HELPING OTHERS UNDER THE FACE OF SHARED DISTRESS: INFLUENCES OF EMPATHIC RESPONDING AND SOCIAL DESIRABILITY ON INTERNALIZING SYMPTOMS IN WOMEN

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Abstract

While empathic ability heightens the ability to respond to other's emotions, overempathy, or too much empathy, has been linked to symptoms of psychopathologies such as anxiety and depression. Additionally, acts of prosociality are known to result from feelings of empathy, such as increased sensitivity to others' fear which can lead to self-costly behavior. While high empathy and altruistic giving appear to be desirable outcomes, they can in some instances lead to burnout. Additionally, social expectations for behaving prosocially are heightened for women, and have a positive link with altruistic behavior, but less is known about the potential maladaptive effects of this relationship, including consequences for internalizing symptoms. Thus, in a sample of 67 predominantly Asian and Hispanic women, we aimed to examine the complex relationship between women's empathy, altruistic giving, and internalizing symptoms (anxiety, depression), mediated by conditions of social desirability via a self-report and behavioral manipulation. We first replicated affective empathy's association with increased altruistic giving behavior under shared distress. Next, we found an interaction between a facet of women's affective empathy, peripheral responsivity, and altruistic giving behavior on the emergence of symptoms of anxiety for those with low but not high empathy. Lastly, social desirability influenced the relationship between altruistic giving behavior and anxiety and depression, moderated by affective and cognitive empathic subcomponents. This works points to unique levels of low affective and high cognitive empathy as associated with symptoms of internalizing disorders, saliently interacting with altruistic giving behaviors and conditions of social desirability.

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Introduction

While empathy is often considered a strength, too much of a good thing may sometimes be maladaptive. The tipping point of empathy, or too much empathy, may not be holistically beneficial. Prior research has found a link between overempathy and symptoms of internalizing disorders such as anxiety and depression (Zahn-Waxler et al., 1991). Such links are thought to be produced through over-resonation with others' distress, eventually leading to personal distress for the empathic individual, manifesting as symptoms of anxiety and depression (Tone & Tully, 2014). Importantly, prior work on overempathy is largely theoretical and has infrequently considered ecologically meaningful contexts, such as social desirability, and how these contexts may influence altruistic giving behavior. To address these gaps in the literature, in the current study, we examined the effects of altruistic giving behavior on internalizing symptoms (i.e., anxiety, depression) in college students, across varying social desirability contexts.

Altruism, by definition, is costly to the self (Schwartz & Howard, 1984) as it often encompasses prosocial behaviors at the expense of the altruist. Acts of prosociality are known to result from feelings of empathy (Eisenberg et al., 2010), such as increased sensitivity to others' distress which can lead to self-costly behavior such as anonymous kidney donations (O'Connell et al., 2019). Thus, heightened empathy to others' distress may enhance self-costly behaviors when an individual has an increased sensitivity to others' fears. Altruism does not necessarily need to involve great costs to the self such as kidney donation. College experience is another context where students are encountering daily opportunities for empathic responding and altruistic giving from peers. Here, we extend prior findings to everyday lives of college students.

Empathy is the ability to perceive, understand, and resonate with the emotions of others (Singer & Lamm, 2009). However, empathy is composed of two overlapping but distinct

subcomponents: affective and cognitive empathy. Cognitive empathy is the ability to engage in the understanding and perspective taking of the emotions of others, and to represent their mental states (Blair, 2005). Affective empathy, also known as emotional empathy, is the internal resonation and evoked emotional response as a result of the emotions of others (Ratka, 2018). These affective processes within empathy are overlapping but unique, with distinct underlying brain networks (Simone et al., 2009).

While empathic ability heightens the ability to respond to other's emotions, overempathy, or too much empathy, has been linked to psychopathology symptoms such as anxiety and depression (Tone & Tully, 2014; Zahn-Waxler et al., 1991). In particular, excessive cognitive empathy has been linked to symptoms of depression due to empathic distress driven by guilt (O'Connor et al., 2002; Tone & Tully, 2014), whereas excessive affective empathy has been linked to symptoms of anxiety, due to a proneness to heightened personal distress (Tone & Tully, 2014). However, the association between empathy and such symptoms may not be linear, with theoretical models proposing genetic, social, and environmental interactions which may augment or attenuate the strength of these associations (Tone & Tully, 2014). Thus, we examine two influences, costly altruistic giving behavior under shared distress, as well as influences of social desirability to test their interaction with empathy on internalizing symptoms.

Even though high empathy and altruistic giving appear to be desirable outcomes, they can in some instances lead to burnout (Oakley & Knafo, 2012). For example, those with high empathy may be aversive to and avoid settings for altruistic behaviors to avoid burnout (Maslach, 1982). Nurses and doctors are famously at risk for burnout and are observed to downregulate their affective empathy to avoid heightened distress and inability to care for patients (Decety et al., 2010). During the pandemic, students who displayed more altruistic

behaviors had higher negative affect, compared to students with less altruistic behaviors and low negative affect (Feng et al., 2020). These studies suggest that there is variability in individuals' capacity to downregulate or avoid situations where altruism is required or expected. We therefore ask whether high empathy individuals exhibiting altruistic behavior are at elevated risk for internalizing symptoms (i.e., depression, anxiety) and under which conditions.

Lastly, social desirability could additionally affect the expression of costly altruistic behaviors, which may further escalate symptoms of anxiety and depression. Even though prosocial behaviors are similarly frequent across genders, social expectations for behaving prosocially are heightened for women (Espinosa & Kovářík, 2015). Across many cultures, women are expected to act in ways consistent with gender norms such as to "tend and befriend" under conditions of stress (Taylor et al., 2000). Additionally, when individuals believe themselves to be observed, social desirability is heightened (Engelmann et al., 2013). Therefore, associations between empathy, anxiety, and depression may be heightened during conditions of high social desirability as women may feel compelled to behave prosocially out of obligation, rather than an intrinsic prosocial motivation. While social desirability in women has a positive relationship with altruistic behavior (Furnham et al., 2016), less is known about potential maladaptive side effects, including consequences for internalizing symptoms like anxiety and depression. There are several ways to assess social desirability. One method is to ask people directly and another is to experimentally manipulate social desirability demands. In this study, we assess social desirability via questionnaire and by placing participants in an observed vs unobserved situation under perceived shared distress.

