein, 2017). Over time, suburban communities have become incredibly diverse, with suburbs close to central cities resembling urban-like communities, while suburbs located further from the city center seem more rural in nature, and still others fall somewhere in between these two extremes (Hanlon et al., 2006; Logan & Molotch, 2007; Lucy & Phillips, 1996). There are wealthy homogeneous suburbs and poorer diverse suburbs across this spectrum and across geographies. One defining feature of suburbs is expansion facilitated by transportation innovations. Early suburbs were known as streetcar suburbs, made accessible by the invention of the streetcar. Suburbs built after WWII were dependent upon the automobile and highway construction as they grew (Hanlon et al., 2006; Phelps & Wood, 2011).

Suburbs are characterized by their jurisdictional authority as independent municipalities taking the form of townships, villages, and small cities that are constantly competing for residents and tax base in metropolitan space (Hanlon et al., 2006; Sweeney & Hanlon, 2017). Despite the metropolitan competition, suburbs are regionally interdependent—their existence made possible by the presence of a central city and neighboring suburbs (Galster et al., 2001). The out-migration from urban and suburban areas has led to the development of communities that are neither fully suburban nor fully rural, otherwise referred to as the exurbs (Nelson, 1992). Exurban spaces are also characterized by their regional interdependence (Davis, & Nelson, 1994).

While for decades both suburban and exurban communities experienced substantial population growth in part due to out-migration from the urban core, the beginning of the housing crisis in 2008 marked a critical time period in which this trend slowed down, stalled, and over time migration to suburbia and exurbsi ultimately reversed (Frey, 2017). From 2010 until 2014, the population in urban centers grew faster than suburban communities, leaving many new suburban developments partially incomplete, with homes in foreclosure and individuals at-risk of or experiencing poverty (Frey, 2017). Recently, migration to suburban communities has accelerated once more. In 2016, suburban counties experienced greater population growth than their urban counterparts in 72 out of 82 metropolitan areas with a population of 100,000 or more, most notably in the outermost exurban counties (Frey, 2017).

Immigrants have, since the 1980s, been bypassing central cities for suburban spaces, and this trend continues (Alba et al., 1999). According to the Brookings Institute, between 2000-2013,
76% of the growth in the foreign-born population who reside in the nation’s largest metropolitan areas occurred in the suburbs (Wilson & Svajlenka, 2014). Enhanced employment opportunities, safe neighborhoods, stronger schools, and affordable housing served as some of the most salient reasons for this suburban growth (Wilson & Svajlenka, 2014).

How suburban municipalities are faring today, whether they are declining or maintaining their elite status, is very much dependent upon their position within metropolitan space, their relative age or that of their housing stock, and numerous other local factors (Hanlon, 2008, 2010). For example, according to the U.S. Census Bureau, the Cincinnati, Ohio, bedroom counties of Clermont and Warren claimed the second-highest median household incomes in Ohio (U.S. Census Bureau, 2018).

However, not every suburb or exurb is as economically advantaged as the Cincinnati region profile. Murphy (2010) identified three distinct classifications of declining suburbs in Pennsylvania based on economic, political, geographic, and social factors. Some suburbs, coined symbiotic suburbs (Murphy, 2010, p. 552–555), reside on the outer rings of large cities; however, due to various social determinants, they were recognized as poor and troubled economically. Others, described by Murphy as skeletal suburbs (Murphy, 2010, p. 555–560), were characterized as once-thriving locations of industry that were closed, consequently eliminating jobs and hindering economic well-being. The third type of suburb described fits the example in Cincinnati noted above and was referred to as the overshadowed suburb (Murphy, 2010, p. 560–564) known and described as a relatively affluent community with pockets of poverty. Clearly, suburbs are not merely extensions of their close urban neighbors, rather individual communities experiencing unique geographical, economic, and social disparities.

In the case of the overshadowed suburbs of Cincinnati, aggregate data can hide pockets of need in an otherwise affluent community. This is in part due to how America has traditionally built suburban communities. Suburban communities have historically been zoned predominantly single-family. When multifamily housing has been built, it is often segregated in small pockets, resulting in pocketed poverty in suburban spaces. For example, when analyzed from a macro perspective, or at the township or county level, incidences of poverty are a relatively small phenomenon in suburbia and exurbia. However, according to the Brookings Institute, 70.2% of all individuals living below 200% of the poverty level lived in the collective Cincinnati suburbs in the Cincinnati-Ohio-Kentucky-Indiana area, as compared to 29.8% in the central city (Kneebone & Garr, 2010). Nationally, in 2013, 30.8 million people in the nation’s largest metro areas lived below the poverty line, which translated into a poverty rate of 15%, more than three percentage points higher than the 2000 metro area poverty rate of 11.6%. More than two-thirds of the increase in major metro poverty from 2000 to 2013 occurred in suburbs. Within these regions, the suburban poor population grew more than twice as fast as the urban poor population between 2000 and 2013 (66% versus 30%). By 2013, the suburbs accounted for 56% of the poor population in the nation’s largest metro areas, with the number of poor in suburbs outstripping...
the urban poor by 3.5 million (Kneebone & Holmes, 2014). The growth of poverty in suburban spaces is driven by changing public preferences toward density, mixed-use, and walkability, as well as the attractiveness of urban pre-World War II housing stocks that have made urban spaces more attractive (Dunham-Jones, 2005; Kelbaugh, 1997; Leinberger, 2011).

As suburban housing stocks age, they deteriorate much more quickly than pre-WWII housing stocks that were custom built using techniques that have stood the test of time. Meanwhile, post-WWII housing stocks are often manufactured or mass-produced, using building techniques that do not last as long. Many of these homes built in the 20 years after WWII were built exceptionally fast to meet a severe housing shortage, these Levittown-style subdivision homes are typically small and have declined over time (Hanlon, 2010; Lee & Leigh, 2007; Madden, 2003; Mikelbank, 2006; Puentes & Warren, 2006). As housing stocks decline, people with means tend to leave these older homes for newer homes with more amenities, often further from the city; this process is known as filtering (Bear & Williamson, 1988; Bier, 2001). Filtering is one process that is responsible for outer-ring suburban and exurban growth and for urban and inner-ring suburban neighborhood decline (Bier, 2001; Cooke & Marchant, 2006).

While demographic data points can cast a shadow to mitigate the recognition of significant need in suburban communities, factors such as unemployment and underemployment, resident migration, and changes to local and federal policy (e.g., state reductions in the local government fund) expose an uncomfortable truth—the potential for hunger has no zip code. Aligning with the growth and severity of suburban poverty is suburban food insecurity. Food security is a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance, social justice, and democratic decision-making (Hamm & Bellows, 2003; United States Department of Agriculture, 2009). Research suggests that suburbanites were equally as likely to be food insecure as urbanites, and more likely to be food insecure than rural residents after accounting for income and education (Coleman-Jensen, 2012). These statistics are supported by increased demand in suburban areas for food pantries and food assistance programs, especially by those who have never used charitable and social services (Allard & Roth, 2010; Andrews, 2010).

**Food Access Challenges in the Suburbs**

Food deserts, especially as conceptualized in urban or rural forms, tend to have few high-quality grocery stores, and due to lack of competition, are relatively pricey and offer few healthy food options (Mulangu & Clark, 2012). Some reports suggest that suburban and exurban communities are considered food oases that tend to be healthier and more food secure.

According to the County Health Rankings, Warren and Clermont Counties rank as some of the healthiest in Ohio (ranked 7th and 38th out of 88 counties) in health behaviors, healthy environments, and health outcomes (University of Wisconsin Population Health Institute, 2015). In a news article published in the *Cincinnati Enquirer*, Hamilton County lost four grocery stores,
whereas surrounding suburban and exurban counties such as Butler and Clermont opened 11 new grocery stores within a 10-year timeframe (Baverman, 2010).

However, researchers have suggested that affluent exurban and suburban communities have unique healthy food access and food insecurity problems that have been largely ignored. For example, although Cincinnati-Dayton exurban and suburban counties have gained many full-service grocery stores, access is dependent on one’s ability to own and operate an automobile, the availability of safe sidewalks, and/or access to public transportation, the latter of which can vary greatly in the traditional suburban context (Kneebone & Garr, 2010). One study noted that suburban food pantry users have less access to public transportation (Garasky et al., 2004).

