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Factors Impacting Program Delivery: The Importance of Implementation Research in Extension

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Cooperative Extension is in a unique position, given its relationship with research-based, Land-Grant Universities, to advance the scholarship of implementation research. A stronger shift towards evidence-based practice has been occurring, oriented towards the assessment of programs for outcomes. This paper explores core concepts related to program implementation and delves into factors that influence successful implementation of Extension programs and services. The importance of implementation within the Extension Program Development Model is explored, along with emerging issues and trends.

Keywords: implementation, engagement, evidence-based practices, Extension, Cooperative Extension, program evaluation, scholarship

In 2014, Cooperative Extension (Extension) celebrated its 100th anniversary—a time to reflect on the work of the last century, and to examine how the system has changed and how it needs to evolve in the future. While the core mission and vision for Extension to translate research into practice remains the same, the challenges associated with implementing programs have evolved as communities and organizational environments have changed. By understanding research related to program implementation, Extension professionals at the national, state, and local levels can advance the scholarship of Extension and deliver evidence-based programs that continue to meet and exceed stakeholder needs for the next 100 years.

The social sciences continue to evolve towards evidence-based practice (Mowbray, Holter, Teague, & Bybee, 2003; Stein et al., 2008), and this shift has been noticeable within Extension education. For example, Spoth, Gyll, Lillehoj, Redmond, and Greenberg (2007) developed

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PROSPER (PROmoting School-community-university Partnerships to Enhance Resilience)—a “three-component community-university partnership model that includes community teams, university Extension linking agents, and university researchers” (p. 984). This partnership model allows Extension communities to choose from a menu of evidence-based programs and interventions.

The evidence-based movement focuses on *outcomes assessment*—ensuring that programmatic outcomes are achieved (Aarons, Sommerfeld, Hecht, Silovsky, & Chaffin, 2009). This orientation toward outcomes often sacrifices another important component of programs, their *implementation*—how programs are delivered (Berkel, Mauricio, Schoenfelder, & Sandler, 2011). Considering implementation assessment in the program development process provides a more complete picture of the efficacy of programs and services and a richer understanding of why a program succeeded or failed.

This paper explores the concept of program implementation in the Extension community of practitioners, factors that contribute to high quality program implementation, and strategies and trends for advancing implementation research within Extension settings. This paper is particularly relevant for Extension given the relative paucity of work investigating program implementation and its corresponding assessment within the context of Extension work (Duerden & Witt, 2012).

Importance of Implementation Research in Cooperative Extension

Much of the research related to program implementation has occurred in the prevention and health sciences fields (Duerden & Witt, 2012; Sloboda, Dusenbury, & Petras, 2014). These fields have strong parallels with Extension work in both community-based participatory research (Israel, Eng, Schulz, & Parker, 2013) and transformative learning (Franz, Garst, Baughman, Smith, & Peters, 2009). Implementation research is “the scientific inquiry into questions concerning implementation—the act of carrying an intention into effect” (Peters, Adam, Alonge, Agyepong, & Tran, 2013, p. 1). Put simply, when we investigate implementation, we look at how a program was delivered, rather than what outcomes were achieved. The consideration of program implementation is an essential aspect of the program planning, development, and evaluation process (Berkel et al., 2011; SeEVERS & Graham, 2012). A well-designed program can have differing levels of success depending on the quality and quantity of implementation. If only a portion of a program was delivered as designed, it is reasonable to anticipate that only a portion of the desired outcomes (if any) will be achieved (Duerden & Witt, 2012). Conversely, if a program’s content is present but lacks high quality delivery as intended by program designers, implementation value and corresponding outcomes can, and often do, suffer (Mihalic, Fagan, & Argamaso, 2008). The importance of implementation is clear: programs delivered with high quality implementation tend to produce positive outcomes more consistently than programs