The Current Study

Thus, in the current study, we aimed to examine the complex relationship between women's empathy, altruistic giving, and internalizing symptoms (anxiety, depression), mediated by conditions of social desirability.

We proposed three hypotheses. First, based on prior work supporting a positive relationship between empathy and altruistic giving (Eisenberg et al., 2010), we hypothesized that the affective component of empathy will predict altruistic giving behavior in women under overall shared distress.

Second, we tested the association between altruistic giving behavior and internalizing symptoms of anxiety and depression, moderated by the affective and cognitive subcomponents of empathy. Supporting prior theoretical work (Tone & Tully, 2014), we hypothesized that the affective component of empathy will moderate the association between altruistic giving behavior under shared distress and anxiety symptoms, such that women high on affective empathy would show a positive association between altruistic giving behavior and anxiety symptoms, whereas women low on affective empathy would not show an association between altruistic giving and anxiety symptoms. Additionally, we hypothesized that the cognitive component of empathy will moderate the association between altruistic giving behavior under shared distress and depression symptoms. Thus, women high on cognitive empathy would show a positive association between altruistic giving behavior and depression symptoms, whereas women low on cognitive empathy would not show an association between altruistic giving behavior and depression symptoms.

Third, we examined whether heightened social desirability mediates the association between women's affective and cognitive empathy and internalizing symptoms of anxiety and depression respectively, due to a greater social expectation for women to behave prosocially

(Espinosa & Kovářík, 2015). We hypothesized that under conditions where social desirability is high, we would observe positive associations between affective empathy and symptoms of anxiety and between cognitive empathy and symptoms of depression. In contrast, under conditions where social desirability is low, we hypothesized that we would observe no relationship between affective empathy and symptoms of anxiety and between cognitive empathy and symptoms of depression. To control for these distinct relationships, participants completed a self-report measure on their social desirability, as well as split into an observed and unobserved condition to uniquely test these hypotheses.

Method

Participants

Women were recruited via the Psychology Subject Pool (SONA) at the University of California, Riverside. Participants were incentivized to participate to receive one SONA participatory credit for one hour of participation in the study at the University of California, Riverside (UCR), Kids Interaction and NeuroDevelopment (KIND) Lab. Women were eligible to participate in the study if they met the following criteria: 1) identify as a woman, 2) be proficient in English, and 3) be at least 18 years old.

Participants completed 1 hour worth of credit for their participation in the study via the UCR SONA System. If participants chose to withdraw from the experiment, they were eligible to receive 0.5 credits for every 30 minutes of their participation. Participants who withdrew their data after the completion of the study were eligible to be given full credit for their participation, however, no participants withdrew from the study. Participants were informed that their participation in the study is voluntary and withdrawing participation would not affect their grade, class standing, and relationship with their instructor. Participants who did not participate in the

study had access to the SONA system to participate in another study on campus or write a written response to a prompt.

Seventy participants completed the study. Data for one participant was removed due to a withdrawal of consent for data usage following study completion. No participants withdrew from the study during the study duration of the experiment. An additional two participants were removed from the final data set for not meeting English proficiency requirements. The final data set consisted of sixty-seven diverse and predominantly Asian and Hispanic women between the ages of 18 to 23 years (M_{age} = 19.45, *SD* = 1.08). (See **Table 1** for Demographic Information).

Measures

Interpersonal Reactivity Index (IRI; Davis; 1980)

One measure of women's empathy was self-reported through The Interpersonal Reactivity Index (IRI; Davis, 1980). The IRI is a 28-item five-point Likert scale. The scale has four subscales, including perspective taking, fantasy, empathic concern, and personal distress (Davis, 1980), including a total score of overall empathy (Wang et al., 2020). The IRI total score passed alpha testing (α = .83), with subscales of empathic concern (α = .72), perspective taking (α = .79), personal distress (α = .71), and fantasy (α = .82) passing consistency testing. Thus, this scale was valid for usage in the study.

Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, 2011)

Additionally, cognitive and affective components of empathy were self-reported via the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, 2011). The QCAE is a 31-item four-point Likert scale. The scale measures two components of empathy, affective and cognitive empathy, with each component composed of individual subscales.

Affective empathy, defined as the ability to experience the emotional states of others, is measured via the total score of the emotion contagion, peripheral responsivity, and proximal responsivity subscales (Reniers, 2011). The emotion contagion subscale measures "the automatic mirroring of the feelings of others", peripheral responsivity measures the affective response to someone in a detached context, and proximal responsivity is the affective response "elicited when witnessing the mood of others in a close social context" (Reniers, 2011).

Cognitive empathy, defined as the ability to understand and comprehend another person's experience is measured via the total score of the perspective taking and online simulation subscales (Reniers, 2011). The perspective taking subscale measures the ability to put oneself in another person's shoes to understand their perspective, while the online simulation subscale "encompasses an effortful attempt to put oneself in another person's position by imagining what that person is feeling" (Reniers, 2011).

Both components of the QCAE (Reniers, 2011) passed alpha testing (affective empathy, $\alpha = .78$; cognitive empathy, $\alpha = .82$), with subscales of peripheral responsivity ($\alpha = .66$), emotion contagion ($\alpha = .77$), proximal responsivity ($\alpha = .64$), perspective taking ($\alpha = .83$), and online simulation ($\alpha = .76$) passing consistency testing. Thus, this scale was valid for usage in the study.