The social, cultural, and political environments of suburban and exurban communities also pose unique challenges to those that are food insecure. The Brookings Institute reported that those living in exurban or suburban communities showed lower food stamp usage rates than their city counterparts. In cities, 39.2% of families used food stamps as compared to 32% in the suburbs (Kneebone & Garr, 2010). Suburban food pantry users have also reported that they are less likely to participate in food assistance programs or be aware of community gardens (Garasky et al., 2004). The authors offered few explanations for these findings, but speculations include lack of knowledge, stigmatization associated with using public assistance, difficulties accessing food stamp offices (often located in urban centers), and transportation problems. Suburban social service offices often have larger areas to cover, especially when considering exurban communities (Murphy & Wallace, 2010). Suburban communities have fewer food pantries per resident than principal cities, and food-insecure individuals were often less aware of them (Coleman-Jensen, 2012). The findings suggest that public policy and entities such as local government, Extension, food banks, religious affiliations, social service agencies need to address the unique needs of food-insecure families in suburbia.

To address issues of food insecurity, suburban nonprofits and social service agencies often have unique challenges procuring resources through grants and fundraising. In the case of overshadowed suburbs, aggregate demographic data pose a challenge and often serve as a hurdle toward justifying the prevalence of food insecurity among this demographic (Murphy, 2010).

**How Can Extension Respond?**

How is Extension responding to suburban food insecurity? Although there are many successful case studies of Extension responding to urban food insecurity through SNAP-Ed and Expanded Food and Nutrition Education Program (EFNEP) programming or facilitating community gardens and food policy councils (Blaine et al., 2010), there are few peer-reviewed manuscripts on the topic of how Extension has or could mitigate issues of suburban food insecurity. In fact, there is a lack of literature about suburban food insecurity and related social services in general. Since Extension is connected with land-grant universities, it has a mission to engage with communities and offer research-based education programs in the areas of family and consumer
sciences, community development, 4-H youth development, and agriculture and natural resources. As such, Extension can provide leadership, engaged research, and programming focused on the unique and often overlooked challenges of food insecurity.

How can the Extension disciplines address the unique challenges many suburban food-insecure families face? In addition to the following examples, Table 1 includes a summary of rural, urban, and suburban distinctions focused on community characteristics, Extension work context, food insecurity indicators, and Extension practice to address food insecurity and healthy food access.

### Table 1. Rural, Urban, and Suburban Perspectives

<table>
<thead>
<tr>
<th>Topic</th>
<th>Rural</th>
<th>Urban</th>
<th>Suburban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Characteristics</td>
<td>Low population density, often homogeneous ethically. High poverty rates.</td>
<td>Large population density, diverse ethnically. Diverse economically.</td>
<td>Mix of urban and rural and usually comprised of townships and small cities. Growing population density, growing ethnic populations. Generally wealthier, but pockets of poverty.</td>
</tr>
<tr>
<td>Extension Work Context</td>
<td>Small offices, traditional, ag/4-H focused.</td>
<td>Large staff, multidisciplinary programs.</td>
<td>Traditional, large staff, moving toward multidisciplinary programs.</td>
</tr>
<tr>
<td>Food Insecurity Indicators</td>
<td>High rates. Limited grocery store options, transportation challenges. High prices. More stigma.</td>
<td>High rates. Many areas have limited grocery stores. Many transportation options. Less stigma. More awareness of social service agencies.</td>
<td>Low rates, but collectively large raw numbers. Lack of awareness. Many grocery stores but transportation challenges. Stigma prevalent. Social services often not centrally located in communities or low awareness of these services.</td>
</tr>
<tr>
<td>Extension practices to address food insecurity and healthy food access</td>
<td>Bring partners together through food councils, coalitions. Address transportation challenges and stigma.</td>
<td>Bring partners together through food councils, coalitions to address land zoning. Provide multi-ethnic programming.</td>
<td>Bring partners together through food councils and coalitions. Use community capital framework. Consider nutrition needs of growing ethnic groups participating in food pantries, gardens, and nutrition education. Make use of green space to build community gardens. Address stigma. Involve 4-H youth, especially teens, in programs.</td>
</tr>
</tbody>
</table>
Community Development

Given the innate wealth of expertise held by Extension practitioners, the organization is primed and positioned to address issues of food security where the genesis of the issue resides at the intersection of politics, policy, and place. Food insecure communities within a suburban township may not have the ability or knowledge as to how to strategically voice their concerns and needs to local governments or those with influence. Extension professionals could facilitate an engagement process using the Community Capital Framework (Flora, 2009). The Community Capital Framework identifies seven types of capital: natural, cultural, human, social, political, financial, and built. Beyond identifying the capital resources and their role, this approach focuses on the interaction amongst these seven types of capital and how they could enhance one another. Examples of these efforts could include

- The creation of a local food policy council could influence zoning laws that affect where and what food is grown. Extension has been involved in creating rural and urban food policy councils as a means to extend research, providing a sustainable group to continue improving local food systems.
- City- and state-owned spaces, typically featuring trees and flowers, beautifying the landscape and welcoming visitors and residents. These spaces could be transformed to feed by planting edible plants and creating collaboration outlined in the Community Capital Framework (McLain et al., 2012).
- Extension-led community gardens that might enhance natural capital and financial capital within suburban communities. Preliminary research suggests that property values are increased by high-quality community gardens in urban areas (Voicu & Been, 2008).

Family and Consumer Sciences

Nutrition education, provided by SNAP-Ed or EFNEP program assistants, could be beneficial in terms of helping low-income suburban and exurban residents understand how to enhance their grocery shopping experience, eat healthier, and stretch their food dollar. EFNEP, in particular, has been successful in terms of recruiting large classes and also changing knowledge and self-reported nutrition behavior within urban areas (Dollahite et al., 2003). Urban best practices related to nutrition education might be applied by program assistants working within growing suburban communities as well. Examples might include providing culturally appropriate recipes for growing ethnic audiences or helping participants navigate unique food access challenges. Residents without cars who bike, walk, or get rides to the grocery store, given limited transportation opportunities, may have to consider the weight of the food they choose as well as shelf life.

Nutrition education programs could help suburban residents understand how to make nutritious and economical choices in the context of their situations. However, the documented stigma associated with the moniker “SNAP” could carry over to the SNAP-Ed nutrition education
program, negatively impacting participation rates (Garasky et al., 2004; Kneebone & Garr, 2010). Marketing and advertising SNAP-ED or EFNEP in suburban communities need to be mindful of the cultural climate. In addition to engaging residents in SNAP-Ed and EFNEP education, family and consumer science educators are well-positioned to partner with agriculture and natural resources Extension professionals to co-facilitate workshops on home food production and preservation. Furthermore, for suburban residents who may experience chronic illness, programs such as Dining with Diabetes can serve as a catalyst for the organic development of community, fostering social support among a vulnerable population, hence sharing knowledge regarding opportunities to gain access to and effectively utilize food resources for improved health.

Agriculture and Natural Resources

A study of food pantry users in rural, urban, and suburban Iowa indicated suburban residents viewed community gardens as less available in their communities (Garasky et al., 2004). Extension has helped establish successful community gardens in low-income urban communities (Hallberg, 2009). Could these same types of programs be successful in the suburbs or exurbs? Suburban communities most likely have more green space and healthier soil than urban contexts, given the lower population density. In many communities, there is unused land available for gardens or production sites of small-scale agriculture. Furthermore, agriculture and natural resources Extension educators can leverage pre-existing curricula such as the Master Urban Farmer and Master Gardener programs to teach suburban home food production techniques, hence equipping residents with knowledge to produce their own food and, thus, mitigating incidences of food insecurity. In addition, participants must complete volunteer service to become certified. In suburban communities, there could potentially be an abundant number of opportunities to facilitate or lead community garden projects if land and human and financial capital are available. Extension volunteer program models could be more cost-effective and relevant to local needs within suburban areas (Yarber et al., 2015).

