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Independent Investigations of the Relationships between Altruistic Behavior and Empathy

with Depression

Honors Thesis

J. Colton Watson

Abstract

Depressive symptoms can influence a variety of individual factors, including altruism and empathy. The nature of that relationship, however, is poorly understood. Cross-sectional studies examining the empathetic and altruistic abilities of people with varying levels of depressive symptoms have produced mixed results, as both the magnitude and direction of any correlations between empathy or altruism and depression are varied. Thus, we aimed to examine the impact of depressive symptoms on self-report measures of altruistic behavior and empathy. Using the Quick Inventory of Depressive Symptoms-Self Report (QIDS-SR) to measure depressive symptoms, the Interpersonal Reactivity Index (IRI) to measure empathy, and the Self-Report Altruism Scale (SRAS) to measure altruistic behavior, we administered a cross-sectional Qualtrics survey via Amazon Mechanical Turk (MTurk) to 369 participants to investigate what relationship depressive symptoms had with empathy and/or altruistic behavior. Our findings suggest that overall empathy and altruistic behavior have no relationship with depressive symptoms, but individual subscales of the IRI, including the Perspective Taking Subscale (PTS), which demonstrated a negative relationship with depressive symptoms, and the Personal Distress Subscale (PDS), which demonstrated a positive relationship. These findings suggest that some empathy processes may suffer a deficit in depressed patients, and that further research into these relationships is needed.

Keywords: depression, depressive symptoms, altruism, altruistic behavior, empathy

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Introduction

Humans are a unique species in that the extent to which they utilize social relationships is unmatched by any other lifeform of earth. While there are pods of dolphins thousands strong that communicate and live as a cohesive unit, they pale in comparison to human megacities with millions living under common laws. Ant and termite mounds might have millions and in some cases billions of residents, but they are disconnected from members of their species in other mounds while humans across all seven continents are able to instantly connect with each other whenever they want. The legacy of sociality, cooperation, and friendship among human beings was essential to our early survival as a species, and now is the key to all the artistic and technological advances humankind enjoys today. Some key traits that are necessary for the type of cooperation and innovation seen amongst humans include language, agreeableness, an ability to compromise, ambition, and prescience to envision for the future something that does not exist in the present. Humanity blessed with all these factors, but there is another, or others, that are more elusive for some people and perhaps even more important to the development of larger society.

It is the ability of many humans to understand one another; of one person to feel what another person feels via referentially calling upon his own prior experiences and applying them to a situation in which he is uninvolved. It is the evolutionarily baffling tendency of many people to act in the best interest of others, even sometimes at a detriment to their own wellbeing. It is the compassion and sympathy that humans can feel which can lead them to make decisions to help other humans, to assist in times of need rather than always taking advantage of the situation for

themselves. Compassion, sympathy, helpfulness, empathy, and altruism are qualities that come easier to some people than others (and some species—it is not only humanity that exhibits selfless behaviors). Not everyone is called to be the bleeding heart in every situation. But overall, these qualities are a social benefit to not only those that have them, but to their peers and society as a whole (Miller, 2016). Deficits in these qualities quickly lead to maleficence that benefits no one. When humans lose their ability to see things from others' point of view, to do things for other people, and sometimes act against their own best interests, society can start to fracture. Laws do not get made, agreements do not get reached, help does not come, medical research does not get performed, and progress ceases marching forward. Anything that can lead to or is associated with a deficit in empathy and altruism warrants investigation.

Today, as social media, web conferencing, and other digital communication platforms are becoming increasingly prevalent in peoples' lives, empathy and altruism are more difficult to achieve (Peebles, 2014). The humanness of another person is diminished when they are viewed from behind a screen. It is important to study and effectively combat anything that could unnecessarily lead to a decrease in empathy and altruism. Anything that can be demonstrated to cause or associated with a rise in empathy or altruism should be investigated as well. This line of inquiry can yield data and results that people can use to increase pro-social behavior, reduce anti-social behavior, and make the world a better place.

The purpose of this project is to investigate one factor which has been shown, in some of the prior findings on the matter, to be associated with a lowering in empathy and altruism. Interestingly enough, other studies have shown that this factor can be associated with heightened empathy and altruism. That factor is depression. Oft studied and highly prevalent, depression is a key factor in many emotional constructs, and its relationships with empathy and altruism are

poorly understood. This study intends to shed some light on those relationships. We measured a large sample of people using online surveys to determine their levels of altruistic behavior, empathy, and depressive symptoms. These surveys have been used scientifically for some time and have been shown to be reliable. The sample of people was regionally diverse because the survey was sent out using a nationally relevant online platform called Amazon MTurk. By comparing the levels of depressive symptoms with the levels of altruistic behavior and empathy, we can determine if a relationship between depressive symptoms and either of the latter two factors exists.

Although this study will not be able to determine causation (whether one factor caused a change in another), some implications of the results could be as follows: if high depressive symptoms are associated with lower empathy/altruistic behavior, then perhaps depression makes it more difficult for people to feel empathy and do nice things for each other. If high depressive symptoms are associated with higher empathy/altruistic behavior, then perhaps the sympathy and angst empathetic people feel at the distress of others or the burden of performing altruistic tasks can lead to an increase in depression. To answer these questions definitively would require more studies, more research, more time, and more money. First, it is best to determine if a relationship between two or more factors might exist in the first place. That is what this study is trying to do. The constructs, methods, statistical analyses, and results are all explained hereto after.

Empathy and Altruistic Behavior

Compassion, sympathy, pro-social behavior, helpfulness, empathy, and altruism are qualities that are typically beneficial to the health of every culture on earth (Miller et al., 2016). The latter two, empathy and altruism, are often conflated or used interchangeably, often resulting in problems measuring these constructs. Welker (2005) describes five components in his

definition of empathy —comprehending the unconscious mentation of another person, extrospection about that person's experience, introspection involving receptiveness to one's own unconscious mentation, comparison between the results extrospection and introspection, and consideration for how those results interplay with the other person's unconscious mentation's. Empathy entails both basic cognitive processes, higher-order cognitive processes, and emotional processes (Zurek & Scheithauer, 2017). Conversely, Batson and Shaw (1991) describe altruism as a motivational mindset that produces actions with the primary goal of benefitting someone else. The key difference between empathy and altruism is that, while empathy can be passive, centered on thought or feeling but not necessarily action, altruism is manifested by active behavior. However, many debate whether true altruism even exists, stating that even the most pro-social behavior is performed in order to benefit the person or persons performing it (Batson & Shaw, 1991).