State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983)

Anxiety symptoms were self-reported through The State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983). The STAI is a 40-item four-point questionnaire with 20 questions assessing momentary state anxiety and 20 questions assessing general trait anxiety. For the current study, only trait anxiety was included in analyses. The STAI (Spielberger et al., 1983) trait anxiety subscale passed alpha testing ($\alpha = .93$), and was valid for usage in the study.

Beck's Depression Inventory (BDI; Beck et al., 1961)

Depression symptoms were self-reported through the Beck Depression Inventory (BDI; Beck et al., 1961). The BDI is a 21-item four-point scale measuring depression from minimal to severe symptoms (Beck et al., 1961). One item, item nine, was requested to be omitted from the study by the Institutional Review Board for informing on participant suicidality. Thus, in the current study, participants completed a 20-item scale for the BDI, with the omission of item nine. The BDI (Beck et al., 1961) depression score passed alpha testing ($\alpha = .90$), and was valid for usage in the study.

Marlowe-Crowne Social Desirability Scale (MC-SDS; Crowne & Marlowe, 1964)

Social desirability was self-reported via the Marlowe-Crowne Social Desirability Scale (MC-SDS; Crowne & Marlowe, 1964). The scale is a 33-item true or false questionnaire assessing participant's concern of social approval, scored on a continuous range of 0 to 33. A low score on the MC-SDS represents a low concern of social approval, whereas a high school on the MC-SDS represents a high concern for social approval (Crowne & Marlowe, 1964).

However, the participants' self-report of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) did not pass alpha testing ($\alpha = .35$), and thus was not valid for usage in the study. This diminished our ability to formally test the third hypothesis in the study.

Altruistic Giving Task

An adaptation of the Dictator Game (Forsythe et al., 1994) was used to measure altruistic giving when under shared distress. In the dictator game, participants get the choice to help or defeat their opponent through monetary accumulation without revenge from their opponent. In the current iteration, participants received 100 choices to help or defeat their opponent through monetary accumulation without opportunity for revenge from their opponent.

Participant's altruistic giving under distress was determined by if the participant chose to pursue more prosocial or more self-serving monetary behaviors with the opponent in the game after reading a confederate's pitch (See **Table 2**) on a scale of $300 to $500. Prosocial/altruistic behavior was measured via accumulating less money, or closer to $300, and self-serving behavior was measured by accumulating more money, or closer to $500.

Additionally, participants completed the Altruistic Personality Scale (APS; Rushton et al., 1981). The APS is a 20-item five-point Likert scale with questions assessing the frequency of altruistic behavior. For the current study, the APS score was compared with the altruistic giving task in order to measure convergent validity between the altruistic giving task and self-reported altruistic behavior.

Procedure

Part One

Participants were placed in the testing room individually, sitting at a desktop computer. Participants were first taken through the consent process by one of three experimenters and then answered demographic questions on their age, race, and gender identity. Next, participants completed the APS (Rushton et al., 1981), IRI (Davis; 1980), QCAE (Reniers, 2011), MC-SDS (Crowne & Marlowe, 1964), BDI (Beck et al., 1961), and the STAI (Spielberger et al., 1983).

Part Two

Next, participants were prepared for the behavioral task. To assess altruistic giving under shared distress, participants were informed that the confederate has already completed the questionnaires and behavioral tasks and has been waiting for the participant in another testing room at the testing location behind a closed door. Participants were informed that they must compete with the confederate, and that the participant's performance on the next task will be

compared to the confederates to determine the participant's and confederates' compensation for their participation. Participants were told that if they perform worse on the Dictator Game than the confederate, they would have to give away 0.5 their SONA credit to the confederate. However, if the participant performs better than the confederate on the behavioral task, they would earn 0.5 credits of the confederate's SONA credit in addition to their predetermined 1 credit for their participation, amounting to a total of 1.5 credits.

To examine the effects of social desirability on behavioral responding, participants were randomly assigned to one of two conditions. In the "observed" condition (n = 34), participants were informed they were being watched via a camera on the desktop computer by an experimenter as they completed the behavioral task. In the "unobserved" condition (n = 33), participants received no instructions regarding being observed. Then, all participants were given 5 minutes to read a written "pitch" (See **Table 2**) by the confederate to evoke empathic responding by encouraging the participant to perform poorly on the next task so the confederate may receive all the compensation. Lastly, participants completed the behavior task, consisting of an iteration of the Dictator Game (Forsythe et al., 1994) on the desktop computer at the testing location. Following the task, participants were debriefed by an experimenter. Participants were requested to certify the non-disclosure of study information to any individuals other than researchers, the Institutional Review Board, and Counseling and Psychological Services in order to ensure a baseline for all future participants in the study ($n_{certified}$ = 63, $n_{rejected\ certification}$ = 4).

Data Analysis

Self-report data collection for the study was completed on Qualtrics on a desktop computer in a testing room at the KIND Lab. Following data collection, data was cleaned and scored on Microsoft Excel version 16.63.1 (Microsoft Corporation, 2018). Data consistency

testing, normalization, and analysis was completed with R version 1.4.1717 (R Core Team, 2022).

Assessing the Iteration of the Altruistic Giving Behavior Task

To assess construct validity of the altruistic giving task adaptation, we completed a correlational analysis between the altruistic giving behavioral score and the self-report score on the APS (Rushton et al., 1981). Pearson's correlation found a near-significant inverse correlation between the altruistic giving behavioral score and the APS score, $r(65) = -.22$, $p = .072$ (See **Figure 1**). Thus, as a reduced altruistic giving score is associated with *increased* giving, there is a marginally-significant *positive* relationship between the altruistic giving behavioral score and the APS score. Hence, the altruistic giving behavioral task is likely measuring a similar construct as the APS.

Results

Descriptive statistics are provided in **Table 3**.

Affective Empathy and Altruistic Giving Behavior

First, we examined the association between affective empathy and altruistic giving behavior under shared distress with a confederate across all participants. We found a marginally-significant inverse association between the affective empathy component of the QCAE and the altruistic giving behavior score ($R^2 = .06$, $F(1, 65) = 3.84$, $p = .054$). Thus, as a reduced altruistic giving behavior score is associated with *increased* giving, women's affective empathy was marginally associated with increased giving behavioral behavior.