Social justice is an aspect of food security that is often overlooked. This is especially true within the realm of agriculture and natural resources, with a history of policies discriminating against minorities (Reynolds et al., 1990). Expansion of agriculture programs needs to consider the entire population of suburban areas, avoiding the data trap, emphasizing cultivating equity. Agricultural and natural resources could also help gardeners grow ethnically and culturally appropriate foods, especially if they are first-generation immigrants. Ethnic community gardens have been successful in urban areas in terms of production of conventional and ethnic herbs and vegetables and hosting various social, cultural, and educational events (Saldivar-Tanaka, 2004). Similar gardens could be encouraged and facilitated in suburban or exurban, considering their changing demographics.
Youth Development

Youth who live in food-insecure households have unique experiences, especially within suburban schools where food assistance programs might be stigmatized (Bhatia et al., 2011; Mirtcheva & Powell, 2009). Although stigmatization may exist, schools participating in the National School Lunch Program serve as effective gateways to address hunger, health, and nutrition (Gundersen et al., 2012). Schools participating in the National School Lunch Program in Ohio are mandated to have school wellness policies, typically created by a school wellness committee made up of teachers, parents, and community wellness professionals. Allowing youth to serve on these committees could introduce policy and community organizing, empowering them by letting their voices and opinions be heard. Student involvement in policies that change the food landscape in schools could reduce stigma and increase participation. Backpack programs coordinated by organizations such as the Mid-Ohio Foodbank have been deemed a successful means to incorporate healthy foods in food-insecure households in a nonthreatening way (Feeding America, 2016). 4-H Extension professionals and 4-H youth could partner with said organizations and supplement backpack food donations with health messaging, recipes, and/or resources that highlight local opportunities to acquire sustained access to nutritious foods.

Teenagers also experience unique circumstances concerning food insecurity. Most programs target elementary-aged children or adults, causing teens to fall through the cracks of our food assistance system (Seligman et al., 2015; Waxman et al., 2016). Furthermore, many older youth might also be responsible for shopping and meal preparation due to parents of low-income families working two or more jobs to make ends meet (Waxman et al., 2016). Youth development programs, such as 4-H, are well-positioned to offer skills such as food preparation and nutrition to teens. In addition to nutrition, 4-H promotes leadership, public speaking, and citizenship skills, which might cultivate food citizens capable of improving their health and well-being and their food environments (Write & Nault, 2013). The suburbs and exurbs have the advantage of being on the fringe of rural areas, where strong 4-H programs could recruit food-insecure youth.

Examples of Extension Partnering with Organizations to Address Suburban Food Insecurity

Addressing issues of suburban food insecurity is undoubtedly a growing concern across Ohio. Franklin County, the largest and most affluent county in the state, is also not immune to this challenge. Westerville, an affluent suburb within the county, enjoys a healthy median family income of $110,686; however, the symptoms of poverty hiding in plain sight remain. The suburb has established the Westerville Area Resource Ministry (WARM) with the mission to join the fight against hunger as well as provide short-term financial, educational, and employment assistance and spiritual support to help residents accomplish a sense of self-sufficiency.
Expanded Food and Nutrition Program (EFNEP) has been a key partner with WARM, providing classes on nutrition, food budgeting, and food safety to residents.

In suburban West Chester within Butler County, Ohio, many low-income families experience food insecurity and barriers to accessing healthy foods. OSU Extension, along with community partners, employed HEALth MAPPS (John et al., 2017), where residents participated as researchers using participatory photo mapping to explore the lived experiences of food-insecure residents in this affluent community. The researchers documented many physical barriers to accessing healthy food, including a lack of sidewalks, dangerous traffic at intersections, and crowded parking lots that make it unsafe to walk for food items. The participatory researchers also recognized the need to purchase fruits and vegetables but noted financial challenges as a barrier to doing so. The findings of HEALth MAPPS were used to raise awareness and engage the larger community around the topics of food insecurity and healthy food access.

**Conclusion**

Food insecurity is a complex problem that should be addressed at many levels. Unique aspects of food insecurity in suburban communities include transportation barriers, stigmatization of food assistance programs, lack of awareness of food assistance or community programs, and perhaps underappreciation of the extent of the problem. The presented examples illustrate the value of engaging all Extension disciplines in community engagement projects such as food policy councils or community gardens. Programs such as Master Gardeners employing the train-the-volunteer model could increase the number of community gardens. Community development skills are needed to address various community capitals, such as addressing the lack of public transportation to and from gardens, grocery stores in suburban communities, or connecting with social services. Family and consumer sciences could help suburbanites understand how to make healthy choices in the context of environments or learn food preservation skills to extend the availability of garden harvest. Finally, involving youth in every aspect of building a sustainable and healthy food system will help create a culture shift, one of which healthy food is a priority. Innovative programs that address suburban food insecurity could involve elements of all Extension disciplines through reworking the wheel but not reinventing it.

Multidisciplinary programming might be more prevalent in urban Extension programs, but possibly not as much in suburban, where silo approaches to 4-H or agriculture still might be the cultural norm. However, as rural counties become more suburban, urban best practices need to be considered and applied, especially when addressing the complex and often overlooked problem of suburban food insecurity. Striking a balance between maintaining strong traditional programs yet innovating and adapting urban best-practices should carefully be considered in strategic planning at the local, state, and national levels.
Finally, during the 2020 pandemic and beyond, Extension could successfully engage with suburban audiences using online platforms. Internet and digital access are greater in the suburbs than in rural and urban environments (Perrin, 2020).

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[https://www.urban.org/sites/default/files/publication/98011/exploring_teen_food_insecurity_in_portland_oregon.pdf](https://www.urban.org/sites/default/files/publication/98011/exploring_teen_food_insecurity_in_portland_oregon.pdf)


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Appendix A

Demographic Terms and Definitions

Metropolitan Statistical Area – county-based geographic clusters that correspond to densely settled areas with economic/cultural ties and consists of one or more counties that contain a city of 50,000 or more inhabitants, or contain a Census Bureau-defined urbanized area (UA) and have a total population of at least 100,000

Principal city – a city that contains the primary population and economic center of a metropolitan statistical area OR a core area with a large population nucleus and adjacent communities that are highly integrated economically or socially with the core

Suburban – an area located outside a principal city and inside an urbanized area

Exurban – a region or settlement that lies outside a city and usually beyond its suburbs

Primary city – the leading city in a region that serves as a center of governments and economic systems and is disproportionately larger than any others in the urban hierarchy

Central city – a city that constitutes the densely populated center of a metropolitan area
Integrating Policies, Systems, and Environments (PSE) Work into FCS Extension Programming: Lessons Learned from A Multi-State Training

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Public health efforts have emphasized changes to policies, systems, and environments (PSEs) to improve health behaviors for individuals and communities. Extension has increasingly emphasized these approaches, particularly for the work of Family and Consumer Sciences (FCS) agents. In part, this emphasis on PSEs in Extension has been driven by SNAP-Ed and other federally-funded initiatives, such as the Centers for Disease Control and Prevention (CDC) High Obesity Programs (HOPs). However, broader adoption and implementation of PSEs at the local level has lagged in some states for various reasons. These include limited understanding about PSE interventions and how this work fits with a traditional Extension emphasis on direct education. To address these issues, faculty and specialists from two states receiving funding from the first round of CDC HOPs planned, designed, and implemented a face-to-face, multi-state, multi-institution PSE training for FCS agents. This paper describes the multi-state training effort and barriers to PSE work in Extension, offers considerations based on lessons learned, and presents recommendations for others seeking to provide similar training.

Keywords: PSE, training, multi-state, public health approaches, environmental change, in-service, Extension health

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Introduction

For more than fifty years, public health professionals have advocated for health education and health promotion efforts addressing the social determinants of health (Green & Allegrante, 2011). Terminology used in discussing such work has evolved over the decades, with these public health approaches most recently referred to within the Cooperative Extension System as PSE change (PSEs), meaning changes to policies, systems, and environments. Shifts in funding priorities by the Centers for Disease Control and Prevention (CDC), Robert Wood Johnson Foundation (RWJF), and others emphasize the importance of including PSEs in outreach work (Kegler et al., 2015; Savoie-Roskos et al., 2018). The research and evidence base linking PSEs with improved health outcomes continues to grow (Bunnell et al., 2012; Stevens et al., 2017). In addition, as discussed by Kegler and colleagues (2015), numerous practice-proven PSE interventions exist that, if sustained, show promise for long-term health benefits within communities.

Two public health models have been used to explain the value of PSEs: the Health Impact Pyramid developed by Frieden (2010) and the Social Ecological Model (SEM) first described by Bronfenbrenner (1979) as Ecological Systems Theory and later applied to health promotion (Golden et al., 2015; Green et al., 1996; McLeroy et al., 1988). The Health Impact Pyramid posits that health interventions are most beneficial when they have the potential to impact large numbers of people through policy changes and by influencing environmental factors connected to where and how people live. The SEM describes complex, multi-level influences on health behavior and the interplay between individuals, groups, and the social environment. Interventions grounded within the SEM should target changes at different levels (i.e., individual, interpersonal, community, organization) to effectively reinforce and support healthy behaviors.