Historically, empathy and altruism have been difficult to measure via self-reports. Indeed, it may not possible to measure altruism itself but only instances of altruistic behavior. The Self-Report Altruism Scale (SRAS; Rushton et al., 1981) is a common self-report measure implemented in research, but it only asks "how often" one performs very specific, common altruistic tasks such as holding an elevator for a stranger or giving a stranger money (Rushton et al., 1981). Empathy may also be difficult to measure via self-reports, but one common self-report measure is the Interpersonal Reactivity Index (IRI; Davis, 1983). Although not the first scale of its kind as Dymond (1949) began work on this as early as the World War II era, the IRI is the most commonly-used measure of empathy. The IRI consists of four subscales that measure different domains of empathy, including perspective taking, fantasies, empathetic concern, and personal distress from the unfortunate circumstances of others. Previous research has noted

difficulties with measuring empathy as a sum-score on the IRI, so recent recommendations suggest examining empathy as individual subscales on the IRI rather than the whole score (Ekinci & Ekinci, 2016; Wang et al., 2020).

Depression

Depression, or major depressive disorder (MDD), is a mood disorder characterized by persistent feelings of sadness and/or loss of interest (i.e., anhedonia). It is one of the most common psychiatric disorders with a prevalence of 8.4% of U.S. adults in 2020 (U.S Department of Health and Human Services, n.d.). Extant research has sought to provide insight to the causes, treatments, risk factors, and protective factors for depression by examining the relationship between depressive symptoms and other psychological factors. Indeed, individual factors, including empathy and altruism, that are typically regarded as "beneficial" factors may provide insight into how depressive symptoms are developed, maintained, and protected against.

Altruistic Behavior, Empathy, and Depression

The relationship between depressive symptoms, empathy, and altruism are mixed. Although large studies have been conducted for at least 50 years on the subject (Morris & Kanfer, 1983), the direction and magnitude of the associations between these factors are not totally understood. Neugebauer et al. (2020) found through longitudinal methods that the magnitude of risk for individuals being diagnosed with MDD is positively correlated with altruism. Alternatively, other studies indicate that empathy, which is linked to altruism, is lower in those with depressive symptoms than those without (Cusi et al, 2011; Ekinci & Ekinci, 2016). Others state that empathy and altruism can keep depressive symptoms at bay, and that the absence of opportunity for altruistic behavior can increase depressive symptoms for people high in altruism (Feng et al., 2020). Large cross-sectional studies using retroactive data collection

demonstrated that altruism is associated with both anxiety and depression (Fujiwara 2007; 2009). Staub and Vollhardt (2008) found that depression, altruism, and empathy can be positively related when suffering and traumatic events have played a roll in the lives of study participants. Lim and DeSteno (2016) also showed that adverse life experiences that lead to depression may also beget an increase in helping behavior.

Rationale

The purpose of the current study is to further investigate the relationship between depression and empathy and altruistic behavior. Although empathy and altruistic behavior are similar, they are not identical and thus their relationship with depression was investigated independently of one another. We hypothesize that the Cartesian graph of the relationship between (1) empathy and depressive symptoms and (2) altruistic behavior and depressive symptoms will take on an inverted-U shape; that is, those with the highest and lowest reported depressive symptoms will score lowest on empathy and altruism measures while those with moderate reported depression score the highest for empathy and altruism. We believe this relationship may best explain the inconsistency in prior findings of studies that examine empathy and depression, because common analyses such as linear regressions can often fail to adequately describe U-shaped and inverted-U-shaped relationships.

Method

Participants

Three hundred seventy-nine participants ($N = 379$; 170 females; $M_{age} = 39.98$; 78.9% White) were recruited online via Amazon Mechanical Turk (MTurk). Participants were given $8.00 as compensation for completing the study. Completing the surveys took approximately 30 to 50 minutes.

Measures

Interpersonal Reactivity Index (IRI)

The IRI is a 28-item self-report measure that assesses for empathy (Davis, 1983). Items are scored on a Likert scale from 0 to 4.; from "Does Not Describe Me Well" to "Describes Me Very Well." The IRI contains 4 subscales: the Perspective Taking Subscale (PTS), the Empathetic Concern Subscale (ECS), the Personal Distress subscale (PDS), and the Fantasy Subscale (FS). The PTS measures participants' tendencies to spontaneously assume another person's point of view. The ECS measures participants' tendencies to feel sympathy and compassion for those in need. The PDS measures participants' tendencies to feel discomfort when in the presence of others in need. The FS measures participants' tendencies to imagine themselves in fictional situations (Davis, 1983). The total IRI is score from 0 to 112 and each subscale is scored from 0 to 28. The assessment of the IRI both as a whole and as four individual scales has precedent and meri (Wang, 2020). The IRI in the current study demonstrated good internal consistency (α = .89).

Self-Report Altruism Scale (SRAS)

The SRAS is a 20-item self-report measure that assesses the frequency with which participants engage in altruistic behavior (Ruston et al., 1981). Items are scored on a Likert scale from 1-5, from "Never" to "Very Often". An example item from the SRAS includes "I have given directions to a stranger." The SRAS in the current study demonstrated good internal consistency (α = .91).

Quick Inventory of Depressive Symptomatology – Self Report (QIDS-SR)

The QIDS-SR is a 16-item self-report measure that assesses for depressive symptoms (Rush et al., 2003). In the current study, we removed item 12, which asks about suicidal ideation,

given that the researchers were not readily available to respond to participants if they self-reported suicidal ideation. Items are scored on a Likert scale from 0-3, with higher scores reflecting higher severity of depressive symptoms, and assess for all 9 symptoms for MDD as outlined in the DSM-5. Thus, we utilized a 15-item QIDS-SR, which has been used in previous research (Collins et al., 2021; Jordan et al., 2020). The scale is scored from 1 to 27; 1 to 5 indicates no depression; 6 to 10 indicates mild depression; 11 to 15 indicates moderate depression; 16 to 20 indicates severe depression; 21 to 27 indicates very severe depression (Rush et al., 2003). The QIDS-SR in the current study demonstrated good internal consistency (α = .80).

Procedure

Participants were recruited via Amazon MTurk and completed the survey via Qualtrics. Before beginning the survey, participants viewed an informed consent page and their click to begin the survey indicated their consent. Participants completed the IRI, SRAS, QIDS-SR, and a validity question, along with other measures not relevant to the current study, in a randomized order. The validity question included a paragraph describing the purpose of emotions that included a sentence at the end instructing participants to choose "Other" and write "I have read the instructions" in a textbox. Ten participants were excluded for completing a validity question incorrectly, which has been used in previous studies (Jordan et al., 2021), resulting in valid data for 369 participants.

Data Analytic Plan

The following data analytic plan (as well as the hypotheses discussed above) were registered via AsPredicted.org (#87866) prior to data analysis. We first visualized U-shaped graphical distributions of data. Depressive symptoms as measured by the QIDS-SR was the

independent variable. Empathy as measured by the IRI, both sum-score and each of the four

subscale scores, as well as altruistic behavior as measured by the SRAS were the dependent

variables. Thus, we visualized 6 different scatter plots, Dependent Variables 1-6 vs QIDS-SR

(see Appendix). The purpose of graphing the data was so we could visually ascertain whether an

apparent inverted-U-shaped relationship between any of the dependent variables and QIDS-SR

existed. We then conducted a quadratic regression to quantify these relationships further. To

accomplish this, we squared our independent variable (i.e., QIDS-SR^2), and entered the QIDS-

SR and QIDS-SR^2 into a regression model as the predictors and then independently entered each

dependent variable, resulting in 6 regression models. The quadratic regressions' purposes were to

determine if any curvilinear relationships, including the inverted-U-shaped relationship, existed

in the datasets between QIDS-SR and any dependent variable. We also analyzed all data via

linear regression if a quadratic relationship was not present. All statistical analyses were

completed via the IBM SPSS Statistics (Version 27).