Next, we examined the subscales of affective empathy as predictors in the model. Affective components of the IRI (Davis, 1980) and QCAE (Reniers, 2011) consisted of the independent variables, with altruistic giving behavior across all participants as the dependent

variable. Regression analysis found an inverse association between the proximal responsivity subscale of the QCAE and the altruistic giving behavior score (R^2 = .11, $F(1, 65) = 4.63$, p = .035). Thus, as a reduced altruistic giving behavior score is associated with *increased* giving, women's proximal responsivity was associated with increased altruistic giving behavior.

Altruistic Giving Behavior on Internalizing Symptoms, Moderated by Empathy

Next, across all participants, we examined the association between altruistic giving behavior under shared distress on internalizing symptoms (i.e., anxiety, depression), moderated by empathy. Based on prior work (Tone & Tully, 2014), we hypothesized affective empathy to moderate the relationship between altruistic giving under shared distress and anxiety symptoms. Similarly, based on prior work (Tone & Tully, 2014), we hypothesized cognitive empathy to moderate the relationship between altruistic giving under shared distress and depressive symptoms. Per model, altruistic giving behavior under shared distress served as the independent variable, anxious and depressive symptoms as the dependent variable, and affective and cognitive constructs of empathy as a moderating variable.

Affective Empathy and Anxiety Model

A significant association between the altruistic giving under shared distress behavioral score and peripheral responsivity, a subscale of the affective component of the QCAE, emerged to predict symptoms of anxiety (R^2 = .11, $F(3,63) = 2.67$, p = .034) across all participants.

To better understand this interaction, we completed a simple slopes analysis (See **Figure 2)**. We observed a significant inverse moderation effect between the altruistic giving behavior score and symptoms of anxiety for those with peripheral responsivity one standard deviation below the mean (p = .01), marginally for the mean (p = .07), but not for participants one standard deviation above the mean on peripheral responsivity (p = .84).

Thus, in those with low peripheral responsivity, those with increased self-focused giving behavior are associated with decreased anxiety symptoms. Additionally, with those with low peripheral responsivity, increased altruistic giving behavior is associated with higher anxiety symptoms. No remaining significant relationships emerged for the remaining measures of affective empathy.

Cognitive Empathy and Depression Model

No significant associations emerged across all participants between altruistic giving behavior and depressive symptoms, moderated by cognitive empathy components, across all participants.

Altruistic Giving Behavior on Internalizing Symptoms, Moderated by Empathy, Influenced by Social Desirability

Lastly, we aimed to examine if social desirability mediates the association between empathy and internalizing symptoms (anxiety, depression). We hypothesized that social desirability would have a significant mediation effect on the relationship between empathy and symptoms of anxiety and depression. However, as the Marlowe-Crowne Social Desirability Scale (Marlowe & Crowne, 1964) did not pass alpha testing ($\alpha = .35$), we were unable to test this model in the study.

To test the influence of social desirability on the relationship between altruistic giving behavior and internalizing symptoms, moderated by empathy, we conducted exploratory analyses by comparing these constructs between the unobserved and observed conditions.

Exploratory Analyses - Observed Condition

Anxiety Model

A marginally-significant relationship between the observed altruistic giving behavior and symptoms of anxiety, moderated by peripheral responsivity, a subscale of the affective component of the QCAE, emerged (R^2 = .18, F(3,30) = 2.23, p = .096). To better understand this interaction, we completed a simple slopes analysis (See **Figure 3)**. Echoing the total group analyses, we found a significant inverse moderation effect between the altruistic giving behavior score and symptoms of anxiety for those with peripheral responsivity one standard deviation below the mean (p = .02), marginally-significantly for the mean (p = .06), but not for participants with one standard deviation above the mean on peripheral responsivity (p = .91).

Thus, in those with low or average peripheral responsivity, those with increased self-focused giving behavior are associated with decreased anxiety symptoms. Additionally, with low or average peripheral responsivity, increased altruistic giving behavior is associated with higher anxiety symptoms. This relationship did not significantly replicate in the unobserved condition.

Depression Model

A marginally-significant association between the observed altruistic giving behavior and depressive symptoms, moderated by the online simulation, a subscale of the cognitive component of the QCAE, emerged (R^2 = .33, F(3,30) = 5.00, p = .053). To parse this interaction, we completed a simple slopes analysis (See **Figure 4)**. We observed a significant inverse moderation effect between the altruistic giving behavior score and symptoms of anxiety for those with online simulation at mean level (p < .001), as well as one standard deviation above the mean (p < .001).

Thus, in those with mean and high levels of online simulation, those with increased self-focused giving behavior are associated with decreased depressive symptoms. Additionally, with mean or high levels of online simulation, increased altruistic giving behavior is associated with increased depressive symptoms. This relationship did not replicate in the unobserved condition.

Exploratory Analyses - Unobserved Condition

No significant relationships emerged uniquely in the unwatched group.

Discussion

The current study examined the association between empathy and altruistic giving behavior, altruistic giving behavior and internalizing symptoms (anxiety, depression) in those with varying empathy, and if such relationships can be influenced by a behavioral manipulation testing for social desirability driven biased responding. We tested this relationship in a predominantly Latin and Asian sample of women engaged with self-report and behavioral manipulation. Three findings of note emerged. First, we replicated prior work (Eisenberg et al., 2010) showing an association between affective empathy and altruistic giving behavior. Second, contrary to our hypothesis, we observed an interaction between a facet of women's affective empathy, peripheral responsivity, and altruistic giving behavior on the emergence of anxiety symptoms for those with low but not high empathy. Lastly, our exploratory analyses found an influence of the social desirability condition on the relationship between altruistic giving behavior and anxiety and depression, moderated by affective and cognitive empathic subcomponents.