Within the Extension System, PSE work has been driven largely by changes in funding for federal nutrition education programs. For over 100 years, Extension Family and Consumer Sciences (FCS) agents have focused on delivering direct education to individuals and families in community settings. From the start of home demonstration work, educators acted as change agents, providing accessible, translated research findings tailored to meet the specific needs of people in their communities (Kelsey & Hearne, 1949; Reisbeck & Reynolds, 1976). These efforts were expanded through federally-funded nutrition education programs starting with the Expanded Food and Nutrition Education Program (EFNEP) in the 1960s and the current Supplemental Nutrition Assistance Program Education (SNAP-Ed), named the Food Stamp Nutrition Education Program when it started in 1981 (Landers, 2007). Both EFNEP and SNAP-Ed were designed to meet the nutrition education needs of low-income adults and children. With the passage of the Healthy, Hunger-Free Kids Act in 2010, Extension programs funded by SNAP-Ed were mandated to provide comprehensive nutrition education programs, including direct education and PSE interventions. Additional support for PSE implementation in SNAP-Ed and EFNEP was provided through USDA-funded Regional Nutrition Education and Obesity
Prevention Centers of Excellence (RNECE). The RNECE Policy, Systems and Environmental Change Center (RNECE-PSE) focused specifically on integrating effective PSE approaches in EFNEP and SNAP-Ed. The RNECE-PSE provided training and technical assistance for SNAP-Ed implementing agencies, including Extension, on how to provide quality PSE interventions for low-income audiences (RNECE, 2019).

PSE work within the Extension system reaches beyond EFNEP and SNAP-Ed programming. Starting in 2014, CDC funded Extension work specifically to address PSEs in counties with adult obesity rates over 40% through the High Obesity Program (HOP). These cooperative agreements aimed to address environmental factors impacting healthy food and physical activity access (Muriel et al., 2020). Additional efforts to address social determinants of health and integrate PSEs with direct education emerged from a partnership between the Cooperative Extension System and National 4-H Council with support from RWJF. This multi-year project, titled the Well Connected Communities Initiative, aimed to cultivate wellness and foster a culture of health in communities through PSE change (Well Connected Communities, 2021).

National trends, both in funding and focus, indicate a greater need for integration of PSEs in Extension outreach at the local level. While the SEM evolved from human sciences, FCS undergraduate experiences do not uniformly provide exposure to the theoretical underpinnings for FCS or expose students to the systems-level thinking required for successful PSE implementation (American Association of Family & Consumer Sciences, 2019). Despite this challenge, Extension FCS is uniquely positioned to facilitate PSE change in communities (Buys & Rennekamp, 2020). FCS agents often have more flexibility to work with diverse audiences and community groups, in contrast to other locally-based agencies that may have restrictions based on program type or funding source.

In this paper, we describe a multi-state endeavor to provide PSE training for FCS agents. After discussing existing challenges to broad adoption of Extension PSE work at the county-level, we describe the multi-state training planning process and outline training content and format. Based on our experiences and review of documents and participant feedback, we present lessons learned and recommendations.

Where We Are Now

National emphasis on PSE approaches in Extension has remained constant for the last decade. Widespread adoption of such approaches might be expected after continued diffusion (Rogers, 2003). While some programmatic support of these upstream approaches is occurring at varying levels (e.g., state or local), widespread, scaled adoption appears to be lagging (Walsh et al., 2018). This lag may be due, in part, to a lack of contextualized training for Extension settings and audiences, and the absence of examples demonstrating the fit of PSE within county-based Extension programs, especially when funding is limited or nonexistent (Smathers et al., 2018). Because PSE approaches originated in public health, differences in terminology and a long-
Integrating PSE Work

standing emphasis on direct education may impede adoption of these interventions by Extension agents. Increased understanding of how PSE aligns with current work of Extension professionals is needed for PSE change to become valued and institutionalized within the Extension system.

Extension outreach has traditionally occurred through educational programs delivered directly to local residents in face-to-face settings. Supports available to Extension professionals (e.g., training and curriculum) are typically focused on direct education (i.e., convey content to increase knowledge or change behavior at the individual level) and do not normally link educational programs to complementary policy, systems, and environmental changes. This gap in support may reinforce a perceived discontinuity between what agents view as their job responsibilities and their understanding (or lack thereof) of how PSE connects with work in their county. However, some Extension professionals may already be doing work to influence change beyond the individual level (i.e., PSEs) but do not recognize it as such. This lack of recognition is understandable given limited attention to contextualizing PSE work to match common county-level efforts. PSE successes often showcase examples of work occurring in population-dense urban settings. Real-world examples of successful policy and environmental change or enhancements in rural areas are needed, including rural areas with high poverty and few resources.

Several challenges need to be addressed for PSE work to flourish in Extension. First, PSE approaches, as they are typically presented, may appear to conflict with or minimize the importance of traditional Extension program delivery methods. The Extension System has historically focused on direct education to accomplish the missions of FCS. A shift away from direct education, or new methods that appear to diminish the importance of one-on-one connections in Extension work, may be perceived as a threat to core values in this field. PSE change can emerge from direct education, and direct education paired with PSE has been successful (Hardison-Moody et al., 2020). A direct education “plus PSE” approach may overcome this challenge; PSE opportunities related to educational content can be included as an enrichment or enhancement activity.

Second, PSE work is inherently process-oriented and time-intensive, requiring knowledge and skills not typically acquired in undergraduate programs. Compounding this barrier is a lack of infrastructure and expertise at state levels to provide subject-matter support for full integration of PSEs in county plans of work. At the local level, PSE change is collaborative; it cannot and should not be done by Extension alone. Similarly, fully supporting PSE work requires collaboration across programmatic and organizational silos within Extension, a challenge frequently lamented at various levels within the Extension system. Collectively, Extension is well-equipped to support many of the common PSE initiatives implemented to build healthier communities. For example, colleagues with expertise in agriculture are essential partners for projects related to the local food environment. Although many states lack capacity and expertise in community development, it is a critical and often sought-after area for FCS collaboration
within Extension. There are few models for how these collaborations function, particularly regarding implementing PSE change. FCS collaborations with demonstrated success have included Master Gardeners and agricultural Extension agents (Stluka et al., 2019).

Third, the typical 12-month planning and evaluation cycle is an ill fit for PSE work. PSE change takes time, and impacts generally are not measurable for several years. Given a traditional focus on direct education, few evaluation tools or indicators exist, particularly those that align with state reporting systems. Existing reporting structures and timelines may be a disincentive. Extension agents may be discouraged from pursuing this type of work if they perceive negative consequences related to unfavorable annual performance appraisals when direct contacts and individual behavior change are valued over sustained environmental changes that improve health behavior for large groups of people.

Despite these barriers, adoption of PSE approaches in Extension work is necessary to make the difference needed to improve health in the next 100 years (Braun et al., 2014). Training, technical assistance, and ongoing support are needed as FCS efforts expand into working with communities on PSE interventions. Effective training considers context and makes necessary adaptations for the target audience (Gagnon et al., 2015). Plans for PSE training must consider the organizational and community context within which local Extension professionals operate. There is a dearth of tailored training from within the Extension system (Hill et al., n.d.; University of Minnesota Extension, n.d.), and cost is a barrier for wide access to what is available. The burden of developing and providing training, considering both rural and urban settings and allowing room for local tailoring of solutions, often rests with individual states.

**Training Planning and Development**

Researchers from the University of Tennessee, Tennessee State University, and the University of Kentucky collaborated to develop a two-day training program to equip Extension professionals in Tennessee and Kentucky to implement PSE strategies in their communities. These institutions partnered to disseminate knowledge gained and lessons learned from the CDC-funded High Obesity Programs (HOPs) in both states. HOPs were implemented in a handful of rural counties with adult obesity rates over 40%. Extension personnel in these counties had access to a range of customized training and technical assistance related to healthy food and physical activity access provided by nationally-recognized experts and organizations.

The PSE Academy described here expanded HOP best practices and information to counties and Extension FCS professionals not involved with the cooperative agreements.

The overall goal of the multi-state training was for Extension professionals to learn how to make PSE changes in rural communities to support healthy eating and active living. Learning objectives for the PSE Academy were to (a) describe the importance of PSE changes to foster healthier rural communities, (b) identify strategies to incorporate PSE work into county plans of
work, (c) understand how agents used PSE approaches in the CDC 1416 HOPs, and (d) identify barriers and facilitators for PSE work in their county/community.

