Does the Mere Experience of Empathic Emotion Shape Self-Perceptions?

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ABSTRACT

Recent work by Devlin, Bink, and Clark (under review) found that merely experiencing empathic emotion in response to another person's expression of emotion can make the empathizer see themself as a more prosocial person. The present study conceptually replicated their investigation with textual vignettes rather than visual display of emotion. Participants were assigned randomly to condition: (1) Happy vignette, (2) Sad vignette, or (3) Neutral control vignette. After reading their assigned stimulus paragraph, they rated their emotion and completed a self-perceptions assessment. No main effect of vignette valence condition on self-perceptions of prosociality was found. Correlational analyses revealed positive and significant within-condition associations between emotion-congruent reaction rating and prosocial self-perceptions; however, it's likely that these findings do not meaningfully support the hypothesis. It's possible that the discrepancy between these outcomes and those of Devlin et al. (under review) can be attributed to the non-visual nature of the stimuli used.

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INTRODUCTION

Theoretical Background

Humans are highly social beings whose social behaviors extend to living together, forming personal relationships, cooperating with and even helping one another (Batson, 2011; Hoffman, 1981; Rand, Greene & Nowak, 2012). To those ends, the multifaceted psychological construct of empathy plays an essential role in facilitating those processes (de Waal, 2008; Jia, Lee & Tong, 2015; Morelli, Lieberman & Zaki, 2015; Schaller & Cialdini, 1988; Zaki & Ochsner, 2012).

Empathy can be defined in many ways, but in general, it involves the ability to share and understand in another person's emotion state (de Waal, 2008; Decety, Michalska & Akitsuki, 2008; Zaki & Ochsner, 2012). Emotions and emotion displays are among the most important and useful tools for social communication – through empathy and its related mechanisms, a perceiver can quickly relate to a target. Research suggests that, in turn, empathy produces altruistic motivation (Hoffman, 1981; Batson, 2011; de Waal, 2008) and also has also demonstrated that empathy is positively associated prosocial behaviors like sharing, helping, volunteering, and providing emotional and tangible support (Batson, 2011; Eisenberg & Miller, 1987; Morelli et al., 2015; Schaller & Cialdini, 1988; Zak et al, 2007).

Frequently, empathy takes place through automatic, passive, unconscious means, Emotion contagion is the typically unconscious induction of emotion state from one party to another, and has been observed with both positive and negative emotions (Coyne, 1976; Decety et al., 2008; Hatfield, Cacioppo & Rapson, 1994; Hoffman, 1981; Singer, Seymour, Doherty, Kaube, Dolan & Firth, 2004). Notably, neuroimaging studies have shown that empathy

selectively activates the brains regions associated with first-hand experience of the particular shared emotion (Gallese, Keysers & Rizzolatti, 2004; Morelli et al., 2015). Studies investigating empathy for pain have even found this to be true for affective parts of the pain network (Decety et al., 2008; Singer et al., 2004). To generalize, an observation of a target's state activates a mirrored representation of that state in the perceiver, often accompanied by all of its associated autonomic and somatic responses. In this way, the perceiver can truly bridge the gap between and empathize with the target.

It is widely accepted that behavioral mimicry, or synchrony, is the driving force behind emotional contagion. Using laboratory experiments, researchers have observed that even between strangers, people tend to automatically, unconsciously, and unintentionally mimic the facial expressions, postures, and mannerisms of their interaction partners (Aragón, Sharer, Bargh & Pineda, 2014; Chartrand & Bargh, 1999; Dimberg, Thunberg & Elmehed, 2000; Jia et al., 2015; Vacharkulksemsuk & Fredrickson, 2012; Valdesolo & DeSteno, 2011; van Baaren et al., 2004; Wiltermuth & Heath, 2009; Zaki & Ochsner, 2012). Mimicking appears to be an instinctive behavior in social situations; it has been shown to begin among infants and to continue throughout life (Hatfield et al., 1994).

Similar to the mirroring mechanism described above, the external experience of performing the same movements as the target may lead the perceiver to experience the same internal representation of the target's state, as well. With specific regard to facial expressions, some theories – such as the facial-feedback hypothesis – propose that the visceral experience of physically displaying emotion coupled with the associated neural resonance causally affects the experience of emotion – so if one were to mimic another's smile, they would come to feel happier as a result (Gallese et al., 2004; Strack, Martin & Stepper, 1988; Zaki & Ochsner, 2012).

Others theorize that synchrony elicits appraisal of similarity, which enhances In any case, there are many positive consequences of emotional contagion due to mimicry, including feelings of interpersonal closeness and mutuality (Vacharkulksemsuk & Fredrickson, 2012), compassion (Valdesolo & Desteno, 2011), cooperation (Wiltermuth & Heath, 2009), and prosocial behavior (van Baaren, Holland, Kawakami & van Knippenberg, 2004).

However, empathy can also arise through conscious, effortful, and active strategies. The theory of mind mechanism allows humans to mentalize about others' internal states, and so it is possible for one to self-project and take the perspective of a target – colloquially, step into someone else's shoes and consider their point of view (Buckner & Carroll, 2006; Leslie, Friedman & German, 2004; Zaki & Ochsner, 2012). Given their effortful nature, these processes are modulated by motivation. The cognitive components of empathy described here differ in many ways from the visceral, affective mechanisms described above. These categories comprise only two of empathy's multidimensional facets.