As we found that women's affective empathy across both conditions had a marginal association with altruistic giving behavior, this replicated prior work on altruistic giving as a

behavior characterized in empathic individuals (Bethlehem et al., 2017; Eisenberg et al., 2010). Notably, the nature of this finding under a manipulation of distress supports prior work on women engaging in enhanced prosocial behaviors following a stress induction (Dawans et al., 2019). As affective empathy is the ability to share the emotional states of others (Reniers, 2011), a greater tendency to resonate with the emotions of others may have been a seed to the altruistic giving behavior participants engaged in following the shared distress manipulation. Further parsing this finding, we observed that proximal responsivity, or the affective response to someone in a close social context (Reniers, 2011), was a subcomponent of affective empathy significantly associated with increased altruistic giving behavior. As prior work has proposed that increased proximity is associated with increased altruistic giving behavior (Long & Krause, 2017), our findings point to proximal responsivity as a mechanism to enable this relationship in women. Thus, women with the heightened ability to resonate with the emotions of the confederate participant may have been greatly inclined to pursue altruistic giving behavior following the manipulation task due to an exacerbated internal distress response to the confederate's emotional state and increased social proximity to the confederate.

Next, a subscale of affective empathy, peripheral responsivity, or the affective response to someone in a detached context (Reniers, 2011), moderated the relationship between altruistic giving behaviors and increased anxiety symptoms. Contrary to our hypotheses, this relationship was driven only by those with low peripheral responsivity. Women with high peripheral responsivity displayed no association between increased altruistic giving behaviors and increased anxiety symptoms. Thus, perhaps a low affective response to the distress of another in a detached social context (i.e., with an ostensible, unknown peer) may introduce negative effects to altruistic giving behavior, as it may buffer healthy psychological benefits associated with the emotional

impacts of altruistic giving behavior. This aligns with prior work suggesting helping a stranger (i.e., the confederate) may be due to heightened ego-centric drives (Maner & Gailliot, 2006). Additionally, heightened emotional responses to the distress of others in a detached social context may serve as a protective factor to buffer the effects of increased altruistic giving on the emergence of anxiety symptoms. Future work should explore if average or mean empathy is an important moderator for altruistic giving behaviors and healthy psychological outcomes.

Our third exploratory finding was a marginally-significant relationship between the observed altruistic giving behavior and symptoms of anxiety, moderated by peripheral responsivity in the observed condition. Saliently, in women with low peripheral responsivity being observed, we observed that increased altruistic giving behavior is associated with higher anxiety symptoms, but was not replicated for high peripheral responsivity women being observed. This relationship did not emerge for the unobserved condition. Thus, low peripheral responsivity, or low affective response to someone in a detached context (Reniers, 2011), moderates the relationship between altruistic giving behavior and anxiety symptoms in women being observed pursuing the altruistic giving behavior. Thus, as an observed social desirability condition produces conditions of social-evaluation (Engelmann et al., 2013), perhaps anxiety symptoms are salient in such conditions due to a heightened sensitivity to performing in a socially-acceptable manner (i.e., augmented altruistic giving behavior). Overall, as low peripheral responsivity allows for a heightened focus on the self, altruistic giving behavior may form an association with anxiety symptoms and be an indicator of heightened sensitivity of social-evaluation, associated with catalyzed altruistic giving.

Further extending our third finding, in the observed condition, we found a marginally-significant relationship between observed altruistic giving behavior and depressive

symptoms, moderated by online simulation, a subscale of cognitive empathy measuring intentional acts to put oneself in another's emotional position (Reniers, 2011). Specifically, this relationship was evident in those with mean and high online simulation scores, but not low scores. Thus, in those with mean and high online simulation scores, increased altruistic giving behavior was associated with increased depressive symptoms. This work supports prior work highlighting heightened cognitive empathy as a risk factor for the development of depressive symptoms (Tone & Tully, 2014). As the social desirability manipulation elicits a heightened environment of distress, perhaps those with high online simulation and cognitive components are more likely to have their distress for the confederate exacerbated by social-evaluation, leading to symptoms of emotional burnout, such as depression.

Limitations and Future Research

First, the study's sample size was limited. Acknowledging the diversity of the sample, which was representative of the community at the University of California, Riverside, the limited sample size may have significantly reduced the power of the analyses, and may limit the generalizability of the work. Exploratory analyses were hindered by a significantly reduced sample size (n = 34) in the observed group. Thus, simple slopes analyses in the exploratory analyses in future work may benefit from a larger available sample. Future research should have a heterogeneous and powerful sample size, in order to parse potential substrates of these effects in a stronger model.

Additionally, the task manipulation may have been affected by the agency of the participant to pursue the altruistic giving behavior under shared distress. As the University of California, Riverside, is on a ten-week quarter system, the time point within this frame may have influenced the willingness of SONA-recruited participants to pursue altruistic giving. Perhaps,

participants at the beginning of the quarter would be more inclined to pursue this behavior, as they had the opportunity to engage in alternative compensation measures on the SONA platform. Similarly, participants at the end of the quarter would be more likely to pursue self-focused behavior, as they may have not had access to pursuing alternative compensation measures. Future research using similar manipulations should control for these effects.

Lastly, the current study was unable to test the mediation effect of trait-social desirability on the relationship between empathy and internalizing symptoms of anxiety and depression. While exploratory analyses offset this concept with a manipulation measure, future work should formally test this construct in both trait and behavioral measures.

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Tables and Figures

Table 1.

Study Demographic Characteristics

Participants (*N* = 67)	**Descriptive Statistics**	
Age (M, SD)	19.45 (1.08)	
Age (Range)	18-23	
Female-identifying	67	
Ethnicity	***N***	**%**
White	2	2.98%
Black	7	10.44%
Hispanic	24	35.82%
Asian and Pacific Islander	29	43.28%
Other/Mixed	5	7.46%

Note. Participants completed a free-response for Ethnicity, then categorized.

Table 2.