Collaboration and planning for this multi-state training started in Fall 2018; the PSE Academy was conducted in mid-July 2019. A single in-person planning meeting occurred in October 2018, which included a brainstorming session for the training and establishing training goals and objectives. All subsequent planning took place by conference call, video conference, or email. Nine virtual planning meetings were held to develop programmatic content, delegate tasks, and work through training logistics. Materials and documents were shared between planning committee members through cloud-based services freely available to the universities. Fourteen people served on the planning committee, including four Extension administrators across the two states. Ten committee members were associated with HOP projects in their respective states. More than 60% of committee members had some portion of their time dedicated to SNAP-Ed or EFNEP.

The dates, timing, and location of the two-day training were strategically planned to best coincide with large events and year-end reporting required of Extension professionals in both states. Major factors in determining the location included access via interstate highways, affordable hotel rates with a large enough room block, availability of hotel conference space, and restaurant/entertainment options for participants traveling farther distances.

Each state utilized a different system for inviting or recruiting Extension professionals to attend the training. In Tennessee, regional program leaders provided names of agents who would be a good fit to attend based on previous knowledge and experiences. In Kentucky, the training was promoted to all Extension agents within FCS Extension and area agents within the Nutrition Education Program through existing email distribution lists. Extension professionals previously engaged with the CDC HOPs were directly invited to attend.

A $100 registration fee was charged to cover meeting space and facilities costs, travel expenses for speakers, training materials, and meals (breakfast, snacks, and lunch). Participants were responsible for lodging and dinner expenses. To reduce lodging expenses for participants, the PSE Academy agenda included a full first day; Day 2 was a half day. Registration and travel costs for participants were reimbursed by each university. Additional costs associated with speaker travel and lodging not covered by registration fees collected were paid by the universities. Existing programmatic materials (e.g., workbooks, resources) related to PSE implementation were provided by each university for participant use.

At registration, participants completed a brief survey to gauge interest in PSE work and discern the setting/audience of interest for the participant and their future community-based PSE work. This information was used to make seating assignments to ensure tables included individuals with similar interests and a combination of Extension professionals from both states. This
allowed participants to learn from individuals in a different state with a similar project. Both states had approximately equal representation among the 57 PSE Academy participants.

**Training Content**

Due to the collaborative nature of the planning process and programmatic content, the PSE Academy agenda included 20 presenters from the participating Land-grant Universities, some of whom presented jointly. These individuals provided subject-matter expertise as well as participant technical assistance throughout the training.

The two-day training began with a unifying message grounding policy, system, and environmental work within Extension education, providing a platform for building on common ground within FCS programming. Eight agents representing both states shared personal experiences and success stories of working with PSE-centered projects within their communities. During the second half of the day, state-level Extension faculty and staff shared lessons learned from previously funded grant projects and cooperative agreements, including barriers, facilitators, and considerations for evaluation. The first day concluded with a keynote speaker sharing a motivating and impactful PSE story.

Day Two of the PSE Academy focused entirely on utilizing resources provided to develop a plan of action for PSE strategies within the participant’s community (Kennedy et al., 2020). After brainstorming and individual reflection, participants worked at their tables with others who had similarly focused projects to identify barriers, challenges, and facilitators for implementing their individual action plans. Finally, action plans were shared by participants among the larger group. Movement and networking breaks were intermittently placed within the training agenda. Extension administrators from both states provided closing remarks to reinforce the importance of community-level PSE work. See Appendix for PSE Academy agenda.

Pre- and post-questionnaires completed by PSE Academy participants indicated statistically significant positive changes in confidence to implement PSE strategies and overcome barriers. Participants also reported increased understanding of PSE strategies and increased confidence in communicating the impact of PSE change (Sneed et al., 2020). Follow-up is needed to gauge the continuance of increased confidence reported by participants. Long-term data are needed to determine if PSE Academy participation contributed to sustained change in communities represented.

**Implications for Extension**

PSE implementation does not align with the traditional learning models used in Extension (e.g., Bloom’s taxonomy, Dale’s Cone of Experience), making identification of effective training approaches important for the continuation of PSE work in Extension settings. Currently, no best practices are available for Extension training or programs, although some exist for SNAP-Ed in
rural communities (Haynes-Maslow et al., 2018). The PSE Academy is one example of a PSE training approach. This paper offers initial insight into considerations for training Extension educators to implement and evaluate PSE strategies. However, continued work is needed to identify best practices for training, implementing, and evaluating PSE strategies within Extension programming and structures.

We reviewed PSE Academy planning meeting notes and summaries of quantitative and qualitative data collected from participants to identify training components that seemed most beneficial and areas for improvement. This, together with group reflection activities in PSE Academy de-brief meetings and observations of the author team, contributed to the following lessons learned and recommendations for others planning to conduct similar training.

**Lessons Learned**

- **Plan for purposeful participant seating.** The registration process included a survey about interests to inform participant seating charts during the PSE Academy. Seating assignments grouped participants according to their expressed interests. We also considered audience, setting, and state in group assignments to ensure a diverse mix of expertise and approaches at each table. Given the positive feedback received on the group activities facilitated, this strategy seemed effective at purposely providing participants with an opportunity to learn from individuals from another state with similar projects and needs.

- **Evaluate the need for extraneous components.** Existing Extension programs and initiatives that include PSE strategies were set-up on tables as booths for participants to browse during breaks and networking opportunities. Sign-up sheets were provided for participants to complete if interested in more information about a specific program. Unfortunately, there was a lack of engagement with the booths, and more structured time for browsing may have been beneficial.

- **Think through traffic flow.** The PSE Academy food environment modeled healthy eating options by providing lower-fat items and small nudges that could be implemented as community-based PSE strategies. For example, during lunch, the salad bar layout placed higher-fat toppings (e.g., shredded cheese) and dressings towards the end of the buffet. This created a bottleneck toward the end of the buffet line as participants tried to make selections in a smaller area. Additionally, given the separation of salad bar components on the buffet line, hotel event staff had trouble keeping track of set-up at two separate stations. Other states may plan to improve the layout, develop menus with healthy regional and cultural food preferences in mind, and improve communication with the hotel staff about layout needs.
Recommendations

- **Make participant readiness a pre-requisite for attendance.** Our intent was to bring together a group of educators demonstrating readiness to implement PSE strategies but needing extra training to help them begin. We believe this resulted in more robust discussion around PSE strategies. A synergy among participants might have been absent if participants had a low readiness or awareness of the value of PSE strategies. It may be beneficial to gauge participant knowledge or interest prior to training.

- **Streamline communication and information sharing.** The logistics of a multi-state, multi-institution collaborative event may require particular attention. We assigned two lead communicators, one from each state, and used two distinct state registration systems, which may have resulted in miscommunication with participants about training details. We recommend developing a joint communication plan and sharing the full agenda with participants in advance, so they feel prepared and confident about their participation.

- **Know the venue.** A walk audit was planned to provide participants with applied learning experiences. However, there were no sidewalks in and around the hotel venue. Since PSE Academy faculty were unfamiliar with the venue, the activity had to be eliminated from the agenda. We recommend investigating the PSE Academy venue in advance so that all agenda items can be completed and participants can gain the desired applied learning experiences.

- **Plan for sustained educator support.** Although our project did not involve post-Academy coaching for educator groups, we suggest this as a possible strategy to sustain knowledge gained, facilitate local implementation of PSE strategies, and support goal attainment related to educators’ action plan. Continued coaching would allow for creative problem solving, accountability for goals, and strengthened relationships among multi-state educators and the faculty.

- **Develop an evaluation plan.** Changes in participant knowledge/understanding and confidence to implement PSEs and overcome barriers were collected using a questionnaire completed before training adjourned. Results are reported elsewhere (Sneed et al., 2020). While this type of information is helpful, a thorough and deliberate evaluation plan guided by a logic model would deepen understanding of how training connects with outcomes. An evaluation plan might include participant baseline and follow-up data on both process and outcomes. Use of a logic model may help agents visualize how PSE change is part of a larger strategy to improve health in communities.
Where We Need to Be

For many decades, it has been assumed that teaching people about what will make them healthy leads to adopting recommended health behaviors. This is a flawed assumption. Knowledge alone is not enough to change behavior. People need healthy options to make healthy choices. Integrating PSE work in Extension can result in sustained impacts from direct education efforts. PSE change can be achieved apart from educational programs, but presenting PSEs as separate from direct education may negatively impact agent adoption. PSEs independent of Extension education may lack the context needed for adoption by those working at the county level. Linking Extension’s PSE work to existing or new educational programs may be key to increasing adoption. PSEs can be seen as an enhancement to direct education instead of a stand-alone activity or add-on for Extension professionals. This enhancement occurs when programs are developed or existing programs are revised to intentionally integrate options for PSE change connected to educational content. This is direct education “plus PSE.”