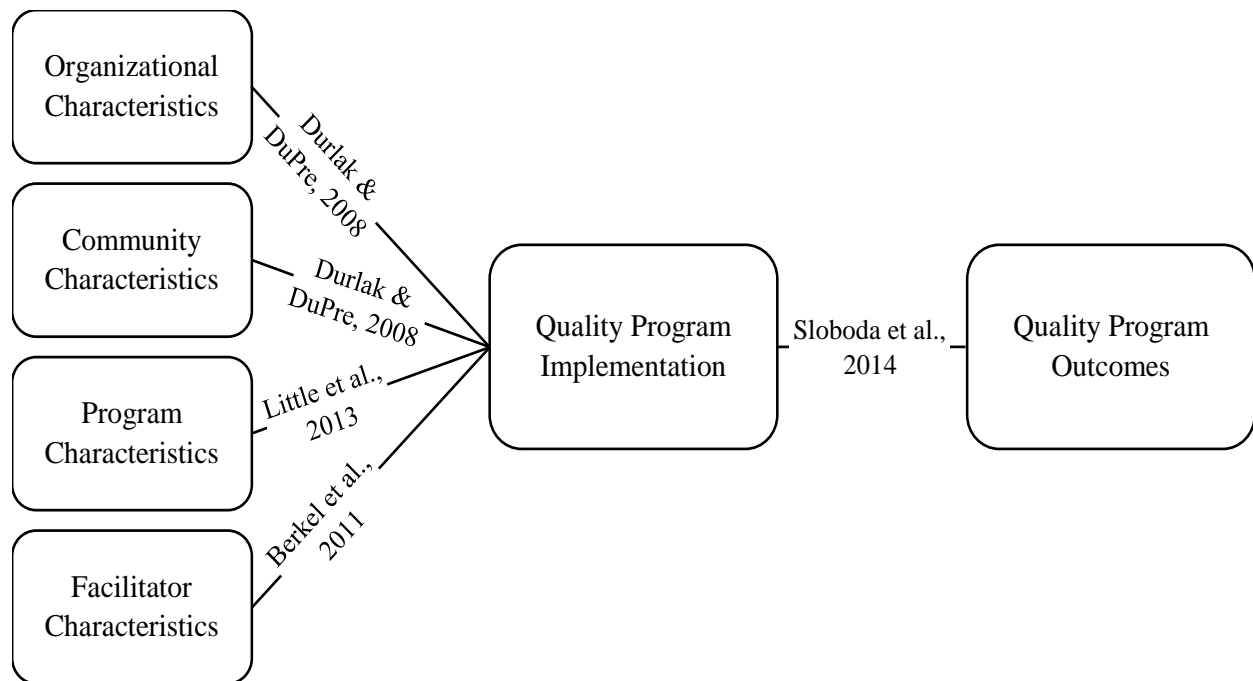
delivered with lower quality implementation (Biglan & Taylor, 2000; Dane & Schneider, 1998; Durlak & DuPre, 2008; Mihalic, 2002). A failure to pay attention to implementation can also impact program outcomes in other ways. As noted by Caldwell et al. (2008), “Small effect sizes or findings inconsistent with well-reasoned hypotheses may not be related to the efficacy of the program as it was designed, but rather be related to failure to implement the program as intended” (p. 148).

Another important reason for monitoring program implementation occurs when a program moves from efficacy trials, where researchers typically have a high level of control, to the *real world*, where the program is delivered to its intended audience with less control by program developers or evaluators (Mihalic et al., 2008). In this situation, implementation assessment helps determine if research-based programs are practical and transferable in real-world settings (Fixsen, Blase, Naoom, & Wallace, 2009; Johnson, Mellard, Fuchs, & McKnight, 2006). Furthermore, as a primary goal of programs is to enhance participant well-being, it is important to understand how factors such as implementation mediate and/or moderate the associations between participation in a program and the program’s desired outcomes (Stein et al., 2008). Additionally, implementation assessment ensures that programs are delivered consistently across sites and highlights potential explanations for omissions or modifications to a program. Finally, the pairing of implementation assessment with a traditional outcome evaluation provides “the identification of effective programs and practices” (Duerden & Witt, 2012, p. 2), and this pairing provides a gold standard for Extension programs.