In short, humans are sensitive to others' emotions, and tend to react with emotions of their own. As we've been discussing, sometimes those emotional reactions are congruent with the emotion that their interaction partner is feeling and expressing – what is generally categorized as empathy. Of course, not everyone behaves empathetically all of the time. Sometimes a person may experience an emotion in response to a partner's emotion that is incongruent with their partner's feeling (e.g. feeling happy when an opponent loses an election and is sad.) Their emotion reaction, whatever it may be, may then become a source of information, which they may use to draw conclusions about themselves (Bem, 1972; Laird, 2007). To elaborate, people often make judgments based unconsciously on inapplicable but easily accessibly sources of information, such as mood and cognitive experiences (Schwarz &

Clore, 1983; 2003; Tversky & Kahneman, 1973). Self-perception theory posits that people typically do not have access to their own internal states – as such, they can only make inferences about themselves based on external behavior and context (Bem, 1972). Accordingly, a person may have difficulty making judgments on their own personality traits – except to infer from how they act in different situations.

When it comes to empathy, a person who observes another's display of emotion and responds in an emotion-congruent manner may then conclude that they are a more prosocial person than would otherwise be the case – that is, a reaction of sadness for another person who feels sad or a reaction of happiness for another person who feels happy leads to an enhanced self-perception of prosociality. The experience of sharing in someone's sadness may indicate to the empathizer that they prosocial individual who empathizes and is willing to share in and validate the other's misfortune (Coyne, 1996; Davis, 1983). On the other hand, the experience of feeling happy for another person who is happy may suggest to one that they are a prosocial individual who cares about others and is willing to help others capitalize on their good fortune (Gable & Reis, 2010; Morelli et al., 2015). In general, empathic reactions occur commonly and are considered the appropriate response according to most social norms (Royzman & Rozin, 2006).

In contrast, a person who observes another's display of emotion and responds in an emotion-incongruent way would not necessarily conclude that they are a prosocial person – that is, a reaction of sadness to another person who feels happy or a reaction of happiness to another person who feels sad doesn't lead to a self-perception of prosociality. As mentioned earlier, sadness in the face of another's happiness may occur as a result of an upward social comparison, jealousy, or resentment (Festinger, 1954; Morse & Gergen, 1970; Salovey & Rodin, 1986; Tesser & Collins, 1988). In the latter case, happiness in response to another's sadness may arise

as a result of upward social comparison or schadenfreude (Smith et al., 2009; Wills, 1981). Indeed, such reactions may lead people to see themselves as especially unempathic and, therefore, less rather than more, prosocial in nature.

Foundational Work

Recent studies conducted by Devlin, Bink & Clark (under review) were designed to test the hypothesis that the mere experience of viewing another's display of emotion and responding with emotion can influence one's own self-perceptions. Participants were assigned randomly to one of three emotion conditions: (1) Positive emotion (i.e. happiness), (2) Negative emotion (i.e. sadness), and (3) Neutral emotion, a control. Participants viewed stimuli of a target's emotion display corresponding to their assigned emotion condition, and then were asked to self-report how positively and negatively the stimuli made the participants feel. Afterwards, an assessment of self-perceptions was completed in which participants rated themselves on a list of traits. Among these, three prosocial traits (i.e. compassionate, kind, generous) served as a composite measurement of the participant's self-perceptions of their own prosociality.

In the first study, the stimuli used were brief video clips of an emotional display corresponding to one of the three emotion conditions. A trained female actor displayed emotion through verbal expressions and corresponding non-verbal facial expressions. Participants who observed another's sadness (negative condition) reacted with emotion-congruent responses (i.e. sadness) consistently. Further, they subsequently rated themselves as marginally more prosocial than did participants in the neutral condition and significantly more prosocial than participants in the positive condition. Although participants who observed another's happiness (positive condition) did not consistently react with an emotion-congruent response (i.e. happiness), those who did react congruently also did report high prosocial self-perceptions.

A second study was designed to conceptually replicate the first. It used a still slideshow of faces as stimuli. The images included emotion displays from multiple target persons who varied in both gender and race. Additionally, the emotion displays in these stimuli involve facial expressions but not accompanying verbal expressions, which is often the way that emotions are communicated in reality. In these ways, the findings were ensured to be generalizable to experiences in daily life. Fortunately, and in contrast to the previous investigation, participants who observed another's happiness and participants who observed another's sadness both reacted consistently with emotion-congruent responses. Sadness condition participants rated themselves as significantly more prosocial than participants in the neutral condition; happiness condition participants reported marginally higher prosocial self-perceptions than the neutral condition. Within-condition correlation analyses further revealed positive associations between emotion-congruent responding and self-perceptions of prosociality.

Taken together, the results of these two studies support the hypothesis that merely experiencing empathic emotion in response to another person's emotion display – even without an opportunity to provide support or interact with the target – can make an individual feel like a more prosocial person. The outcome depends on how one responds to another's emotion: an emotion-congruent reaction adds to self-perceptions of prosociality, while an emotion-incongruent reactions detract from self-perceptions of prosociality. Further, there appeared to be a direct association between the strength of emotion-congruent reactions and reported self-perceptions of prosociality – that is, after viewing a display of positive emotion, the more positive that participants feel, the more prosocial they view themselves as being (and vice versa for the display of negative emotion).