Results

All variables were normally distributed (see Table 1 for descriptives; Tabachnick &

Fidell, 2013). Although our pre-registration states that we planned to include empathy as an

overall sum-score, recent research has suggested that measuring the IRI as an overall sum-score

may be problematic. Thus, it is often suggested that each subscale is examined separately (Wang

et al., 2020), so we conducted all analyses for empathy separately with the sum score of the IRI

and sum scores for all 4 subscales.

Linear Regressions

Results from the linear regressions suggest that there were no statistically significant

relationships between QIDS-SR and (1) SRAS: $F(2, 366) = 0.102$, $p = 0.750$; (2) IRI: $F(2, 366)$

$= 1.139$, $p = 0.287$; (3) FS: $F(2, 366) = 0.837$, $p = 0.361$; and (4) ECS: $F(2, 366) = 3.867$, $p = 0.050$ (see Tables 2, 3, 4, and 7 and Figures 1, 2, 3, and 6). This suggests that there were no relationships between depressive symptoms and altruistic behaviors or overall empathy. Measurement of depressive symptoms was unable to reliably predict altruistic behaviors and overall empathy, especially participants' tendency to engage in fantasies or have concerned feelings for others.

Results from the linear regressions suggest that there was a statistically significant relationship between QIDS-SR and PDS, $F(2, 366) = 68.465$, $p < 0.001$ (see Table 5 and Figure 4). The explanatory variable accounted for 15.7% of variability in PDS. The regression equation was found to be:

$$\text{Estimated PDS Score} = 8.131 + 0.488(\text{QIDS} - \text{SR}).$$

This suggests that depressive symptoms are predictive of participants' ability to feel distress due to the unfortunate circumstances of others, and that those with higher number or intensity of depressive symptoms are more likely to feel distress when confronted with the discomfort of others.

Results from the linear regressions suggest that there was a statistically significant relationship between QIDS-SR and PTS, $F(2, 366) = 24.037$, $p < 0.001$ (see Table 6 and Figure 5). The explanatory variable accounted for 6.1% of variability in PTS. The regression equation was found to be:

$$\text{Estimated PTS Score} = 21.784 - 0.262(\text{QIDS} - \text{SR}).$$

This suggests that depressive symptoms are predictive of participants' ability to assume the perspective of others, and that those with higher number or intensity of depressive symptoms are less likely to take the point of view of another person.

Quadratic Regressions

Results from the quadratic regressions suggest that there were no statistically significant relationships between QIDS-SR and QIDS-SR^2 with (1) SRAS: $F(2, 366) = 0.106$, $p = 0.899$; (2) IRI: $F(2, 366) = 0.729$, $p = 0.483$; (3) FS: $F(2, 366) = 1.768$, $p = 0.172$; and (4) ECS: $F(2, 366) = 1.994$, $p = 0.138$ (see Tables 8, 9, 10, and 13 and Figures 1, 2, 3, and 6). This suggests that there were no inverted-U-shaped relationships between QIDS-SR and any of these measures or subscales. Including depressive symptoms in a quadratic regression did not significantly predict altruistic behaviors, overall empathy, empathetic concern, and fantasy empathy.

Results from the quadratic regressions suggest that there was a statistically significant relationship between QIDS-SR and QIDS-SR^2 with PDS, $F(2, 366) = 35.763$, $p < 0.001$ (see Table 11 and Figure 4). The two explanatory variables together accounted for 16.3% of variability in PDS. The regression equation was found to be:

$$\text{Estimated PDS Score} = 7.454 + 0.764(\text{QIDS} - \text{SR}) - 0.015(QIDS - SR^2).$$

This suggests that depressive symptoms are predictive of participants' ability to feel distress due to the unfortunate circumstances of others, and that those with greater levels of depressive symptoms are more likely to feel distress when confronted with the discomfort of others. Additionally, there appears to be a slight inverted-U-shape to the Cartesian graph of the relationship between QIDS-SR and PDS, as quadratic regression accounted for slightly more of the variability between the variables than did the linear regression.

Results from the quadratic regressions suggest that there was a statistically significant relationship between QIDS-SR and QIDS-SR^2 with PTS, $F(2, 366) = 13.480$, $p < 0.001$ (see Table 12 and Figure 5). The two explanatory variables together accounted for 6.8% of variability in PTS. The regression equation was found to be:

$$\text{Estimated PTS Score} = 22.385 - 0.503(\text{QIDS} - \text{SR}) + 0.015(QIDS - SR^2).$$

This suggests that depressive symptoms are predictive of participants' ability to assume the perspective of others, and that those with higher number or intensity of depressive symptoms are less likely to take the point of view of another person. Additionally, there appears to be a slight inverted-U-shape to the Cartesian graph of the relationship between QIDS-SR and PTS, as quadratic regression accounted for slightly more of the variability between the variables than did the linear regression.

Discussion

Our results suggest that there was no quadratic relationship between altruism, overall empathy, empathic concern, or fantasy empathy and depressive symptoms in our sample; however, two of the subscales produced significant relationships with depressive symptoms as measured by the QIDS-SR. First, perspective-taking, or the ability to assume someone else's point of view, had a significant negative relationship with depressive symptoms, and personal distress, or participants' ability to feel discomfort due to the suffering of others, had a significant positive relationship with depressive symptoms.

These two findings trended in opposite directions: depressive symptoms were positively related to personal distress and negatively related to perspective taking. Ekinci and Ekinci (2016) reported similar results in a matched-controls study with clinically depressed patients. It is unsurprising that depressive symptoms can predict personal distress due to the suffering of others, since depressive symptoms are related to elevated negative emotions (e.g., sadness; Rush et al., 2003). Depressive symptoms' relationship with perspective taking is perhaps a bit less intuitive, but it is a result that is supported by other studies such as Cusi et al.'s (2001) and others. The negative feelings and poor affect resulting from depression seems to interfere with

people's ability to consider other people, other perspectives, and anything outside of their own emotions. Preoccupation with stress or loss of interest in relationship with others that can happen during depression can contribute to a decreased ability to assume outside perspectives (Cusi et al., 2001).

The hypothesis that the graphical representation of SRAS score vs QIDS-SR score would assume an inverted-U shape was not supported. The hypothesis that the graphical representation of overall IRI score vs QIDS-SR score would assume an inverted-U shape was also not supported. The two significant relationships, QIDS-SR vs PDS and QIDS-SR vs PTS, produced quadratic regression equations that did better fit the data than the linear regression equations, if only slightly. There was still an overall positive trend between PDS and QIDS-SR (personal distress and depressive symptoms) and an overall negative trend between PTS and QIDS-SR (perspective taking and depressive symptoms); one would expect the trend lines of these graphical representations to have a lesser slope if they were truly inverted-U-shaped.