Confederate Pitch

Confederate Pitch	**Script**
	"Hi there, My name is Alex Park. You are going to play a game on their computer to earn some money. I'm not allowed to tell you how much I made but please try to make as little as possible. I really need the psychology credit. This is my last class before I graduate…I work full-time and take care of my family, so this is the only time for me to come in to participate…please. Please help me. I'd be very grateful for your help."

Note. Pitch was handwritten by the researcher.

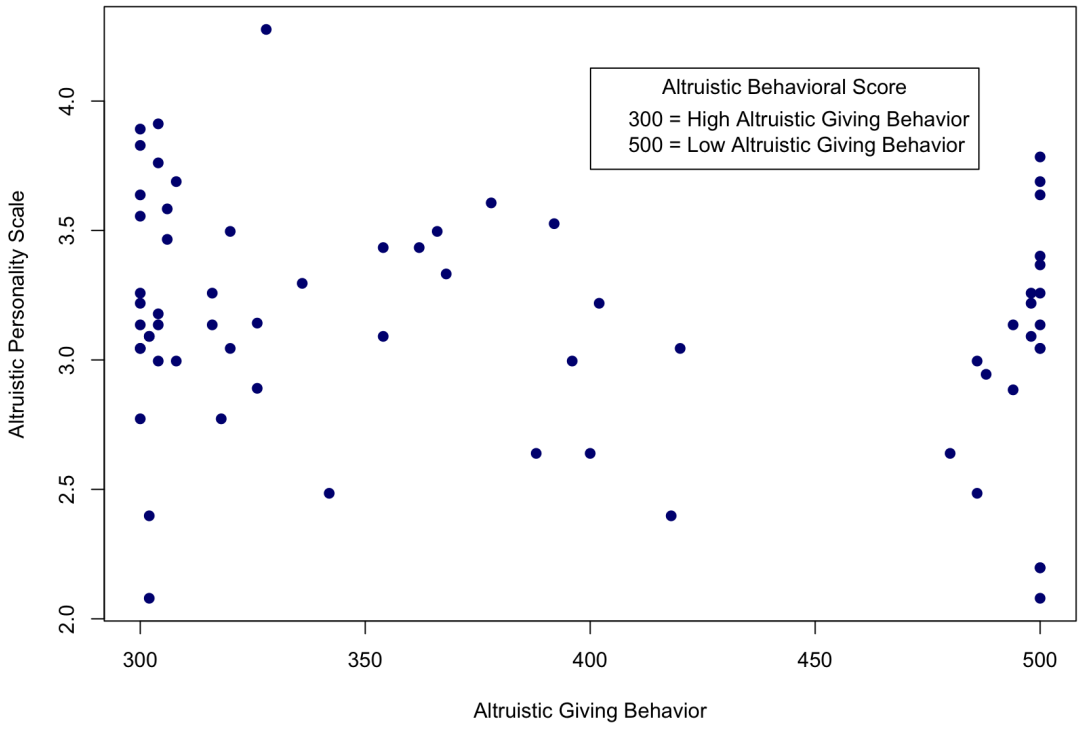
Table 3.

Means and Standard Deviations

Measure (M, SD)	Altruistic Giving Behavior	IRI Total	IRI Perspective Taking	IRI Empathic Concern	IRI Fantasy	IRI Personal Distress	
Total Group (N = 67)	354 (83.52)	38.95 (8.25)	19.12 (4.84)	19.83 (4.56)	17.87 (6.06)	14.62 (4.41)	
Observed Group (n = 34)	339 (84.93)	38.89 (8.30)	19.12 (5.06)	19.77 (4.77)	18.61 (5.94)	14.88 (4.68)	
Unobserved Group (n = 33)	366 (83.28)	39.01 (8.32)	19.12 (4.68)	19.89 (4.40)	17.09 (6.18)	14.36 (4.17)	
Measure (M, SD)	**QCAE Affective Empathy**	**QCAE Emotion Contagion**	**QCAE Peripheral Responsivity**	**QCAE Proximal Responsivity**	**QCAE Cognitive Empathy**	**QCAE Perspective Taking**	**QCAE Online Simulation**
Total Group (N = 67)	2.96 (0.46)	2.97 (0.65)	2.94 (0.60)	2.98 (0.58)	3.04 (0.36)	3.07 (0.47)	3.01 (0.43)
Observed Group (n = 34)	2.97 (0.52)	3.00 (0.76)	2.93 (0.62)	2.98 (0.56)	3.05 (0.33)	3.03 (0.43)	3.02 (0.40)
Unobserved Group (n = 33)	2.95 (0.40)	2.94 (0.53)	3.11 (0.50)	2.94 (0.53)	3.11 (0.40)	3.11 (0.50)	3.00 (0.46)
Measure (M, SD)	**STAI Trait**	**BDI**	**MC-SDS**	**APS**			
Total Group (N = 67)	49.52 (11.80)	13.81 (9.27)	21.45 (3.06)	25.67 (11.53)			
Observed Group (n = 34)	48.47 (12.59)	13.65 (9.72)	21.22 (2.73)	25.18 (9.29)			
Unobserved Group (n = 33)	50.61 (11.03)	13.97 (8.92)	21.68 (3.39)	26.18 (13.60)			

Figure 1.