Conclusion

Supporting Extension professionals in adopting PSE strategies is key to empowering them to meet the critical health needs facing their communities, now and in the future. The Extension System is shifting to integrate public health approaches, creating a challenge for some in reconciling these strategies with more traditional ideas about the work of Extension in communities. The SEM provides a framework for applying multi-level strategies, including direct education paired with PSE. The Health Impact Pyramid acknowledges the need for an array of intervention levels to improve health. The PSE Academy discussed in this article provides an example of one promising method for supporting agents while also providing opportunities for peer learning. This type of training allows Extension agents to learn from each other, see examples of what works in “real world” settings, and increase understanding of how PSE implementation can fit within the framework of Extension programming. Lessons learned from planning and conducting the PSE Academy can inform other states seeking to offer training of a similar style.

References


Well Connected Communities. (2021). *Well Connected Communities*. [https://wellconnectedcommunities.org](https://wellconnectedcommunities.org)

*Lisa T. Washburn*, DrPH, is an Associate Professor and Community Health Specialist at the University of Tennessee Extension. Dr. Washburn’s work focuses on community-based approaches to increase access to physical activity and other healthy lifestyle behaviors, enhancing traditional Extension education methods with public health strategies, and training and engagement of health and wellness volunteers.

*Heather Norman-Burgdorf*, PhD, is an Assistant Professor and Extension Specialist for Nutrition and Health at the University of Kentucky. Dr. Norman’s research and Extension programming utilize policy, system, and environmental strategies to increase access to nutritious foods and enhance local food environments in rural communities.

*Karen L. Franck*, PhD, is an Extension Assistant Professor at the University of Tennessee. Dr. Franck’s work focuses on program evaluation, and she is the lead evaluator for several nutrition education and community health grants and projects.

*Lauren E. Kennedy*, PhD, is an Extension Specialist in community behavioral health at Michigan State University. Dr. Kennedy works to build Extension’s capacity to improve health equity in communities by contextualizing individual health behaviors and outcomes within broader socioecological systems and structures.

*Christopher T. Sneed*, PhD, is an Assistant Professor and Consumer Economics Specialist at the University of Tennessee Extension. Dr. Sneed’s research and Extension work focus on local foods, food marketing, food resource management and access, and family resource management.
Appendix

PSE Academy Agenda

**Day 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Welcome</td>
</tr>
<tr>
<td>9:05 AM</td>
<td>PSEs: Possible Solutions for Everyone</td>
</tr>
<tr>
<td>9:25 AM</td>
<td>Building on Common Ground</td>
</tr>
<tr>
<td>9:40 AM</td>
<td>PSE Tales from Tennessee FCS Agents</td>
</tr>
<tr>
<td>10:10 AM</td>
<td>BREAK</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>PSE Tales from Kentucky FCS Agents</td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Lessons Learned from CDC 1416 in Three States</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>LUNCH – Look at the Food Environment</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Walkability Assessment Activity</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Barriers and Facilitators to PSE Extension Work Discussion</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Ready, Set, Go--Getting Started with PSEs</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>“Glory Unveiled: The Story of Rice Park”</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Adjourn</td>
</tr>
</tbody>
</table>

**Day 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Welcome, Reflections on Day 1</td>
</tr>
<tr>
<td>9:10 AM</td>
<td>PSE Planning - Silent and Group Activity</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>BREAK</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>PSE Planning - Groups Share with All</td>
</tr>
<tr>
<td>11:30 AM</td>
<td>Storytime: A Two-State Tale</td>
</tr>
<tr>
<td>Noon</td>
<td>Taking the Message Home and Digging In</td>
</tr>
<tr>
<td></td>
<td>PSE Academy Evaluation – please provide your feedback</td>
</tr>
<tr>
<td></td>
<td>Adjourn</td>
</tr>
</tbody>
</table>
Identifying the 10 Most-Pressing Issues Facing Local Food Systems in the Southern Region

Quisto Settle  
_Oklahoma State University_  

Carley C. Morrison  
_Mississippi State University_  

Liz Felter  
_UF/IFAS Extension_  

Jennifer Taylor  
_Florida Agricultural and Mechanical University_  

This study was conducted to develop a list of the most-pressing issues facing local food systems in the Southern Region. A Delphi study that surveyed key informants across the Southern Region of the U.S. was used to develop the list. In the first round, informants were asked to list the three most-pressing issues. In the second round, they ranked all of the issues, which was used to create the top 10 issues: profitability, support for local food systems, education of the public, farming practices/knowledge, marketing and promotion, accessibility and affordability, lack of farms and farmers, regulations and certifications, infrastructure, and coordination of efforts. In the third round, informants indicated their level of agreement with the inclusion of the issues in the top 10. A key element of this list of issues is their interconnected nature and understanding that addressing one issue will likely affect others, indicating the need for a systems-based approach for addressing local foods. How these issues present will be different by location, so a one-size-fits-all model of local food systems is unlikely to be successful.

_Keywords_: Delphi study, local food systems, southern region, issue identification

Introduction

While interest in local food has grown (Palma et al., 2013) and efforts are ongoing across the southern region of the United States, there is a need for collaboration that looks beyond isolated approaches (Lamie et al., 2013), including between land-grant universities (Palma et al., 2013). In 2016, a Southern Extension and Research group (SERA 47: Strengthening the Southern Region Extension and Research System to Support Local & Regional Foods Needs and Priorities) was begun with the goal of strengthening local food systems in the Southern Region (Southern Rural Development Center, n.d.), which is in line with similar objectives to increase...
Extension participation in local food systems (Thomson et al., 2011). Addressing local food systems requires long-term changes and a systems-wide approach (Dunning et al., 2012).

SERA 47 sought to minimize duplication among efforts in the region by gathering Extension and research personnel to engage in a more holistic approach. In addition to personnel across the region, the project also includes individuals with expertise in a variety of areas, such as horticulture, sociology, and economics, because multiple disciplines have expertise in local food systems (Benson et al., 2012; Palma et al., 2013; Thomson et al., 2011). SERA 47 was developed to help accomplish cross-disciplinary collaboration in the region. SERA 47 consists of participants from 16 universities in 13 states and territories.

SERA 47 began with five working groups, one for each of the following objectives: identify the most-pressing issues facing local food systems in the southern region, create learning communities of land-grant professionals, design a resource repository, strengthen impact measurement of local food, and identify successful models of local food systems (Southern Rural Development Center, n.d.). The groups were chosen during a brainstorming session at SERA 47’s meeting. SERA 47 was supported by AFRI funding from 2016 to 2017, but no additional grant funding has supported the group’s efforts since then.

We were a part of the issue identification group, which completed its work first to help inform the activities of the remaining groups. Past research has identified priorities but typically only for individual states (Benson et al., 2012; Thomson et al., 2011). We used the Delphi method to develop a priority list of issues facing local food systems in the southern region.

**Methods**

The Delphi method involves trying to get experts in a particular subject area to reach consensus about an issue (Okoli & Pawlowski, 2004). Through successive survey rounds, the experts identify and then reach agreement about issues. While a normal survey allows respondents to identify the issues each believes are important, the Delphi method’s multiple rounds allow respondents to see how others respond and then provide feedback on all issues (Okoli & Pawlowski, 2004). This group decision-making process provides higher-quality results compared to providing an average of individual responses of an expert panel (Okoli & Pawlowski, 2004). Members of the identifying issues working group acted as a review panel to ensure that the questions in the study’s three rounds of Delphi questionnaires were usable for participants and met the needs of SERA 47.

SERA 47 members from 13 land-grant universities provided a list of key informants with knowledge about local food in their respective states/territories (Tables 1, 2, and 3). Land-grant universities are uniquely placed to provide expertise for local food issues because they are connected to producers, consumers, and other local agencies (Palma et al., 2013). SERA 47 members were instructed to list anyone who could provide information about local food systems.
Because the members were housed in universities, this likely led to a list of key informants who were mostly university affiliated.

The largest groups of the key informants on the initial list represented Extension faculty (35.6%), county agents/faculty (21.0%), and research faculty (12.4%). However, other informants from nonprofit organizations and one informant from a state department of agriculture were included. The initial list consisted of 22.7% representatives from 1890 land-grant institutions. The only states and territories in the southern region not represented in the study were the U.S. Virgin Islands, which does not have a representative engaged in SERA 47, and Kentucky, which did not have a SERA 47 member provide a list of key informants. SERA 47 members could list as many or as few individuals as they preferred, which varied from 1 to 29 across states/territories, though the typical number was between 15 and 20 per state/territory.