At the same time, the first study revealed unexpected valence-dependent results. Participants in the negative condition consistently responded with an emotion-congruent empathic response to a target's sadness, while participants in the positive condition responded with less consistent and less extreme emotion-congruent responses to a target's happiness (in Study 1 but not Study 2). Devlin et al. (under review) hypothesized that emotion-congruent responding to another's emotional display would enhance prosocial self-perceptions regardless of the valence of the emotion – to the extent that emotion-congruent responses take place. However, the authors were open to the suggested possibility that "it may be more difficult for individuals to experience an empathetic response towards others' positive emotion displays" (Devlin et al., under review).

Quite a few theoretical accounts of this proposition can be found in psychology literature, though actual empirical evidence is much more rare. The primary candidate explanation invokes social comparison theory: perhaps positive condition participants found difficulty in experiencing empathy because observing another's happiness elicited upward social comparisons, which can decrease self-esteem and cause feelings of sadness or jealousy (Festinger, 1954; Salovey & Rodin, 1986; Tesser & Collins, 1988). On the other hand, it may be far easier to sympathize with another's sadness because the sympathizer does not suffer from and may even benefit by comparison (Wills, 1981). Other possible explanations more fully differentiate between negative empathy (empathy towards others' sadness and distress) and positive empathy (empathy towards others' happiness and good fortune). These explanations no longer view empathy as a uni-dimensional construct with regard to valence, but rather two different constructs based in separate valences (Morelli et al., 2015; Royzman & Rozin, 2006).

In short, I felt that the generalizability of Devlin et al.'s results and their theoretical ideas merited further exploration and validation, and additionally, that mysterious nature of empathy, towards both positive and negative emotions, warranted further examination.

The Present Investigation

My study was designed to conceptually replicate the previous work by Devlin et al. (under review) with novel stimuli – specifically, short paragraph vignettes describing displays of emotional expression.

Though a signification portion of personal encounters with emotion and emotional exchanges in daily life come from social interactions with other individuals, human beings frequently encounter and are drawn to other sources of emotion experience. For example, most people regularly seek out narratives to indulge in. The truth is, the narrative form constantly surrounds us throughout our lives every day – whether fictional (novels, movies, plays, etc.) or nonfictional (news stories, personal anecdotes from friends, social media, etc.), whether happy or sad – and we seem to enjoy them all immensely.

Though the latter part of the previous statement may not seem surprising at first glance, the question of why all of these stories are appealing is actually very interesting to consider – specifically, why would anyone choose to seek out sad stories? Why is then even a successful genre of books that are called "tear jerkers?" Intuitively, engaging in a happy narrative may improve one's mood, making than an obviously attractive and adaptive option, but what are the benefits do sad stories confer? Drawing on the recent research conducted by Devlin et al (under review) as well as a body of multidisciplinary work stretching from social psychology to the fine

arts (Coplan, 2004; Keen, 2006; Mar & Oatley, 2008; Woolley, 1997; Zillman, 1994; Zillman & Cantor, 1976), empathy seems to lie at the crux of the matter.

If a sad story makes people feel sad in turn, those people may infer that they are nice, caring people. The appeal of sad narratives begins to make sense – people may actually feel good about themselves afterwards. As mentioned above, the appeal of happy narratives could simply be explained by a resulting increase in happy mood. However, another account could be that people feel empathic happiness for characters in the story, and they in turn evaluate themselves positively. The two processes are not mutually exclusive; when it comes to happy narratives, both could apply. In a similar vein, stories with sad components but ultimately happy endings may be especially appealing. Readers have the opportunity to feel both empathic sadness and empathic happiness, which enables a double dose of perceiving of the self as a good person – one who is empathic and cares about others.

This study aimed to verify Devlin et al.'s theoretical ideas while also trying to contribute to the generalizability of their findings (under review). In the course of their 2 experiments, Devlin et al. (under review) moved from a single visual target (a female actress) to multiple visual targets (a slideshow of faces diverse in gender and race). My study used non-visual stimuli to test the empathy / self-perception hypothesis. Specifically, I wrote short paragraph vignettes describing a target character expressing emotion. In this way, I hope to test the hypothesis with stimuli that tap into a novel source of emotion experience, and perhaps gain insight into why humans engage in sad narratives.

In accordance with the replicative nature of this study, I performed many of the same data analyses that were performed in the original studies. Specifically, for the main experimental

question, I tested for a main effect of emotion condition (happy vs. sad vs. neutral) on self-perceptions of prosociality – that is, whether participants randomly assigned to valence emotion vignette condition do, on average across the group, see themselves as more prosocial, regardless of their emotion reaction to the stimulus. As a secondary analysis, I looked for within-condition correlations to confirm the positive associations between emotion-congruent reaction and prosocial self-perceptions. Devlin et al. (under review) observed – that is, whether those participants who did react to the target's happiness with happiness do see themselves as more prosocial, etc.

In sum, I hypothesized that my project would offer further confirmation to Devlin et al.'s findings: that merely being assigned to watch another person's expressed emotion would influence observers' views of themselves, and that the effect will be modulated by the degree of the participant's emotion-congruent reaction.

METHODS

Participants

Subjects were recruited from Amazon Mechanical Turk (MTurk) to participate in our study. Previous investigations into the MTurk community have yielded promising findings putting forth the site as a source of inexpensive, high quality data for research projects in psychology and other social sciences. Additionally, analyses on demographic characteristics suggest that participants recruited through MTurk are at least as diverse and more representative of the US population than both traditional college samples and typical Internet samples (Buhrmester, Kwang, & Gosling, 2011).