Factors Contributing to Effective Extension Program Implementation

Several factors contribute to effective program implementation, including the characteristics of the organization providing the programs (e.g., leadership and decision-maker buy-in and funding, organizational staffing structure), community-level characteristics (e.g., funding and political atmosphere), program characteristics (e.g., culture for which it was developed versus culture to which it is being delivered, the context the program is being delivered in, the resources necessary to deliver the program), and the characteristics of the program facilitators (e.g., their level of training, program buy-in, and experience) (Berkel et al., 2011; Dane & Schneider, 1998; Durlak & DuPre, 2008; Little, Sussman, Sun, & Rohrbach, 2013). Figure 1 (next page) illustrates how current literature indicates these factors contribute to program implementation and corresponding program outcomes.

Figure 1. Conceptual Model of the Factors Contributing to Quality Program Implementation and Corresponding Outcomes



Organizational Characteristics

Organizational characteristics and leadership influence the quality of program implementation. For example, Gottfredson and colleagues (2000) found program implementation quality was clearly predicted by the level of administrative and managerial support provided by supervisory and organizational staff. This administrative support can include managing concerns, handling the overall process of program implementation (to include logistical, financial, and personnel issues), providing encouragement to program facilitators, and developing and maintaining engagement at multiple levels within and outside of an organization (Durlak & DuPre, 2008). Durlak and DuPre (2008) analyzed over 500 studies of implementation and noted that effective administrative leadership positively influenced the quality of program implementation. This is further supported by the work of Kam, Greenberg, and Walls (2003) who, in an investigation of program implementation, found that quality organizational support led to the best outcomes for students and to higher quality programs. These researchers also found that the quality of program implementation negatively suffered when administrative support was low.

The capacity of an organization also influences the quality of implementation achieved. *Organizational capacity* includes a group's level of planning, vision development and execution, resources, communication, and fiscal management (Fredericksen & London, 2000).

Organizational capacity factors that influence implementation include the level and consistency of communication within an organization, community engagement (community buy-in) (Riley, Taylor, & Elliott, 2003), and organizational competence (Wandersman et al., 2008). In a study of health promotion programs, Riley et al. (2003) found that higher levels of organizational capacity were positively correlated with higher levels of program implementation.

The availability of technical assistance influences program implementation and is a critical component of successful program implementation (Durlak & DuPre, 2008). *Technical assistance* includes the training of program facilitators and program administrators, program evaluation and feedback, program monitoring, coaching, involvement of facilitators in program design, and the additional resources available to program stakeholders (e.g., brochures, manuals, online communities) (Wandersman et al., 2008). Mihalic et al. (2008) found that quality technical assistance prevented or identified potential programmatic issues that may have compromised implementation. Furthermore, when technical assistance is provided and used effectively, program quality increases (Wandersman et al., 2008).

Community Characteristics

An important consideration regarding program implementation relates to the characteristics of the community in which a program is delivered. If a program is designed for higher-resourced, English-speaking participants, but is delivered to lower-resourced, Spanish-speaking participants, it is no surprise that the quality of implementation may suffer. This *cultural mismatch* occurs frequently within social and prevention programs (Castro, Barrera, & Martinez, 2004). Furthermore, when a community is not consulted or ready for a program, community stakeholders may be disinterested in the program. Needs assessment offers one way to gauge community-level interest in Extension programs (Garst & McCawley, 2015). Another consideration regarding a program's successful implementation within a community relates to the context for which it was designed versus the context in which it is currently being delivered (urban versus rural). Extension program administrators must consider these factors when choosing and delivering programs within the communities they serve (Castro et al., 2004).

Another important community characteristic for successful program implementation relates to the participants in the community being served and their responsiveness to the program. According to James Bell Associates (2009), *participant responsiveness* refers to "the manner in which participants react to or engage in a program. Aspects of participant responsiveness can include participants' level of interest; perceptions about the relevance and usefulness of a program; and their level of engagement" (p. 2). Participant responsiveness may influence outcomes and quality of program implementation. For example, "the less enthusiastic participants are about an intervention, the less likely the intervention is to be implemented properly and fully" (Carroll et al., 2007, p. 3). If participants are not responsive to a program or

the program facilitator or are unable to engage for other reasons with the program, this may influence a facilitator's program delivery and compromise the quality of program implementation (Century, Freeman, & Rudnick, 2008).