<table>
<thead>
<tr>
<th>Table 1. Number of Respondents by Round by State/Territory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial List</strong></td>
</tr>
<tr>
<td>Alabama (AL)</td>
</tr>
<tr>
<td>Arkansas (AR)</td>
</tr>
<tr>
<td>Florida (FL)</td>
</tr>
<tr>
<td>Georgia (GA)</td>
</tr>
<tr>
<td>Louisiana (LA)</td>
</tr>
<tr>
<td>Mississippi (MS)</td>
</tr>
<tr>
<td>North Carolina (NC)</td>
</tr>
<tr>
<td>Oklahoma (OK)</td>
</tr>
<tr>
<td>Puerto Rico (PR)</td>
</tr>
<tr>
<td>South Carolina (SC)</td>
</tr>
<tr>
<td>Tennessee (TN)</td>
</tr>
<tr>
<td>Texas (TX)</td>
</tr>
<tr>
<td>Virginia (VA)</td>
</tr>
</tbody>
</table>

Note. There were no participants included from Kentucky and the U.S. Virgin Islands on the initial list. Only respondents from round 1 were asked to complete rounds 2 and 3.

<table>
<thead>
<tr>
<th>Table 2. Round 1 Respondents’ Demographics by State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1890 Ext. County Res. Other/ Spec., Admin. Prog. Reg.</strong></td>
</tr>
<tr>
<td>Job</td>
</tr>
<tr>
<td>AR</td>
</tr>
<tr>
<td>FL</td>
</tr>
<tr>
<td>GA</td>
</tr>
<tr>
<td>LA</td>
</tr>
<tr>
<td>MS</td>
</tr>
<tr>
<td>NC</td>
</tr>
<tr>
<td>OK</td>
</tr>
<tr>
<td>PR</td>
</tr>
<tr>
<td>SC</td>
</tr>
<tr>
<td>TN</td>
</tr>
<tr>
<td>TX</td>
</tr>
<tr>
<td>VA</td>
</tr>
</tbody>
</table>

*aRespondents from 1890 institutions are included in the job category areas.*
Table 3. Number of Respondents by Round by Demographic Characteristic

<table>
<thead>
<tr>
<th>Category</th>
<th>Initial List</th>
<th>Round 1</th>
<th>Round 2</th>
<th>Round 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890 Institution*</td>
<td>53</td>
<td>10 (18.9%)</td>
<td>5 (50.0%)</td>
<td>5 (50.0%)</td>
</tr>
<tr>
<td>Extension faculty</td>
<td>83</td>
<td>34 (41.0%)</td>
<td>22 (64.7%)</td>
<td>26 (76.5%)</td>
</tr>
<tr>
<td>County agents/faculty</td>
<td>49</td>
<td>11 (22.4%)</td>
<td>3 (27.3%)</td>
<td>4 (36.4%)</td>
</tr>
<tr>
<td>Research faculty</td>
<td>29</td>
<td>9 (31.0%)</td>
<td>5 (55.6%)</td>
<td>3 (33.3%)</td>
</tr>
<tr>
<td>Other/not listed</td>
<td>25</td>
<td>4 (16.0%)</td>
<td>1 (25.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Other faculty</td>
<td>21</td>
<td>6 (28.6%)</td>
<td>3 (50.0%)</td>
<td>3 (50.0%)</td>
</tr>
<tr>
<td>Administrator</td>
<td>16</td>
<td>5 (31.3%)</td>
<td>4 (80.0%)</td>
<td>5 (100.0%)</td>
</tr>
<tr>
<td>Specialist, non-faculty</td>
<td>10</td>
<td>3 (30.0%)</td>
<td>1 (33.3%)</td>
<td>2 (66.7%)</td>
</tr>
<tr>
<td>Program assistant</td>
<td>8</td>
<td>1 (12.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Regional coordinator</td>
<td>5</td>
<td>3 (60.0%)</td>
<td>2 (66.7%)</td>
<td>1 (33.3%)</td>
</tr>
</tbody>
</table>

Note. Only respondents from round 1 were asked to complete rounds 2 and 3.

*Respondents from 1890 institutions are included in the job category areas.

There were 233 individuals on the list of key informants who were asked to participate in the study through Qualtrics. The first round consisted of an initial email soliciting participation, followed by three reminders. There were 76 responses, for a 32.6% response rate, in the first round. Various factors may have reduced the response rate. The project’s short timeline meant it was not feasible to increase the number of contacts with respondents (Dillman et al., 2014; Keeney et al., 2006). Although there is no minimum number of respondents required to conduct a Delphi, the small size of the sample could have created bias in the responses (Mullen, 2003).

In the first round, participants were asked to identify what they believed to be the three most-pressing issues facing local food systems in the southern region in an open-ended question. The definition of local was left to the discretion of the respondents. All responses were sorted into categories to avoid duplication of issues in subsequent rounds of the Delphi. Two coders, who were members of this author team, analyzed the first round of responses separately using Glaser’s (1965) constant comparative method before meeting to discuss the categories. After the meeting, some categories were merged (Schmidt, 1997). In the event of disagreement, the conservative option was to keep items as separate categories to avoid erroneously merging categories. Some individual items were not sorted into categories because the responses were vague or unclear. Some individual responses fit into multiple categories because of the open-ended nature of the question.

Only those who participated in the first round were sent the second round of the Delphi to target those already engaged in the project. There was an initial email, which was followed by two reminders. There were 40 second-round responses (52.6%). The participants ranked all 13 issue categories from 1 = most-pressing issue to 13 = least-pressing issue. To calculate results, the highest-ranked issue received one point, the second-highest issue received two points, and so on all the way to 13. While the tentative goal was to find the ten most-pressing issues, the final decision was made based on the large gulf between ranking scores for the 10th- and 11th-ranked issues.
items. In the second round, respondents could provide open-ended feedback, leading to the alteration of two items’ descriptions, which is explained in the results in Table 4.

In the third round, those who participated in the first round were asked to identify their level of agreement (1 = disagree to 5 = agree) for the issues that were included in the top 10 list, as well as their level of agreement (1 = disagree to 5 = agree) for the three issues excluded from the list. This served to confirm agreement with the developed list. The decision was made to send the third-round questionnaire to all first-round respondents instead of only second-round respondents to avoid attrition issues and to give those engaged in the study’s first round (but not the second round) the opportunity to provide feedback on the items. An initial invitation was sent, followed by two reminder emails. There were 42 responses in the third round (55.3%). Thirty-four individuals (44.7%) completed both the second and third rounds.

Results

Round 1

In the first round, respondents listed what they believed to be the most-pressing issues facing local food systems in the southern region. There were 13 categories (Table 4), which were then used for the second round of the study.

Table 4. Categories Developed from First Round Responses and Their Descriptions (N = 76)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility/affordability</td>
<td>Refers to community members not being able to access and/or afford local food</td>
</tr>
<tr>
<td>Aging out of current farmers and lack of new farmers</td>
<td>Refers specifically to the problem of current farmers getting older and the difficulty for new farmers finding affordable land and breaking into the market</td>
</tr>
<tr>
<td>Coordination of efforts</td>
<td>Refers to need for all parties involved to be working together and sharing information</td>
</tr>
<tr>
<td>Education of the public</td>
<td>Refers to need for public knowledge of local food production and how to make healthy food decisions</td>
</tr>
<tr>
<td>Farming practices/knowledge</td>
<td>Refers to the need to educate farmers in production of food and business management of their farms</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Refers to lacking facilities, equipment, technology, and distribution channels</td>
</tr>
<tr>
<td>Lack of farms and farmers</td>
<td>Refers to supply problems caused by a lack of local production due to insufficient farms, farm labor, and diversity of farm production</td>
</tr>
<tr>
<td>Lifestyle/culture</td>
<td>Refers to patterns of lifestyle choices that lead to poor health outcomes, including buying cheap, unhealthy food</td>
</tr>
<tr>
<td>Marketing and promotion</td>
<td>Refers to need for improvements in how local foods are marketed and promoted to local consumers</td>
</tr>
</tbody>
</table>
Identifying the 10 Most-Pressing Issues

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>Refers to factors affecting farmers financially, which includes production costs, difficulty for smaller producers to be successful, and competition from lower-cost products</td>
</tr>
<tr>
<td>Regulations</td>
<td>Refers to regulations in food safety, production, and selling in communities</td>
</tr>
<tr>
<td>Support for local food systems</td>
<td>Refers to need for policy, financial, and research support for local food systems, including farmers and community members</td>
</tr>
<tr>
<td>Weather and environment</td>
<td>Refers to impacts from weather and environmental issues</td>
</tr>
</tbody>
</table>

*aAfter round 2, description was changed to “Refers to factors affecting all farmers financially, including production costs and competition from lower-cost products.”