301 American adults (47.2% female; 79.4% Caucasian) above the age of 18 participated. The sample's mean age was 36.13 (*sd* = 12.28) and the mean years of education was 15.03 (*sd* = 2.39). However, 20 participants were ultimately excluded from analyses due to various reasons: 11 failed the survey's attention check, 1 reported having taken another survey from Devlin et al. (under review) with a similar design and hypothesis, and 8 were excluded for completing the survey in a negligent manner (evaluated based on repetitive patterns of responses and survey completion times faster than 2 minutes).

In the final sample, *n* = 281 (48.0% female; 80.4% Caucasion) with mean age = 36.8 (*sd* = 12.33) and mean years of education = 15.07 (*sd* = 2.30).

Procedure

The study was posted under the title "Reactions to Paragraph Vignettes." Recruited subjects were told that participation in this experiment involves reading a brief paragraph and providing emotion ratings in response, as well as completing a series of questionnaires about the subject's personality and individual traits. This subtle cover explanation was designed to redirect attention from the real hypothesis while encouraging participants to respond honestly and fully.

All participants completed the informed consent procedure, as well as a baseline trait empathy measure called the Interpersonal Reactivity Index (IRI; Davis, 1983).

Next, participants were randomly assigned to one of three experimental conditions: (1) Happy emotion (i.e. paragraph describes a display of happiness), (2) Sad emotion (i.e. paragraph describes a display of sadness), or (3) Neutral control (i.e. paragraph describes a lack of emotional display). Then, participants were presented with the stimuli assigned to their

condition, with instructions to read the paragraph. After reading through their designated vignette, participants provided their own emotional reaction rating.

At this point, they were thanked for their participation in the study thus far and told: "The main section of the survey is over. You will now be asked a series of questions about your personality and demographics in order to gather information about our sample," and were asked to completed the self-perceptions measure.

Finally, participants answered several demographics questions, were debriefed, and were compensated $0.35 for their participation in the study.

Materials & Measures

Trait empathy. The first measure of the study was an initial measure of trait empathy. Previous studies show that there are vast individual differences in levels of trait empathy from individual participant to participant (Davis, 1983; Hein, Silani, Preuschoff, Batson & Singer, 2010). We expected personality trait empathy to be a significant predictor of prosocial self-perceptions on its own, and so the inclusion of this baseline measure provided a way to control for indvidiual differences in trait empathy in later analyses.

Trait empathy was measured using the well-validated Interpersonal Reactivity Index (IRI; Davis, 1983), a scale that views empathy as a multidimensional construct and thus incorporates four specific empathy concepts in its assessment approach. Each of the four constructs is addressed by a 7-item subscale, resulting in a full IRI of 28 questions. Self-reports are recorded on a scale from 1 ("Does **not** describe me well") to 5 ("Describes me very well"); in our implementation of the IRI, these headers were repeated every 8 questions to remind the participants of the meanings of the numbers in the response scale. An attention check was

included as the second to last question: “If you are paying attention, please select 2 in response to this item.”

In particular, our analyses focused on the Empathetic Concern (EC) and Fantasy (FS) subscales. The EC subscale is used to assess one’s trait feelings of warmth, concern, and compassion toward others in everyday life (e.g. “I often have tender, concerned feelings for people less fortunate than me”). In contrast, the Fantasy (FS) scale taps respondents’ tendencies to project themselves imaginatively into the feelings and actions of fictitious characters in books, movies, plays, and other fictional media (e.g. “I really get involved with the feelings of the characters in a novel.”) (Davis, 1983).

The IRI can be viewed, in entirety, as we presented it, in Appendix A.

Emotion stimuli. Three brief paragraph descriptions of emotional expression were written by the experimenter to serve as the main manipulation stimuli. The instructions preceding presentation of the stimulus paragraph stated: “In this survey you will be asked to read a paragraph. Please read it through carefully, at a pace that is comfortable to you. Thank you!”

Each paragraph described a display of emotion corresponding to the three experimental conditions: positive, negative, and neutral. The paragraphs were standardized by length (word count and character count), and by readability scores. See Appendix B for a detailed report.

Qualitative efforts were also made to keep the paragraph flow relatively similar across conditions: each vignette contained the same number of sentences, and those sentences either contained identical fragments (the beginning and ending sentences contained context information that was kept constant across all three conditions) or were structured in parallel ways (long

sentences were broken into two main parts as either a compound sentence or a sentence containing a long dependent clause, etc.).

The full text of the stimuli paragraphs can be found in Appendix C. Paragraphs referring to the target using female and male pronouns were balanced in implementation across participants.

Emotion ratings. After reading the stimuli for their respective condition, participants were asked to answer 8 questions about their reactions to the paragraph they had just read. Two questions asked about their emotion ratings – "How happy, if at all, did this paragraph make you feel?" and "How sad, if at all, did this paragraph make you feel?" – while the other 6 were filler questions, intended to distract participants from knowing the true questions of interest (e.g. "How much did you like this paragraph?" and "How engaged, if at all, did this paragraph make you feel?"). The happy and sad emotion rating questions were always presented as the sixth and seventh questions, though the order of presentation was counterbalanced across participants. Responses were recorded on a scale from 1 ("Not at all") to 7 ("Extremely") (with 4 being "Moderately").