The opposing trends between two subscales of the same instrument indicate the utility in separating the IRI subscales when performing data analyses. It may be the case that the PTS, ECS, and FS might need to be separated from the PDS, especially in depression studies. The IRI still appears to be a valid and reliable instrument, but researchers should take care to consider how its overall results alone might not present the full picture of the results of a study.

Strengths and Limitations

One strength of the current study includes the use of a community sample. Specifically, the sample demonstrated variability in their demographics given that individuals across the United States were recruited, rather than just relying on a college student sample. Although it is difficult to say definitively that the sample is generalizable, the racial distribution was within 2

percentage points of what is present in the United States according to the last census (Bureau, 2022). The median age of this study is within 14 months of the median age in the U.S. (Bureau, 2022). The MTurk software had over 250,000 workers in 2019. Since that number was only expected to increase in the wake of the pandemic, the odds of a varied and generalizable sample are high (Moss, 2020). Another strength lies in the fact that both altruistic behavior and empathy were investigated in terms of their relationship to depressive symptoms. Those independent investigations were able to provide insight into two different behavioral and emotional concepts.

Although there were several strengths to the current study, there are also several limitations. First, this study was cross-sectional; a longitudinal study might not only provide a clearer picture of the relationship between altruistic behavior or empathy and depressive symptoms. Additionally, many longitudinal results have differed from cross-sectional examinations of empathy and depression (Neugebauer et al., 2019). The reasons for this are not clear. Second, the study was also based on self-report measures; although self-report surveys and instruments have been found to be reliable, social desirability of altruism and empathy could have influenced some participants' responses. An experimental study could have been conducted, had resources allowed, to minimize or eliminate the risks of self-report data. Cooperation games have been used in previous studies to find relationships between depression and helping behavior in a laboratory setting (Clark et al., 2013), and using this study might have been possible before the pandemic. Doing so would have added another dataset that strengthened the rigor of the conclusions. Another layer to this issue is the postulated existence of two types of empathy—cognitive empathy and emotional or affective empathy (Smith, 2006). Some studies show that these two types of empathy are distinct and can have different relationships with other

factors—including depression (Li et al, 2019). The current study did not separate empathy into two constructs.

An important limitation in this study was the conservativeness of the statistical analyses. There is perhaps more relevance in the data than what was teased out for the purposes of this thesis. The increase of the predictive power of the independent variable once the quadratic regressions were performed indicates that although a true inverted-U-shape does not exist, further studies and additional analyses could yield something similar to what the original hypothesis proposed. Additional analyses are planned for this data.

Conclusion

This study examined the independent relationships between altruistic behavior and empathy with depressive symptoms. Although we found that depressive symptoms were unable to reliably predict altruistic behavior or overall empathy, we were able to show depressive symptoms seem to increase someone's distress that is felt due to the discomfort of others while decreasing someone's ability to assume outside perspectives. We showed that, like many other psychological factors, depression does seem to have an impact on socially desirable qualities empathy. The exact direction and magnitude of that impact is still unknown, but further thorough investigations into this line of inquiry should prove fruitful in clarifying depression's role in empathetic and altruistic processes. Some further investigations might include asking how severely depressed participants perform on empathy and altruism scales; only 11 of the 369 participants in the current study would have qualified for a diagnosis of very severe depression. Modifying the SRAS or developing a new altruism scale is a long-term project that could benefit this realm of research. An experimental or quasi-experimental format involving laboratory measurement of empathy and altruism via actual observable tasks or games would be another

way to build upon this study. A longitudinal study where depressive symptoms vary over time amongst each participant could have led to some conclusions that would have allowed us to begin to infer causality in the relationship between depressive symptoms and both empath and altruistic behavior.

Implications

This study indicated that two constructs that are components of empathy were associated with depressive symptoms. The first is personal distress that arises due to the misfortune of others. This is the negative feeling that someone feels when another person is in distress or is ailing in some way. In order to feel empathy and feel motivated to act towards the benefit of others in need, a person must feel some kind of pain or distress. This is why personal distress is a component of empathy. Personal distress was higher for those with higher severity of depressive symptoms. That means that those who are higher in depressive symptoms are more likely to feel personal distress when someone else is in need compared to someone lower in depressive symptoms. The second construct that was associated with depressive symptoms was perspective taking. Perspective taking is the tendency of someone to view the world through someone else's perspective; to put themselves in someone else's shoes. This is an important part of empathy because it is necessary to take on outside perspectives in order to understand what someone else is dealing with. It was found that those with higher depressive symptoms were likely to be lower in perspective taking. Therefore, the results show that some components of empathy are more common in those with higher depressive symptoms while others are less common.

As evidenced by this study, the depression epidemic not only negatively affects the individuals themselves but could potentially impact others who are demonstrating depressive symptoms and reduced empathy. A decreased ability to understand the perspective of another

person may hinder one's ability to understand others' worldview. This may lead to an increase in hostility and aggression during conversation and a decrease in respect and appreciation for what other people have experienced. Especially on social media, which serves as barrier between the user and recognition of the personhood of the people they interact with on each respective platform, empathy and mutual respect can reach alarmingly low levels (Peebles, 2014). As polarizing conversations, accusations, and unapologetic discourse seem to be increasing in today's public arenas, a decreased ability to see the world through the lens of another person's perspective could contribute to the hatefulness and anger that is borne out of the controversy. And, of course, this process can become cyclical: as the prevalence of depression is increasing (especially in the midst of the pandemic; [U.S. Department of Human Services, n.d.]), individuals may be more easily disturbed by a lack of empathy in real-life and social media interactions, but also less capable of perspective taking and engaging with others empathetically. This perspective makes the task of identifying and treating depressed individuals, while also working to erase the stigma of mental health services and mental illness, even more dire.

Final Thoughts

I would like to thank all of those who made this research possible. We hurdled many obstacles to get this thing finally written down on paper, least of all was not a global pandemic. We transitioned not only from in-person to online meetings, but to online data collection rather than using participant data gathered in a laboratory setting. We jumped through not only all the standard hoops that come with human subjects research, but also some additional things to make sure we were square with the honors college. We learned new software and used analytical techniques that were new to us as well. And we did it all while our PI was moving to the East Coast! I am proud of what we accomplished.

Thank you, Mississippi State, for being not only the place that allowed me to flourish and carve out my own niche as a student, a researcher, and a professional, but for being my home for the past five years. I could not have drawn up a better college experience for myself. Five years, four research labs, three student organizations, two degrees, and one national championship later, I am changed for the better from when I arrived here in fall 2017. Thank you for being you, Mississippi State. A loyal friend, I will always be.