Correlation Between the Altruistic Giving Behavioral Score and Altruistic Personality Scale

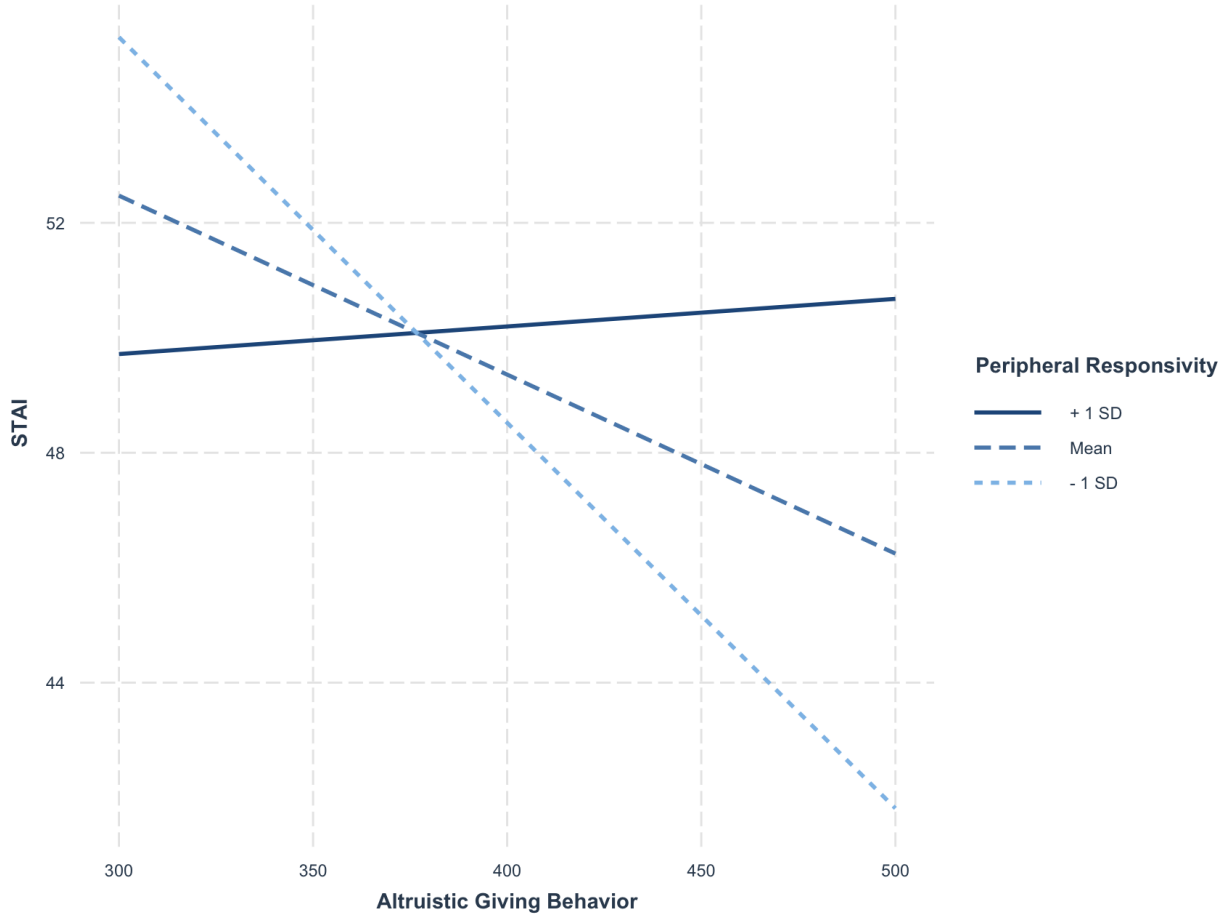


Note. Each dot represents an individual participant. A score of 300 marks *increased* altruistic giving behavior. A score of 500 marks *decreased* altruistic giving behavior.

Marginally-significant negative correlation, $r(65) = -.22$, $p = .072$.

Figure 2.

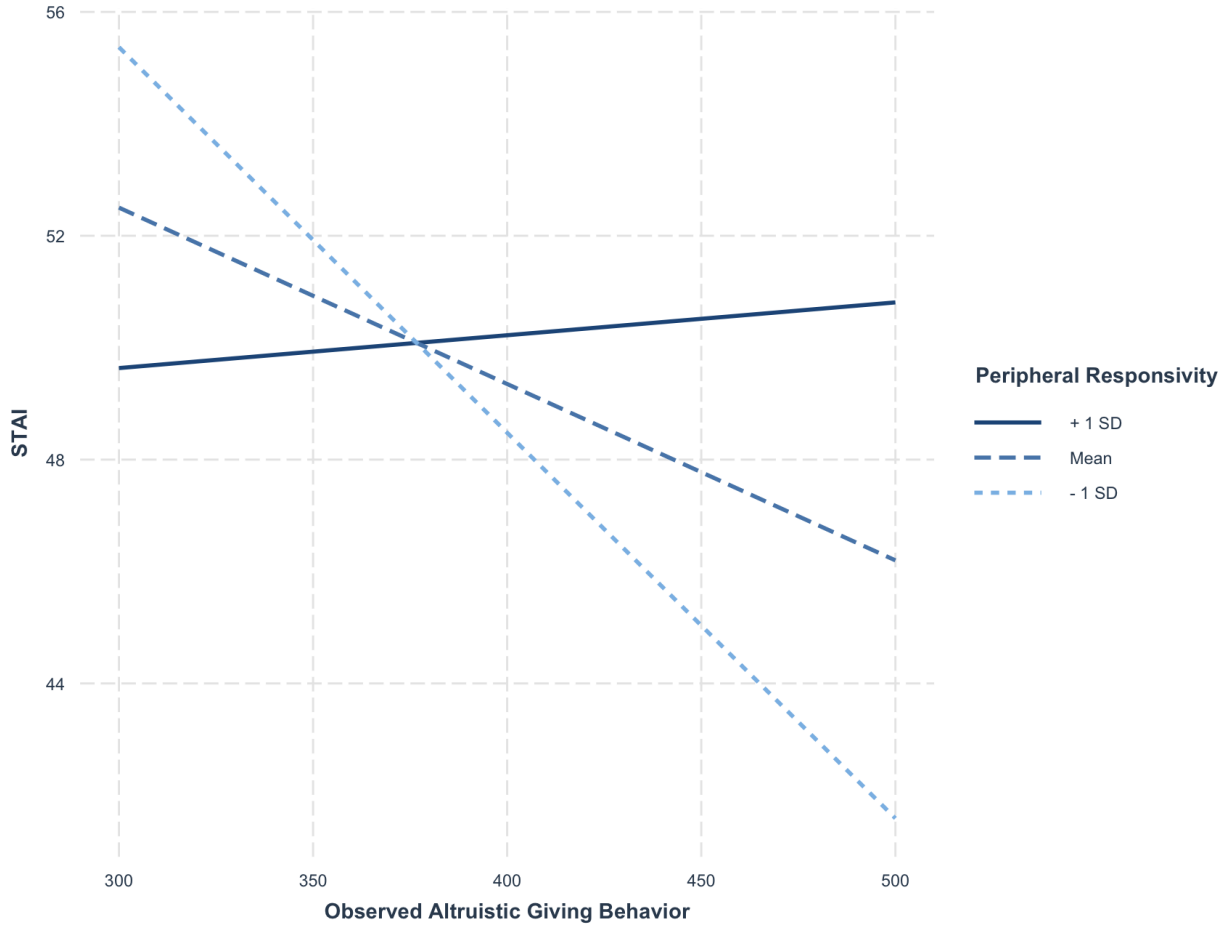
Simple slopes between the altruistic giving behavior score and symptoms of anxiety for those with low, mean, and high peripheral responsivity across all participants*