Self-perceptions. As an assessment of self-perceptions, participants were provided with a list of 16 personality traits. Half of these adjectives described positive, desirable traits, while the other half described negative, undesirable traits. For each adjective, they were asked to indicate the extent to which they felt each trait currently applied to them on a scale from 1 ("Not at all") to 7 ("Extremely") (with 4 being "Moderately").

A composite of three of these traits (i.e. compassionate, kind, generous) was used as our measure of "prosocial self-perceptions." We expect for the three items to exhibit a high degree of

internal consistency, and will report the α value in the final version of this paper. As a control comparison, we selected four positive filler items (i.e. versatile, intelligent, ambitious, athletic) to represent a positive personality trait unrelated to prosociality. In this way, we tested whether empathetic emotion specifically influenced prosocial self-perceptions or merely enhanced positive self-views more generally.

The ordered list of 16 traits used as our self-perception assessment can be found in Appendix D.

Other questions. Participants reported demographic information regarding gender, ethnicity, age, and years of education. This section also contained several filler questions to distract from the self-perceptions measure (e.g. "How much do you read in an average week? Books, newspapers, magazines, and documents for work and personal use are valid reading materials. (For example: 2 hours)").

They were also probed about additional thoughts that may have come up while reading the stimuli paragraphs and impacted responding. We planned to exclude participants who guessed that the hypothesis involved empathy or self-perception, or who indicated that they'd taken a similar survey before.

RESULTS

Pilot study to validate stimuli

An informal pilot study was conducted to ensure that the stimuli vignettes portrayed as displaying the intended emotions. Earlier versions of the three paragraphs were shown to small sample of volunteers in my Cognitive Science Senior Project seminar (n = 23). After reading

through one vignette, the volunteers were asked, "How happy [sad], if at all, did the person in the paragraph feel?" and then recorded their rating on a scale from 1 ("Not at all") to 7 ("Extremely") (with 4 being "Moderately").

In the Happy emotion vignette condition, the target was rated as experiencing high levels of happiness ($M = 6.00$, $SD = 0.93$) and low levels of sadness ($M = 1.50$, $SD = 0.54$). In the Sad emotion vignette condition, the target was rated as feeling low levels of happiness ($M = 1.25$, $SD = 0.46$) and high levels of sadness ($M = 6.25$, $SD = 0.89$). In the Neutral condition, the target was rated as feeling relatively low levels of both happiness ($M = 2.29$, $SD = 1.38$) and sadness ($M = 2.29$, $SD = 0.37$). These informal results confirmed that the vignette paragraphs portrayed the target character as displaying the intended emotions and would serve our purposes as stimuli.

Manipulation checks

After all of the data had been collected, we first established what emotions the paragraphs elicited among participations. We expected participants to experience more happiness after reading the Happy emotion vignette as compared to the Sad emotion and Neutral vignettes. Similarly, we expected participants to experience more sadness after reading the Sad emotion vignette as compared to the Happy emotion and Neutral vignettes.

The post-paragraph happiness reaction ratings underwent a square-root transformation to meet the assumption of homogeneity of variance across groups (according to Levene's Test) ($p = 0.064$). Pairwise comparisons revealed that all three conditions differed significantly from one another in the predicted directions (all $p \leq 0.005$). Overall, participants reported more happiness emotion after the Happy emotion vignette ($M = 2.08$, $SD = 0.48$) as compared to the

Sad emotion (M = 1.36, SD = 0.42) and Neutral (M = 1.57, SD = 0.49) vignettes. Unfortunately, the square-root transformation was not sufficient to make the post-paragraph sadness ratings data to meet the assumption of homogeneity. Regardless, all conditions differed significantly in the predicted directions (all ps < 0.001), with participants reporting more sadness after the Sad emotion vignette (M = 2.05, SD = 0.47) as compared to the Happy emotion (M = 1.17, SD = 0.31) and Neutral (M = 1.43, SD = 0.49) vignettes.

The descriptive statistics of the untransformed data revealed how consistently participants felt an emotion-congruent response to the stimuli. The hypothesis stated that emotion-congruent responses would positively influence self-perceptions of prosociality, but emotion-incongruent responses would detract from perceptions of prosociality.

Both of our valence emotion vignette conditions elicited clear and consistent emotion-congruent responses. This was true both in terms of high ratings of congruent emotion that fell, for the majority of the participants, above the "Moderate" midpoint (4) on the scale, and in terms of low levels of non-congruent emotion falling consistently below the midpoint (4) of the scale. In the Happy emotion vignette condition, participants reacted with happiness (M = 4.56, SD = 1.81) rather than sadness (M = 2.02, SD = 1.29). Conversely, participants who read Sad emotion vignettes responded with sadness (M = 4.41, SD = 1.80) rather than happiness (M = 1.46, SD = 0.93).

The manipulation was successful on all fronts. Based on these initial results, we had hopes that both valence emotion vignette conditions would, on average, see themselves as prosocial compared to the Neutral condition.