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Appendix

Table 1. Descriptives

Measure	*M*	*SD*	Skew	Kurtosis
QIDS-SR	6.439	5.790	1.030	0.395
SRAS	53.415	13.142	0.595	0.417
Total IRI	69.212	17.159	-0.695	0.766
FS	17.404	6.554	-0.547	-0.373
PDS	11.274	7.126	0.365	-0.625
PTS	20.122	6.028	-0.748	0.140
ECS	20.364	6.507	-0.850	0.323

Note. QIDS-SR = Quick Inventory of Depressive Symptomatology – Self Report; SRAS = Self-Report Altruism Scale; IRI = Interpersonal Reactivity Index; FS = Fantasy Subscale; PDS = Personal Distress Subscale; PTS = Perspective Taking Subscale; ECS = Empathetic Concern Subscale

Measure	Mean	Minimum	Max
QIDS-SR	6.439	1.00	26.00
SRAS	53.415	20.00	99.00
Total IRI	69.212	7.00	110.00
FS	17.404	0.00	28.00
PDS	11.274	0.00	28.00
PTS	20.122	0.00	28.00
ECS	20.364	0.00	28.00

Table 2. Linear Regression Predicting SRAS

	b	$SE\ B$	β	p
Constant	53.658	1.025		< 0.001
QIDS-SR	-0.038	0.118	-0.017	0.750

Note. Predictor = QIDS-SR; Dependent variable = SRAS

Table 3. Linear Regression Predicting Total IRI

	b	SE B	β	p
Constant	68.149	1.339		< 0.001
QIDS-SR	0.165	0.155	0.056	0.287

Note. Predictor = QIDS-SR; Dependent variable = Total IRI

Table 4. Linear Regression Predicting FS

	b	*SE B*	*β*	*p*
Constant	17.056	0.511		< 0.001
QIDS-SR	0.054	0.059	0.048	0.361

Note. Predictor = QIDS-SR; Dependent variable = FS

Table 5. Linear Regression Predicting PDS

	b	SE B	β	p
Constant	8.131	0.510		< 0.001
QIDS-SR	0.488	0.059	0.397	< 0.001

Note. Predictor = QIDS-SR; Dependent variable = PDS

Table 6. Linear Regression Predicting PTS

	b	$SE\ B$	β	p
Constant	21.784	0.456		< 0.001
QIDS-SR	-0.258	0.053	-0.248	< 0.001

Note. Predictor = QIDS-SR; Dependent variable = PTS

Table 7. Linear Regression Predicting ECS

	b	*SE B*	*β*	*p*
Constant	21.104	0.506		< 0.001
QIDS-SR	-0.115	0.058	-0.102	0.050

Note. Predictor = QIDS-SR; Dependent variable = ECS

Table 8. Quadratic Regression Predicting SRAS

	b	$SE\ B$	β	p
Constant	53.933	1.317		< 0.001
QIDS-SR	-0.150	0.356	-0.066	0.674
QIDS-SR^2	0.006	0.018	0.052	0.739

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = SRAS

Table 9. Quadratic Regression Predicting Total IRI

	b	$SE\ B$	β	p
Constant	67.539	1.718		< 0.001
QIDS-SR	0.413	0.464	0.140	0.374
QIDS-SR^2	-0.013	0.023	-0.089	0.571

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = Total IRI

Table 10. Quadratic Regression Predicting FS

	b	*SE B*	*β*	*p*
Constant	16.384	0.654		< 0.001
QIDS-SR	0.328	0.177	0.289	0.065
QIDS-SR^2	-0.015	0.009	-0.256	0.101

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = FS

Table 11. Quadratic Regression Predicting PDS

	b	$SE\ B$	β	p
Constant	7.454	0.653		< 0.001
QIDS-SR	0.764	0.177	0.620	< 0.001
QIDS-SR^2	-0.015	0.009	-0.237	0.099

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = PDS

Table 12. Quadratic Regression Predicting PTS

	b	$SE\ B$	β	p
Constant	22.385	0.583		< 0.001
QIDS-SR	-0.503	0.158	-0.483	0.002
QIDS-SR^2	0.013	0.008	0.249	0.101

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = PTS

Table 13. Quadratic Regression Predicting ECS

	b	$SE\ B$	β	p
Constant	21.251	0.649		< 0.001
QIDS-SR	-0.175	0.175	-0.155	0.320
QIDS-SR^2	0.003	0.009	0.056	0.718

Note. Predictors = QIDS-SR and QIDS-SR^2; Dependent variable = ECS

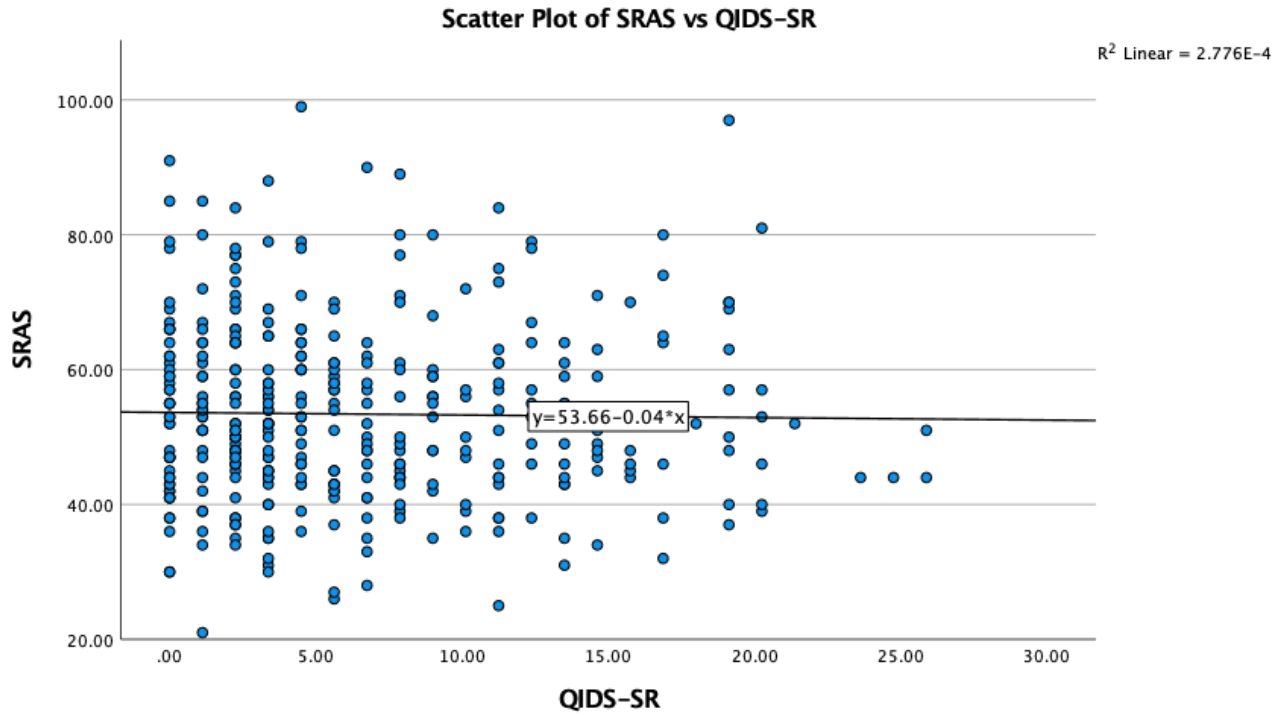**Figure 1. Graphical representation of SRAS vs QIDS-SR**