*bAfter round 2, category was changed to regulations and certifications, and description was changed to “Refers to regulations in food safety, production, and selling in communities, as well as third-party certifications.”

Round 2

For the second round, respondents ranked all categories from the first round (Table 5). Because there were 40 respondents for the second round, the lowest number of points an issue could receive was 40, while the highest number of points possible was 520. Profitability was the highest-ranked issue (181 points), followed by support for local food systems (238 points). The tentative goal of SERA 47 was to determine the 10 most-pressing issues, though the final number was not decided until the ranking list was developed. As it happened, the second-largest difference between ranking scores of any items was between the 10th- and 11th-ranked issues, creating a natural divide between items included and excluded on the final list. The three issues excluded from the top 10 were aging out of current and lack of new farmers (333 points), lifestyle/culture (352 points), and weather and environment (377 points). The second round’s questionnaire had an open-ended item to allow respondents to provide additional feedback, which led to the rewording of two items’ descriptions. The description of profitability in the third round was rephrased to de-emphasize focus on operation size to be more inclusive of all operations. Regulations was changed to regulations and certifications, and the description was revised to include certifications.

Table 5. Results of Ranking Issues (n = 40) in Second Round

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Points</th>
<th>Pt difference*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Profitability</td>
<td>4.53 (3.19)</td>
<td>181</td>
<td></td>
</tr>
<tr>
<td>2. Support for local food systems</td>
<td>5.95 (3.91)</td>
<td>238</td>
<td>57</td>
</tr>
<tr>
<td>3. Education of the public</td>
<td>6.45 (3.71)</td>
<td>258</td>
<td>20</td>
</tr>
<tr>
<td>4. Farming practices/knowledge</td>
<td>6.48 (3.38)</td>
<td>259</td>
<td>1</td>
</tr>
<tr>
<td>5. Marketing and promotion</td>
<td>6.53 (3.04)</td>
<td>261</td>
<td>2</td>
</tr>
<tr>
<td>6. Accessibility/affordability</td>
<td>6.58 (3.36)</td>
<td>263</td>
<td>2</td>
</tr>
<tr>
<td>7. Lack of farms and farmers</td>
<td>6.60 (3.84)</td>
<td>264</td>
<td>1</td>
</tr>
<tr>
<td>8. Regulations</td>
<td>6.75 (3.87)</td>
<td>270</td>
<td>6</td>
</tr>
<tr>
<td>9. Infrastructure</td>
<td>7.03 (3.79)</td>
<td>281</td>
<td>11</td>
</tr>
<tr>
<td>10. Coordination of efforts</td>
<td>7.58 (3.62)</td>
<td>303</td>
<td>22</td>
</tr>
</tbody>
</table>
Identifying the 10 Most-Pressing Issues

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Points</th>
<th>Pt difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Aging out of current and lack of new farmers</td>
<td>8.33 (4.00)</td>
<td>333</td>
<td>30</td>
</tr>
<tr>
<td>12. Lifestyle/culture</td>
<td>8.80 (3.66)</td>
<td>352</td>
<td>19</td>
</tr>
<tr>
<td>13. Weather and environment</td>
<td>9.43 (2.96)</td>
<td>377</td>
<td>15</td>
</tr>
</tbody>
</table>

Note. 1 = highest priority, 13 = lowest priority. A lower mean and point total indicate the issue was ranked as a higher priority.

*Point difference between the issue and the next highest-ranked issue.

Round 3

In the third round, respondents indicated the levels at which they agreed or disagreed with the inclusion or exclusion of items in the top 10 list (Tables 6 and 7). The majority of respondents agreed with the inclusion of each item on the top 10 list. The highest levels of agreement were for marketing and promotion ($M = 4.69$, $SD = 0.56$), profitability ($M = 4.67$, $SD = 0.90$), and support for local food systems ($M = 4.61$, $SD = 0.74$). Table 6 shows the levels of agreement with the items excluded from the top 10 list. More respondents agreed than disagreed with the exclusion of those items.

Table 6. Respondents’ Level of Agreement with Inclusion of Issues in the Top 10 (n = 42) in the Third Round

<table>
<thead>
<tr>
<th>Item</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing and promotion</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>31</td>
<td>4.69 (0.56)</td>
</tr>
<tr>
<td>Profitability</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>34</td>
<td>4.67 (0.90)</td>
</tr>
<tr>
<td>Support for local food systems</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>29</td>
<td>4.61 (0.74)</td>
</tr>
<tr>
<td>Farming practices/knowledge</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>18</td>
<td>22</td>
<td>4.45 (0.67)</td>
</tr>
<tr>
<td>Accessibility and affordability</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>27</td>
<td>4.40 (0.94)</td>
</tr>
<tr>
<td>Education of the public</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>15</td>
<td>22</td>
<td>4.33 (0.87)</td>
</tr>
<tr>
<td>Regulations and certifications</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>25</td>
<td>4.31 (1.07)</td>
</tr>
<tr>
<td>Lack of farms and farmers</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>26</td>
<td>4.29 (1.07)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>12</td>
<td>23</td>
<td>4.29 (1.00)</td>
</tr>
<tr>
<td>Coordination of efforts</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>8</td>
<td>25</td>
<td>4.26 (1.11)</td>
</tr>
</tbody>
</table>

Note. 1 = “Disagree” and 5 = “Agree.”
Table 7. Respondents’ Level of Agreement with Exclusion from the Top 10 (n = 42) in the Third Round

<table>
<thead>
<tr>
<th>Issue</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Disagree nor Agree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle/culture</td>
<td>2</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>18</td>
<td>3.69 (1.33)</td>
</tr>
<tr>
<td>Aging out of current farmers and lack of new farmers</td>
<td>6</td>
<td>8</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td>3.38 (1.45)</td>
</tr>
<tr>
<td>Weather and environment</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>14</td>
<td>3.21 (1.57)</td>
</tr>
</tbody>
</table>

Note. 1 = “Disagree” and 5 = “Agree.”

Discussion and Recommendations

The primary takeaway from this project is the developed region-wide list of issues facing local food systems. Similar research has not been found that explicitly creates a priority list for local and regional food systems beyond the state level, though research delving into the importance of these various issues is abundant. As efforts move forward to improve local food systems in the southern region, awareness and understanding of all of these issues are necessary to avoid unnecessary pitfalls. In particular, it should be noted that none of these issues occurs in isolation. For instance, if profitability increases, accessibility and affordability could be harmed. As a system, changes affecting one issue are likely to affect others directly and/or indirectly. For improvements to local food systems to be sustainable, most if not all of these issues need to be addressed. As such, the diversity of these issues means there is a need for diversity in the response to these issues. Representatives from different academic disciplines, aspects of the local food systems, and locations need to share with each other how they have experienced and addressed these issues in their respective geographic and issue areas.

All of the issues, even those excluded from the top 10 list, are important, but in an era of decreasing funding for universities, there will be limits to what efforts can occur. The goal of this project was to determine which issues were the highest priority to inform a region-wide effort to support local and regional food systems, not which issues were or were not important.

Another aspect that needs addressing is understanding that these issues can look different in different locations. For example, local food issues in the Mississippi Delta may present themselves differently from those in the Atlanta metropolitan area. While the purpose of this project was to develop a priority list of issues for the entire region, there is unlikely to be a universal answer for all locations, given differences in demographics, the types of agriculture that can occur in different locations, and differences in policies among the various local and state governments in the region. Still, region-wide work should continue so that lessons learned in one
area can be shared with other locations to avoid duplication of efforts in terms of research and outreach efforts by universities in their efforts to support local and regional food systems.

The next steps of SERA 47 will be using the priority list of issues to help inform future efforts of the remaining working groups on the project. Like all applications of this priority list, the working groups need to decide the best way to use the findings to help inform their future efforts. The remaining working groups are addressing how to measure impacts, establishing learning communities, developing a resource bank that universities can use, and analyzing successful models of universities supporting local and regional food systems.

The Delphi method was useful for determining a region-wide list, and it would be advantageous to have similar efforts happen within individual states. While multiple states were included in this study, data collection was done in a manner to represent the region, so a more tailored design would be needed to understand state-specific priorities.

References


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*Jennifer Taylor* is an associate professor at Florida A&M University.

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