Table 1. Descriptive Statistics of Post-Stimuli Emotion Ratings Measure

Emotion Reaction Ratings					
				Square-root Transformed	
Emotion Reaction	*Valence Condition*	*Means*	*SD*	*Means*	*SD*
Happiness*	Happy emotion	4.56	1.81	2.08	0.48
	Sad emotion	2.02	1.29	1.36	0.42
	Neutral emotion	2.71	1.60	1.57	0.49
	Levene's Test	$p < 0.001$		$p = 0.064$†	
Sadness**	Happy emotion	1.46	0.93	1.17	0.31
	Sad emotion	4.41	1.80	2.05	0.47
	Neutral emotion	2.27	1.56	1.43	0.49
	Levene's Test	$p < 0.001$		$p < 0.001$	

† The assumption of homogeneity of variance across groups was met only within the transformed happiness reaction data

* Within the happiness reaction, all valence conditions were significantly different from all other conditions at a $p < 0.01$ level

** Within the sadness reaction, all valence conditions were significantly different from all other conditions at a $p < 0.001$ level

Hypothesis testing

Main effects of valence condition on self-perceptions. In the primary experimental analysis, trait empathy was controlled for in examining the main effect of valence condition on self-perceptions of prosociality.

Two analyses of covariance (ANCOVA) were conducted with the prosocial composite variable as dependent variable, valence condition as fixed factor, with trait empathy as covariates (empathic concern and fantasy, respectively). Contrary to our predictions, no effects of valence condition on prosocial self-perceptions were found in either case ($p_{EC} = 0.688$, $p_F = 0.632$). There were also no effects of valence condition on self-perceptions regarding the other positive control traits (e.g. versatile, etc.).

Two additional ANCOVAs were conducted in the same vein – controlling for trait empathic concern and trait fantasy empathy – but with valence condition, gender condition

(female vs. male target pronouns in the vignette), and ValenceCond * GenderCond as fixed factors. No main effects and no interactions were found, regardless of the trait empathy covariate used. While these analyses did not match our expectations or confirm our hypothesis, they did verify that it is safe to collapse the gender conditions within the valence conditions, so that our analysis are only concerned with three valence conditions (within which target pronouns are balanced, half male and half female).

Table 2. Descriptive Statistics of Prosociality Measure from the Self-Perceptions Assessment

Self-Perceptions of Prosociality		
Valence Condition	*Means*	*SD*
Happy emotion	14.59	4.10
Sad emotion	15.14	4.10
Neutral emotion	15.04	3.91

Within-condition correlations between emotion responses and self-perceptions. Within each valence condition, correlations of post-paragraph emotion reactions and self-perceptions were run. In these analyses, we didn't control for trait empathy, since differences in trait empathy were likely the driving factor behind differences in emotion reactions.

In the Happy emotion vignette condition, the correlation between paragraph-elicited happiness ratings and prosocial self-perceptions was positive and significant ($r = 0.427$, $p < 0.001$); importantly, in comparison, the same correlation in the Neutral condition barely approached significance ($r = 0.202$, $p = 0.052$). Similarly, within the Sad emotion vignette condition, there was also a positive and significant correlation between sadness reaction ratings and prosociality ($r = 0.293$, $p = 0.004$); the correlation correlation within the Neutral condition does not reach significance.

As predicted for both valence emotion vignette conditions, a positive and significant correlation was found between the congruent emotion ratings and self-perceptions of prosociality. Further, the correlations in the valence conditions were more significant than their parallel correlations in the Neutral condition. This suggests that these findings can be attributed to more than just pre-existing correlations between trait empathy, positive and negative emotions, and prosocial views of the self.

Table 3. Within-Condition Correlations Between Emotion Responses and Self-Perceptions

Within-Condition Correlations

Valence Condition	*Emotion Rxn*	*Prosociality Traits*		*Pos. Control Traits*	
Happy emotion vignette	Happiness	r =	0.427**	r =	0.361**
		p <	0.001	p <	0.001
	Sadness	r =	-0.101	r =	-0.110
		p =	0.334	p =	0.295
Sad emotion vignette	Happiness	r =	0.042	r =	0.005
		p =	0.688	p =	0.963
	Sadness	r =	0.293**	r =	0.167
		p =	0.004	p =	0.107
Neutral emotion vignette	Happiness	r =	0.202	r =	0.247*
		p =	0.052	p =	0.017
	Sadness	r =	0.046	r =	0.23*
		p =	0.660	p =	0.026

** Correlation is significant at the p < 0.005 level
* Correlation is significant at the p < 0.05 level

Other Results. Within the Happy emotion vignette condition, there was also a positive and significant correlation between happiness and the positive traits control variable ($r = 0.361$, $p < 0.001$). This indicates that participants who read about a happy target and reacted happily saw themselves as more prosocial – but also as a better person more generally.

Additionally, turning to the Neutral condition, post-paragraph happiness correlates both marginally with prosocial self-perceptions ($r = 0.202$, $p = 0.052$) and significantly with the

positive control traits self-perceptions ($r = 0.247$, $p = 0.017$). Furthermore, post-neutral-emotion-paragraph sadness correlates positively and significantly with the positive traits control variable ($r = 0.230$, $p = 0.026$). Some of these unexpected outcomes are unsurprising, while others are perplexing. I speculate more in the discussion section below.

DISCUSSION

Discussion of Results

Main effects of valence condition on self-perceptions. Contrary to my predictions, no overall effect valence condition on self-perceptions of prosociality was found. That is, random assignment to the positive condition made no difference on prosocial self-perceptions.

Disappointingly, the outcome did not support my hypothesis. Further, it also deviated from the previous findings by Devlin et al. (under review). What can account for this pattern of result? While it is possible that the hypothesis itself was poorly founded, I believe that there are better explanations involving other factors at play.