Scatter Plot of SRAS vs QIDS-SR

Figure 2. Graphical representation of IRI vs QIDS-SR

Scatter Plot of Total IRI vs QIDS-SR
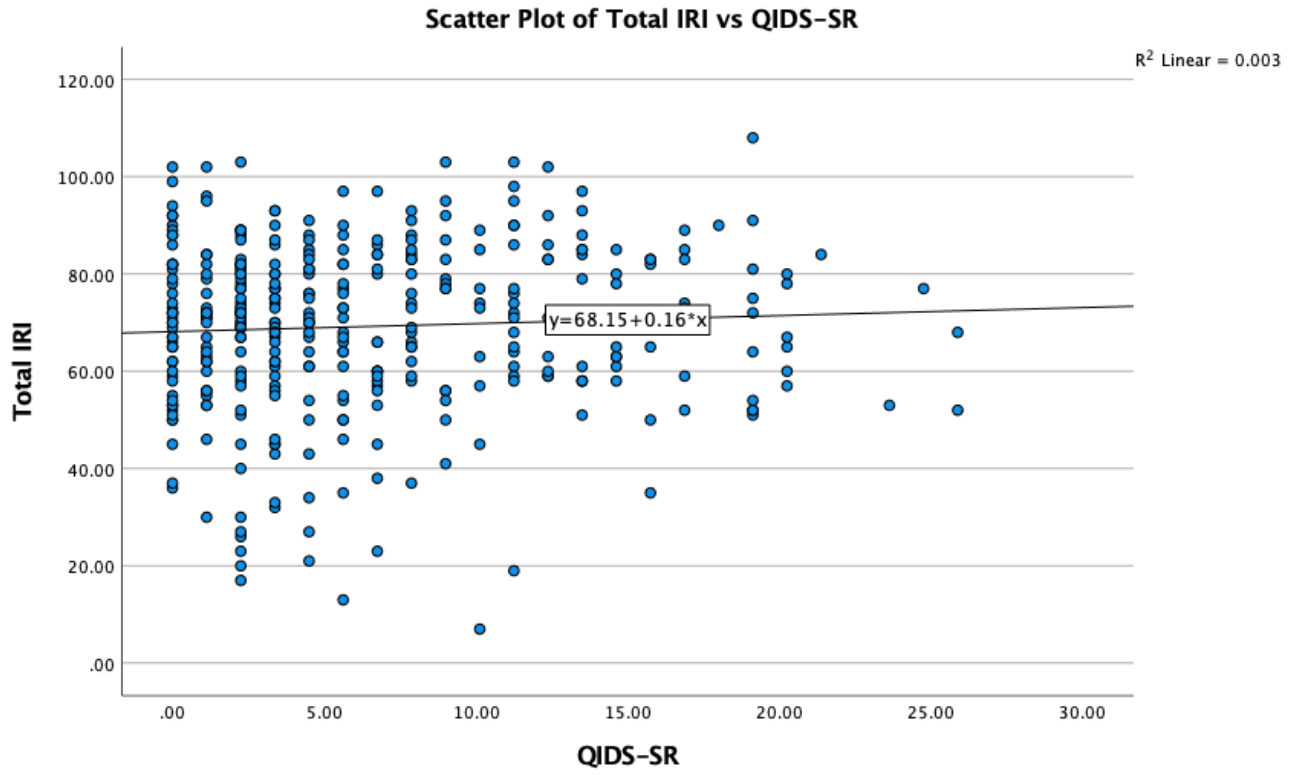
Figure 3. Graphical representation of FS vs QIDS-SR

Scatter Plot of Fantasy Subscale vs QIDS-SR
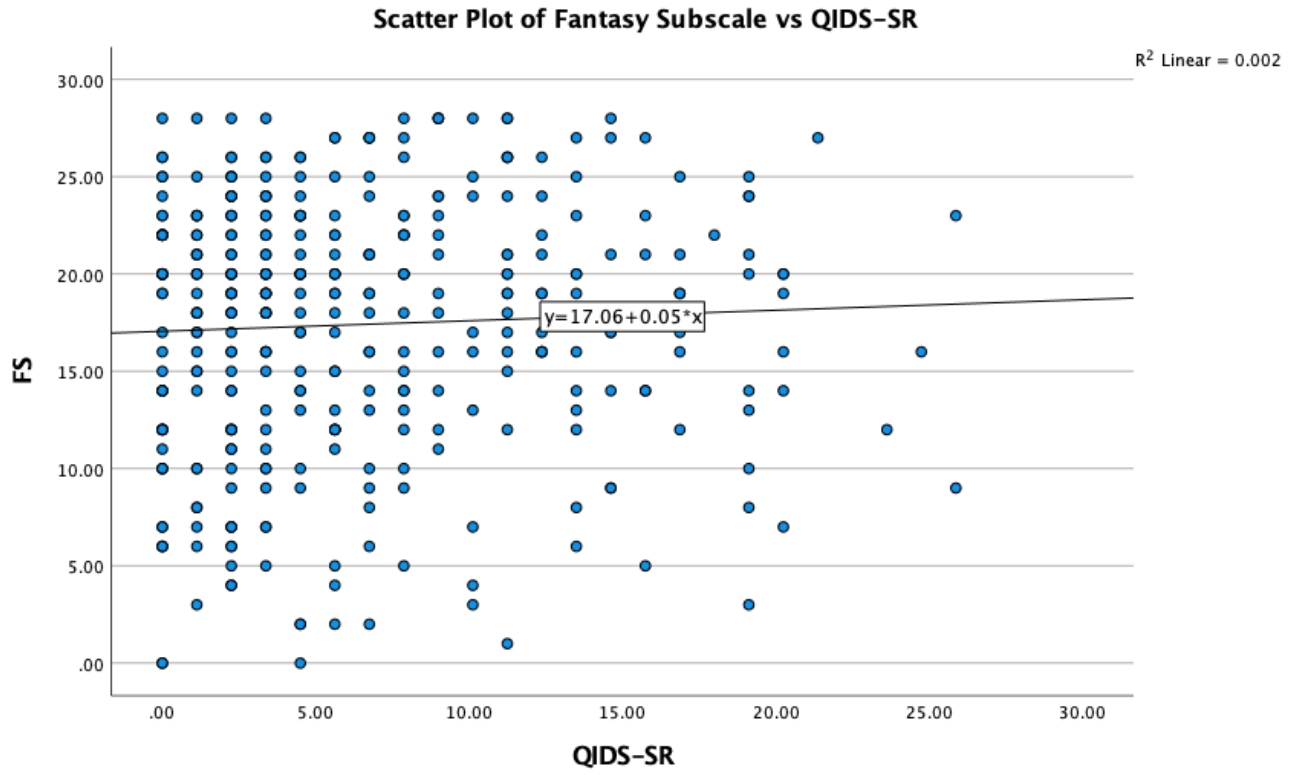
Figure 4. Graphical representation of PDS vs QIDS-SR