Program Characteristics

The characteristics of a program may also influence levels of program implementation. If a program is too complex, too lengthy, or inappropriate for the population being served, the likelihood of a program being delivered as designed may be low (Pereplectchikova, Treat, & Kazdin, 2007). Furthermore, Extension programs are designed inherently for the community they are serving by addressing "the problems, issues, concerns of local communities" (Garst & McCawley, 2015, p. 27). Thus, if a program is not tailored to a local group, the quality to which it is implemented may suffer (Arnold, 2015)

Conversely, if programs are too simple, it may lead those delivering a program to change or modify the program to alleviate boredom or more fully engage participants (Carroll et al., 2007). Program complexity and organization are associated with successful implementation. Programs with clear processes and outcomes are easier to implement and less likely to result in low-quality implementation (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2004).

Facilitator Characteristics

Individuals providing programs exert great influence over how programs are implemented. These program professionals (referred to here as facilitators) and their corresponding characteristics (e.g., program-specific training, program buy-in, level of experience facilitating groups, overall competency) can significantly impact the quality of program delivery (Dusenbury, Brannigan, Falco, & Hansen, 2003; Mihalic et al., 2008; Pereplectchikova et al., 2007; Sloboda et al., 2014) by changing the program design, the intended method of delivery, and the structure of a program, and by adapting program materials (e.g., curriculum, program settings, program components, and so on).

The level and quality of training offered to program facilitators has been shown to be positively associated with both positive programmatic outcomes and quality implementation (Cyr, 2008; Dufrene, Noell, Gilbertson, & Duhon, 2005). When training was active and engaging and involved role playing, peer observation, and timely feedback, facilitator program buy-in, motivation, and self-efficacy were enhanced, and thereby, quality of program delivery (Durlak & DuPre, 2008). In a study of substance abuse prevention programs Little et al. (2013) found that comprehensive training had a significant positive impact on implementation. On the other hand, inconsistent or poor training negatively impacted a facilitator's ability to implement a program as designed (Gottfredson et al., 2000).

Facilitator buy-in can have a profound effect on both program implementation and outcomes. *Facilitator buy-in* is the level of motivation a facilitator has to facilitate, his/her belief in the goals of a program, his/her attitude about a program, and his/her level of agreement that the program will be successful (Dusenbury et al., 2003; Dusenbury, Brannigan, Hansen, Walsh, & Falco, 2005; Johnson et al., 2006). Quality implementation and achievement of positive program outcomes (Durlak & DuPre, 2008; Stein et al., 2008) are correlated with facilitator buy-in.

Experience is another factor that influences how facilitators implement program goals (Nobel et al., 2006) because prior program implementation experience helps facilitators feel more comfortable presenting in front of a group (Allen, Hunter, & Donohue, 1989) and may enhance one's competence and confidence in delivering programs. However, experience may also lead a facilitator to overestimate his/her competence, thereby negatively affecting program delivery (Zollo & Gottschalg, 2004). Finally, there also appears to be a relationship between facilitator competency and quality program implementation. *Competency* can be defined as the level of skill and understanding a facilitator possesses when delivering a program (Milligan, 1998). In an investigation of Extension program facilitators, Cyr (2008) found that quality training enhanced facilitator competency and to contributed facilitators feeling more confident about their efficacy as facilitators. However, this study did not link this competency explicitly with improvement to programmatic implementation or outcomes.