First, the lack of main effect is puzzling given that the manipulation-check analysis had indicated that that survey's manipulation had succeeded. Participants in the Happy vignette condition consistently reported that their paragraph made them feel happy, with the mean happiness rating falling above the scale midpoint and the mean sadness rating falling far below the midpoint. At the same time, participants in the Sad vignette condition consistently reported that their paragraph made them feel sad, with the man sadness rating falling above the midpoint and the mean happiness rating falling far below. Though participants on average were reacting to

their respective stimuli with empathic, emotion-congruent responses, they did not reliably report seeing themselves as more prosocial.

In contrast, Devlin et al. (under review) found a main effect of condition for every condition that consistently elicited emotion-congruent responses. In fact, the latter was considered a basis upon which the former could be expected. My study was designed to conceptually replicate theirs; to that end, I used the same experimental design and all of the same measures. Many of those assessment methods were predicated on self-report – and while it it's true that these techniques involve an inherent degree of unreliability (Nisbett & Wilson, 1977; Shweder, 1982), the measures were consistent between my work and that of Devlin et al. (under review), so they do not explain the discrepancy.

However, a major difference in our studies can be traced back to the nature of our respective stimuli. While I used textual stimuli, short paragraph vignettes describing displays of emotion, Devlin et al. (under review) used visual stimuli, videos and still images of faces expressing emotion. The human visual system is highly specialized for the perception of social material, especially facial features and facial expressions (Wagner et al., 2010), and as discussed in the introduction to this paper, humans experience an automatic tendency to mimic facial expressions that they see, which leads to emotional contagion and empathy (Aragón et al., 2014; Chartrand & Bargh, 1999; Dimberg et al., 2000; Jia et al., 2015; Vacharkulksemsuk & Fredrickson, 2012; Valdesolo & DeSteno, 2011; van Baaren et al., 2004; Wiltermuth & Heath, 2009; Zaki & Ochsner, 2012).

In the investigations by Devlin et al, (under review), then, the mimicry elicited by visual stimuli may have induced a strong empathic, congruent emotion response. In the present survey, however, while the textual stimuli elicited reports of emotion-congruent responses, this may have

been due to demand effects (or social desirability). Lacking a robust mechanism like mimicry to drive empathy, the participants may not have actually experienced the empathic emotion reaction they reported. If this were the case, it makes sense that self-perceptions did not change.

Within-condition correlations between emotion responses and self-perceptions. As predicted, greater emotion-congruent responses (i.e., more happiness in response to the Happy vignette condition; more sadness in response to the Sad vignette condition) were significantly correlated with greater self-perceptions of prosociality. The positive association was seen in both Happy and Sad vignette conditions.

These findings seemingly support my secondary hypothesis that, to the extent that a participant reacted to the target in an emotion-congruent manner, they saw themselves as more prosocial. Individual differences in baseline empathy were not controlled for in this analysis, though the correlations found between emotional responding and prosocial self-perceptions in the valence emotion vignette conditions exceeded the magnitude of their parallel correlations in the Neutral emotion condition. This suggests that these findings go beyond explanations related to trait empathy and its naturally occurring links, and actually support that self-perceptions arise from self-observations of emotional reactions.

However, this optimistic interpretation is threatened by the proposed explanation given above for the absence of a main effect. The primary experimental analysis revealed that, when trait empathy is controlled for, self-perceptions of prosociality were not enhanced by empathic reactions. Thus, these findings of positive and significant associations between prosocial self-perceptions and emotion-congruent responses are likely not as meaningful as initially hoped. Since the correlational analyses did not control for individual differences in empathy, simple variance can account for the pattern of outcomes.

Other Results. Beyond the expected correlations described above, significant associations were additionally found – several of which can be plausibly explained and one that cannot.

In both the Happy and Neutral vignette conditions, ratings of reaction happiness positively correlated with both the prosocial trait variable as well as the positive trait control variable. The control functions to test whether elicited empathy specifically enhances self-perceptions of prosociality. These results suggest that after empathizing with a happy emotion stimulus, participants' self-perceptions of all positive traits were enhanced – that is, participants saw themselves as better people overall. Interestingly, this was only observed in positive empathy; sadness does not correlate with the positive control traits in either valence vignette condition. It's possible that these unusual outcomes are due to a happiness prime. Previous research has demonstrated that positivity generalizes – a positive state activates happy thoughts. In the case of these results, the emotion-congruency of the empathic response may explain the correlation with the prosocial traits (self-perception effect), but the elicited happiness itself may explain the correlation with the prosocial control traits (priming effect).

Bafflingly, within the Neutral vignette condition, ratings of reaction sadness were also found to correlate positively and significantly with positive control traits. This result indicates that participants who respond to a stimulus display of neutral emotion with sadness rate themselves as being more versatile, intelligent, ambitious, and athletic – though not more kind, compassionate, or generous. I fully admit that I can make no sense of this outcome, and will not expend effort here attempting to explain it further.

Future Directions

The present study, as well as its source work, used various forms of highly-controlled stimuli in order to elicit empathic emotion. Though this approach has its advantages – particularly in its ease of manipulation and its capacity to be standardized – reactions to others' emotional displays in daily life are vulnerable to a wide range of other factors. There is much yet to be investigated in this realm of research.