Scatter Plot of Personal Distress Subscale vs QIDS–SR
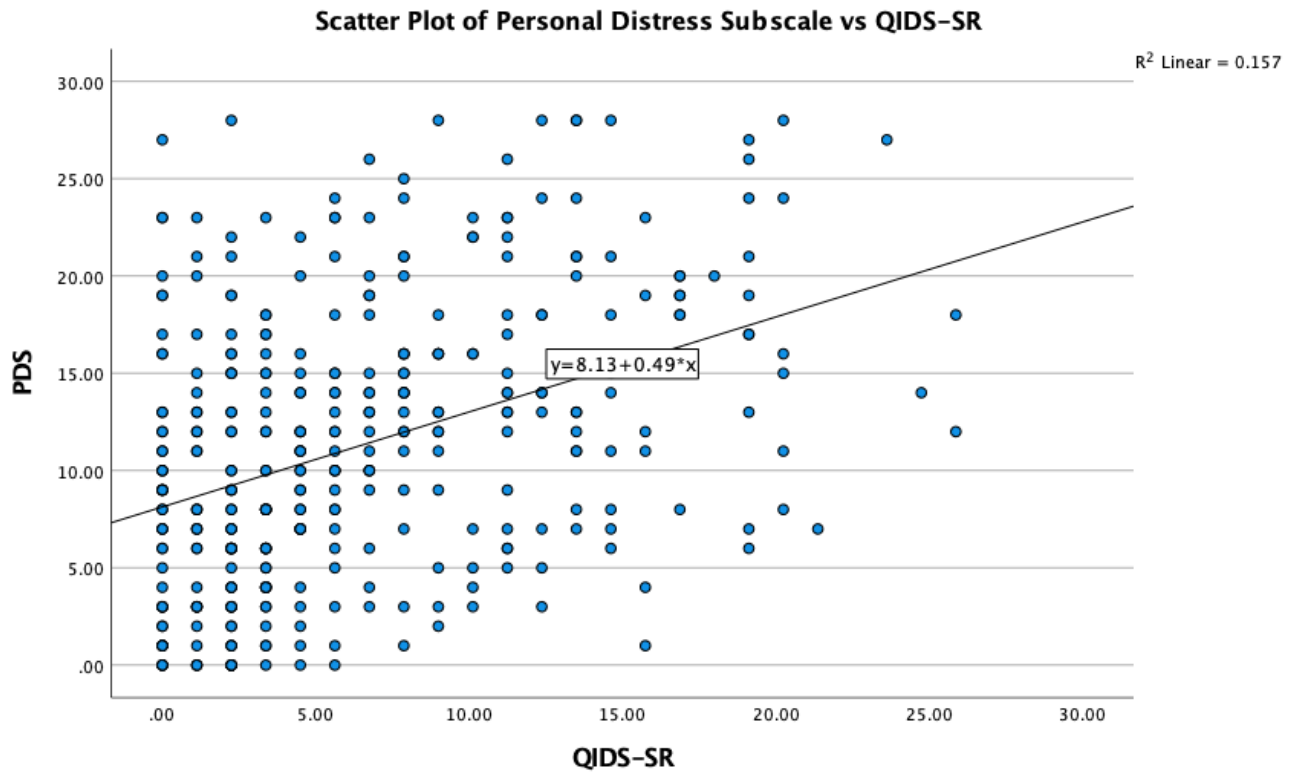
Figure 5. Graphical representation of PTS vs QIDS-SR

Scatter Plot of Perspective Taking Subscale vs QIDS-SR

R^2 Linear = 0.061

y=21.78−0.26*x
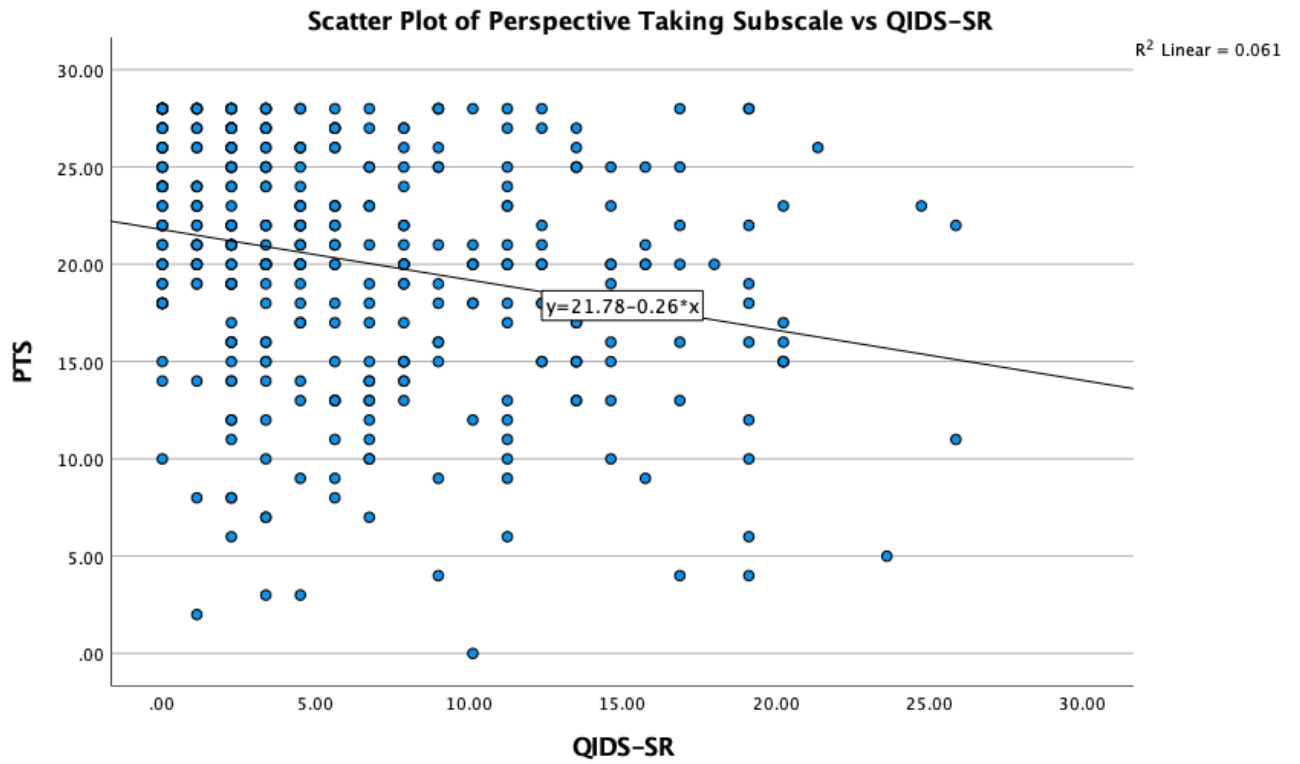
Figure 6. Graphical representation of ECS vs QIDS-SR