Note. A score of 300 marks *increased* altruistic giving behavior. A score of 500 marks *decreased* altruistic giving behavior. Significant moderation effect between the altruistic giving behavior score and symptoms of anxiety for those with peripheral responsivity one standard deviation below the mean (p = .01).

Figure 3.

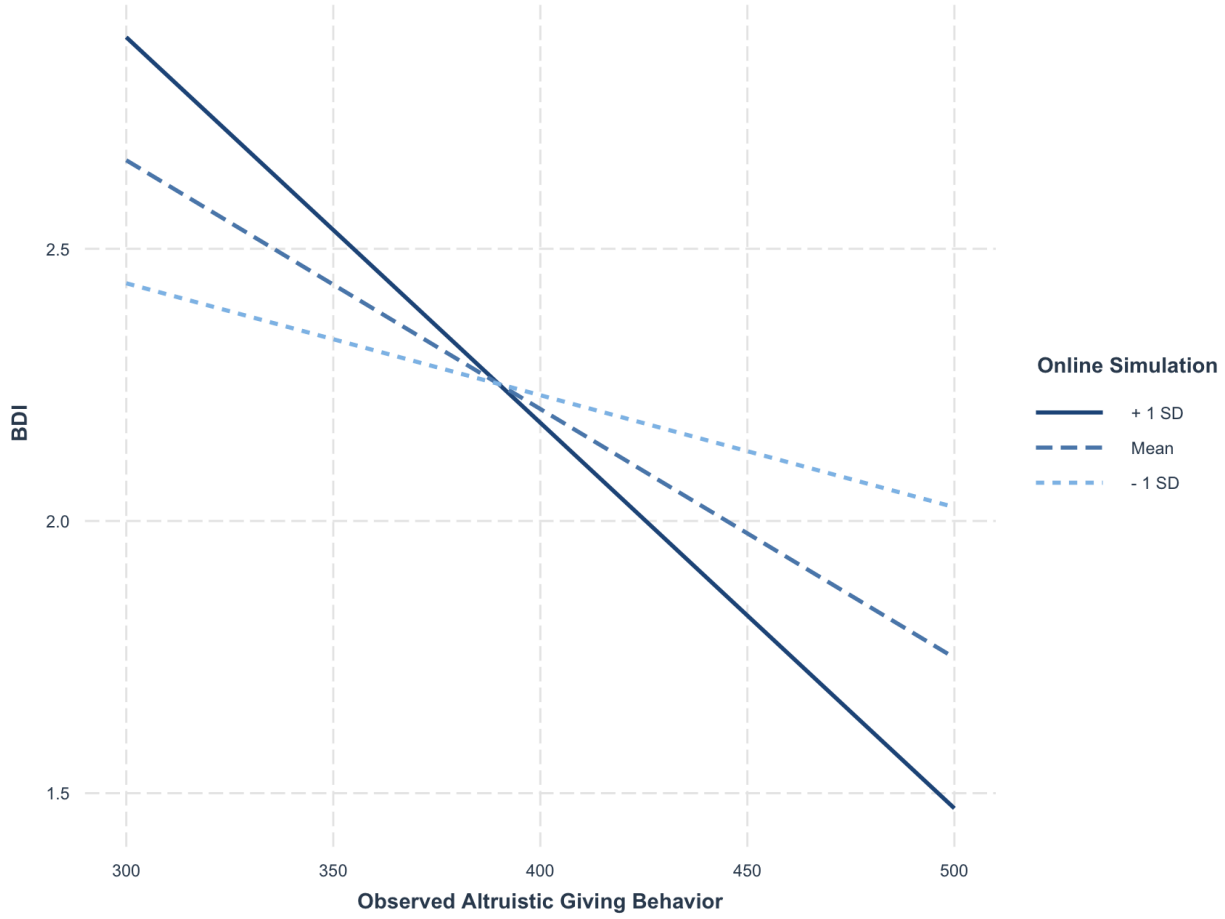
Simple slopes between the altruistic giving behavior and symptoms of anxiety for those with low, mean, and high peripheral responsivity in the observed condition*



Note. A score of 300 marks *increased* altruistic giving behavior. A score of 500 marks *decreased* altruistic giving behavior. Significant moderation effect between the altruistic giving for those with peripheral responsivity one standard deviation below the mean (p = .02).

Figure 4.

Simple slopes between the altruistic giving behavior and symptoms of depression for those with low, mean, and high* online simulation in the observed condition*



Note. A score of 300 marks *increased* altruistic giving behavior. A score of 500 marks *decreased* altruistic giving behavior. Significant moderation effect between the altruistic giving behavior score and symptoms of anxiety for those with online simulation at mean level ($p < .001$), as well as one standard deviation above the mean ($p < .001$).