Program Adaptation

A defining characteristic of Extension programs and services is that they take place in real-world, applied settings. Therefore, despite evidence of the importance of maintaining high-quality implementation (i.e., delivering a program as designed by the developers) producing better program outcomes (Dane & Schneider, 1998), adaptations to programs are commonplace within Extension program delivery. As noted by Carroll et al. (2007), "An intervention cannot always be implemented fully in the real world. Local conditions may require it to be flexible and adaptable" (p. 5). An adaptation occurs when an Extension professional changes, adapts, adds to, or omits material from the program as developed by program designers. There are two basic forms of program adaptation: changing the program content and changing the program delivery mode (Mowbray et al., 2003). Changing the program content involves adding or deleting material (e.g., adding a section about leadership to a team building program). Changing the program delivery mode involves delivering the same content with changes based on factors such as the audience or environment (e.g., if a program was to occur outside, but due to weather, was located indoors; if a program's language had to be modified for a different audience, such as an English language program being delivered to a Spanish-speaking audience) Castro et al., 2004). According to Elliot and Mihalic (2004), "There is a long history of tension between the need to implement programs as they were designed and delivered in their efficacy and effectiveness trials and the need to make local adaptations to 'fit' the program to local conditions" (p. 50).

Extension professionals and researchers should be pragmatic with their programs as they transfer from an efficacy trial setting to the *real world*, where they have less control, and program staff have implementation preferences that developers may not have considered. For example, Extension professionals often feel uncomfortable teaching sessions on body image even though nutrition and health program developers know this education leads to improved health. Programmatic adaptations are highly likely to occur with programs during transfer from development to implementation (Hill, Maucione, & Hood, 2007). One solution for better transfer is to design programs and corresponding program evaluations with adaptation in mind (Durlak & DuPre, 2008). Greenwood, Tapia, Abbott, and Walton (2003) noted that their program was intentionally designed with adaptability in mind as long as it positively contributed to the desired outcomes. If a particular facilitator was doing something outside of the program implementation plan but was improving literacy scores (the desired program outcome), then that facilitator would share his/her technique and train peers at the next training session, thereby incorporating a new aspect into the program. An adaptation should be considered a compromise to implementation—a compromise that does not always have a negative influence on programs.

Assessing and Measuring Program Implementation

Extension professionals recognize the importance of delivering programs according to how they are designed—a core tenet of measuring implementation quality (Dusenbury et al., 2003; Hansen, 2014). Measuring and monitoring program implementation ensures that a program plan is adhered to as designed by program developers. However, implementation assessment is more difficult than a traditional outcomes assessment. Investigation of a program's implementation level requires more training for program evaluators, more time, and more resources (Hansen, 2014; Mihalic et al., 2008). This measurement typically takes place through process evaluations that examine the elements of a program and how they can be enhanced (U.S. Department of Health and Human Services, 2002). Program implementation assessment tells if the relationship between program delivery and program outcomes is accurate (Moncher & Prinz, 1991). If high-quality program implementation is maintained, but desired outcomes are not achieved, then this may suggest the need for program modification or cancellation. The monitoring of a program for quality implementation also can be used to determine what program components or features were or were not present, or what adaptations and omissions occurred, and to provide confirmation that a program is being provided as designed (Mowbray et al., 2003).

Program implementation quality is typically measured using three methods: indirect, direct, and hybrid assessments (Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). In a *direct assessment*, the components and features of a program are clearly specified in operational terms on a checklist based on the major program components. In many programs, direct observation is preferred for monitoring program implementation (Domitrovich & Greenberg, 2000). In a direct assessment, trained staff observe the program and determine the percentage of the program

implemented as designed. Staff also identify facilitators needing retraining due to low levels of implementation and/or omission or adaptation of program materials (Gresham, 1989).

In an *indirect assessment*, methods for monitoring implementation include self-reports, interviews, and permanent products (Gresham, 1989). For example, a facilitator would rate himself/herself on a seven-point Likert Scale on the degree to which he/she implemented each section of a program with fidelity. By completing a self-report, facilitators may become more aware of areas to maintain and improve fidelity. They may pay more attention to enhancing fidelity in those areas in future program implementation. Another useful option for the assessment of program implementation relates to the use of structured facilitator journals. In a study of camp staff, Mainieri and Hill (2015) used daily camp counselor journaling of program activities, adherence to the suggested program components, and reasons for deviations from the program plan. The information contained in these journals was useful in determining how programs were being modified and the underlying causes of the modifications or omissions. Finally, a *hybrid assessment* involves the blend of indirect and direct strategies (i.e., observation combined with self-report). This strategy is useful in triangulating the strategies to obtain a true score of a facilitator's implementation quality rather than being limited to one method of implementation assessment (Mainieri & Anderson, 2014).