Scatter Plot of Empathetic Concern Subscale vs QIDS-SR
R^2 Linear = 0.010
y=21.1−0.11*x
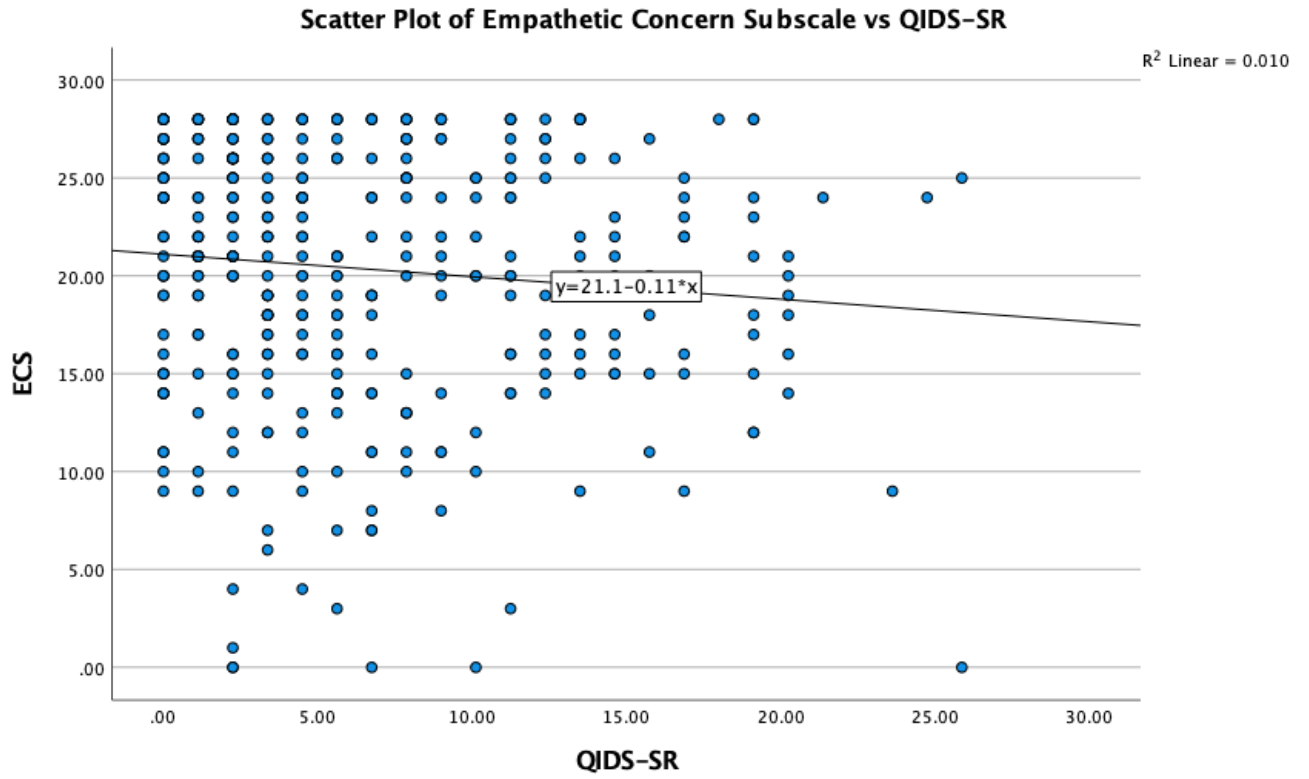
Measures

INTERPERSONAL REACTIVITY INDEX

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. When you have decided on your answer, fill in the letter on the answer sheet next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE: ABCDE

DOES NOT DESCRIBE ME WELL

DESCRIBES ME VERY

WELL

1. I daydream and fantasize, with some regularity, about things that might happen to me. (FS)
2. I often have tender, concerned feelings for people less fortunate than me. (EC)
3. I sometimes find it difficult to see things from the "other guy's" point of view. (PT) (-)
4. Sometimes I don't feel very sorry for other people when they are having problems. (EC) (-)
5. I really get involved with the feelings of the characters in a novel. (FS)
6. In emergency situations, I feel apprehensive and ill-at-ease. (PD)
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (FS) (-)
8. I try to look at everybody's side of a disagreement before I make a decision. (PT)
9. When I see someone being taken advantage of, I feel kind of protective towards them. (EC)
10. I sometimes feel helpless when I am in the middle of a very emotional situation. (PD)
11. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT)
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (FS) (-)

13. When I see someone get hurt, I tend to remain calm. (PD) (-)
14. Other people's misfortunes do not usually disturb me a great deal. (EC) (-)
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT) (-)
16. After seeing a play or movie, I have felt as though I were one of the characters. (FS)
17. Being in a tense emotional situation scares me. (PD)
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC) (-)
19. I am usually pretty effective in dealing with emergencies. (PD) (-)
20. I am often quite touched by things that I see happen. (EC)
21. I believe that there are two sides to every question and try to look at them both. (PT)
22. I would describe myself as a pretty soft-hearted person. (EC)
23. When I watch a good movie, I can very easily put myself in the place of a leading character. (FS)
24. I tend to lose control during emergencies. (PD)
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)
26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (FS)
27. When I see someone who badly needs help in an emergency, I go to pieces. (PD)
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT)

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NOTE:

(-) denotes item to be scored in reverse fashion PT = perspective-taking scale
FS = fantasy scale
EC = empathic concern scale

PD = personal distress scale A =0

B= 1 C= 2 D =3 E= 4

Except for reversed-scored items, which are scored:

A =4 B= 3 C= 2 D =1 E= 0

Self-Report Altruism Scale:

Using the following scale, please select the category that conforms to the frequency with which you have carried out the following acts.

1) never   2) once   3) more than once   4) often   5) very often

1.) I have helped push a stranger's car that was broken down or out of gas. 2.) I have given directions to a stranger.
3.) I have made change for a stranger.
4.) I have given money to a charity.

5.) I have given money to a stranger who needed it (or asked me for it). 6.) I have donated goods or clothes to a charity.
7.) I have done volunteer work for a charity.
8.) I have donated blood.

9.) I have helped carry a stranger's belongings (books, parcels, etc). 10.) I have delayed an elevator and held the door open for a stranger.

11.) I have allowed someone to go ahead of me in a lineup (in the supermarket, at a copy machine, at a fast-food restaurant).

12.) I have given a stranger a lift in my car.

13.) l have pointed out a clerk's error (in a bank, at the supermarket) in undercharging me for an item.

14.) I have let a neighbor whom I didn't know too well borrow an item of some value to me (eg, a dish, tools, etc).

15.) I have bought 'charity' holiday cards deliberately because I knew it was a good cause.

16.) I have helped a classmate who I did not know that well with an assignment when my knowledge was greater than his or hers.

17.) I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.

18.) I have offered to help a handicapped or elderly stranger across a street. 19.) I have offered my seat on a bus or train to a stranger who was standing. 20.) I have helped an acquaintance to move households.
Scoring:

Score scale as a continuous measure.