To take a broader perspective, how do contextual details influence empathetic reactions and subsequently, self-perceptions? In these studies, none of the stimuli informed about the cause of the target's happiness or sadness, which was useful to our hypothesis (that merely watching another's expressed emotion would influence the observers' view of themselves), but not true to life. For example, an observer who finds a target's emotion reaction to a known cause to be an inappropriate (unreasonable, overblown, etc.) may not respond in an empathic manner, but this could feasibly not damage their perceptions of self. In another vein, emotional responding has been shown to depend on judgments of whether the target "deserves" something that happens to them; in a situation like this, contextual details on ingroup/outgroup membership could play a pivotal role (Harris & Fiske, 2006; Hein et al., 2010; Smith et al., 2009; Zaki & Ochsner, 2012).

Finally, these studies selected happiness and sadness to use as emotion conditions, given that they are the most classic representations of the two main emotional valences (positive and negative). But what are the links between other major emotions and self-perceptions? Certainly, there are feelings for which an emotion-congruent response (e.g. experiencing anger at another's anger) may affect self-perception in an entirely different ways, which opens many new direction for future inquiry.

Concluding Remarks

The present study aimed to further our understanding of how the experience of responding to others' emotion in an emotion-congruent manner can influence the observer's perceptions of themself. Previous research on this topic by Devlin et al. (under review) found evidence to suggest that emotion-congruent reactions to another's visual display of emotion may actually benefit the empathizer, who experiences an enhancement in their own positive self-evaluations. While these findings may not generalize to textual descriptions of emotion used as stimuli in this particular study, it is still very possible that the mere experience of empathic emotion can shape self-perceptions.

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APPENDICES

Appendix A. *The Interpersonal Reactivity Index (Baseline Trait Empathy Measure)*

1. I daydream and fantasize, with some regularity, about things that might happen to me.
2. I often have tender, concerned feelings for people less fortunate than me.
3. I sometimes find it difficult to see things from the "other guy's" point of view.
4. Sometimes I don't feel very sorry for other people when they are having problems.
5. I really get involved with the feelings of the characters in a novel.
6. In emergency situations, I feel apprehensive and ill-at-ease.
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.
8. I try to look at everybody's side of a disagreement before I make a decision.
9. When I see someone being taken advantage of, I feel kind of protective towards them.
10. I sometimes feel helpless when I am in the middle of a very emotional situation.
11. I sometimes try to understand my friends better by imagining how things look from their perspective.
12. Becoming extremely involved in a good book or movie is somewhat rare for me.
13. When I see someone get hurt, I tend to remain calm.
14. Other people's misfortunes do not usually disturb me a great deal.
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.
16. After seeing a play or movie, I have felt as though I were one of the characters.
17. Being in a tense emotional situation scares me.
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them.

19. I am usually pretty effective in dealing with emergencies.
20. I am often quite touched by things that I see happen.
21. I believe that there are two sides to every question and try to look at them both.
22. I would describe myself as a pretty soft-hearted person.
23. When I watch a good movie, I can very easily put myself in the place of a leading character.
24. I tend to lose control during emergencies.
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while.
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.
27. When I see someone who badly needs help in an emergency, I go to pieces.
28. If you are paying attention, please select 2 in response to this item.
29. Before criticizing somebody, I try to imagine how I would feel if I were in their place.

*Participants rated each statement on a scale from 1 ("Does **not** describe me well") to 5 ("Describes me very well").*

Appendix B. *Vignette Standardization Measures*

	Happy Vignette	*Sad Vignette*	*Neutral Vignette*
Word Count	90	88	83
Character Count (with spaces)	496	487	465
Flesch-Kincaid Reading Ease	85.5	81.6	77.6
Flesch-Kincaid Grade Level	5.1	5	5.4
Gunning-Fog Score	7	7.8	8.6
Coleman-Liau Index	9.8	10.1	10.4
SMOG Index	3.8	5.6	6.4
Automated Readability Index	6.7	5.6	5.5
Average Grade Level	**6.5**	**6.8**	**7.3**

Appendix C. *Emotional descriptions stimuli*

Happy Condition

Passing through the kitchen, she notices a plain white envelope on the granite countertop. She pauses to pick it up and open it. As she reads the message within, her face lights up. Her cheeks lift as the corners of her mouth curve upward, and her lips stretch into a grin nearly as wide as her face. The outer edges of her eyes crinkle in delight, creasing her laugh lines deeply. Lifting her chin brightly, she straightens, turns and quickly strides out of the room, taking the letter with her.

Sad Condition

Passing through the kitchen, she notices a plain white envelope on the granite countertop. She pauses to pick it up and open it. As she reads the message within, her face clouds over, and every part of her face sags. Her lower lip pouts out slightly as the corners of her lips pull downward. Her brows draw together in the middle and knit together into a frown. Her forehead creases in misery. Shoulders slumped, she turns and slowly trudges out of the room, taking the letter with her.

Neutral Condition

Passing through the kitchen, she notices a plain white envelope on the granite countertop. She pauses to pick it up and open it. As she reads the message within, her face shows no particular emotion. Her eyes are open and alert, looking steadily down at the letter in her hand. Her eyebrows sit neutrally, and her lips rest together in a relaxed, flat line. Her features are expressionless and still. She turns and walks out of the room, taking the letter with her.

Appendix D. *Self-Perception Assessment*

intelligent

selfish

ambitious

kind

moody

aggressive

lazy

generous

versatile

outgoing

compassionate

impulsive

forgetful

anxious

athletic

stubborn

Participants indicated the extent to which they felt each trait currently applied to them on a scale from 1 (not at all) to 7 (extremely) (with 4 being "Moderately").