Extension professionals interested in enhancing program implementation can focus on five dimensions of program delivery: fidelity, exposure, quality of program delivery, facilitator competence, and program differentiation (Berkel et al., 2011; Dane & Schneider, 1998; Gagnon, 2014; Hansen, 2014; Mihalic, 2009; Milligan, 1998).

- (a) *Fidelity* refers to whether the Extension program service or intervention is being delivered as it was originally designed or written (i.e., with all core components being delivered to the appropriate population; staff trained appropriately) using the right protocols, techniques, and materials; and in the locations or contexts prescribed.
- (b) *Exposure* (or *dosage*) may include the number of educational sessions implemented, length of each session, or the frequency with which program techniques were implemented.
- (c) *Quality of Program Delivery* is the manner in which an Extension professional, volunteer, or other worker delivers a program (e.g., skill in using the techniques or methods prescribed by the program, enthusiasm, preparedness, and attitude).
- (d) *Competency* is the level of skill and understanding an Extension professional, volunteer, or other worker possesses and demonstrates when delivering a program.
- (e) *Program Differentiation* identifies the unique features and different components of programs that are consistently differentiated from one another.

Implications and Future Directions

This paper's examination of implementation quality has important implications for Extension because effective program implementation has Extension-wide relevance. As stated earlier, Gottfredson and colleagues (2000) found that implementation quality levels were clearly predicted by the level of administrative and managerial support for program implementation. Extension professionals at all levels are in a position to support and advance the scholarship of Extension through implementation research. Considering the emphasis that Extension places on program quality and meeting the needs of Extension stakeholders (Garst & McCawley, 2015), implementation assessment should be a core goal of Extension for the next 100 years.

With clear movement towards evidence-based practices within its communities, not only due to the demands of funders and legislators, there is a need to ensure that Extension professionals are implementing the very best programs and services possible. The strength of implementation assessment is that it highlights not only areas that Extension can improve, but also current areas of strength. Implementation assessment also highlights the move from research to practice and the challenges of working in the *real world* versus the laboratory environment. When the assessment of implementation quality is conducted, practical data are often discovered (e.g., the program is culturally inappropriate, the participants are not engaged, there is not enough time to deliver all components). Thoughtful consideration of how programs are implemented is necessary to achieve the best possible outcomes for Extension program participants.

Many factors may enhance or negate quality program implementation. As mentioned earlier, Extension work is only done well when all levels of delivery from the organization to the participants themselves are engaged and considered in terms of their contribution to quality implementation. When this complexity (Figure 1) is considered, quality program outcomes generally follow (Dane & Schneider, 1998; Durlak & DuPre, 2008). Given the lack of implementation science research (Duerden & Witt, 2012), Extension has an opportunity to contribute to implementation science to further not only its own research base, but also that of the broader social and prevention sciences.

Extension's real-world setting also provides a rich opportunity for research into both cultural and practical adaptations of research-based programs (Castro et al., 2004). When the research and applications *mismatch*, adaptations to programs often occur. Understanding why, and more importantly how, this happens will only help to serve Extension's constituency by allowing Extension professionals to develop and modify programs that better serve the needs of program participants through better outcomes. Program funders will also support more effective and efficient programs.

Implementation work, in spite of its broad support in the social sciences, is still very much in its infancy. Furthermore, by its nature, it requires more resources than a traditional outcomes assessment. However, because a core goal of Extension is the dissemination and replication of evidence-based programs, it is a necessary cost. By measuring programs for their implementation quality, Extension, as a field committed to both service and research, will be better able to make accurate statements about program efficacy and benefits to constituents.

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