

**Positive and Negative Empathy:
Two Pathways to Enhanced Social Connection**

BY

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THESIS

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TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
1. INTRODUCTION	1
1.1. Aims	3
2. METHODS	5
2.1. Participants	5
2.2. Procedure	5
2.3. Measures	7
2.3.1. State Empathy	7
2.3.2. Connection to Target	7
2.3.3. General Connection to Others	8
2.3.4. Trait Negative Empathy	8
2.3.5. Trait Positive Empathy	8
2.3.6. Loneliness	8
2.4. Statistical Analyses	9
3. RESULTS	10
3.1. Manipulation Check	10
3.1.1. Positive Empathy	10
3.1.2. Negative Empathy	10
3.2. Social Connection	11
3.2.1. Connection to Target	12
3.2.2. General Connection to Others	13
4. DISCUSSION	14
4.1. Empathy as a Social Precursor	15
4.2. The Hidden Cost of Negative Empathy	15
4.3. Clinical Implications	16
4.4. Limitations	17
4.5. Conclusion	18
REFERENCES	19
CURRICULUM VITAE	28

LIST OF FIGURES

<u>FIGURE</u>	<u>PAGE</u>
1. Experimental design	26
2. Mean levels of social connection (target) for participants who read the negative and positive letter, in the objective and perspective-taking conditions	26
3. Mean levels of social connection (general) for participants who read the negative and positive letter, in the objective and perspective-taking conditions	27

SUMMARY

Our capacity for empathy is perhaps one of the qualities that characterizes our humanity. Yet little is known about the specific mechanisms by which it fosters an uncanny sense of closeness among individuals. In the present study, our aim was to elucidate the relationship between the experience of positive and negative empathy – and feelings of social connection. We examined whether a perspective-taking induction would enhance an empathizer's feelings of social connection to a target, and more broadly, connection to others. We recruited 274 participants, who were randomly assigned to one of four conditions in a 2 (Event: positive, negative event) x 2 (Empathy: high, low) between-subjects factorial design.

During the experiment, participants were instructed to read a letter from a previous (bogus) participant describing either a positive or negative event. Participants in the high empathy condition were asked to take the letter writer's perspective. In contrast, they were asked to remain objective in the low empathy condition. Participants then rated their empathy and feelings of connection to the target, as well as responding to questions about their general sense of social connection.

Overall, we found that when subjects empathized with the target's positive or negative event, they felt more connected to the target. However, they did not feel more connected in general.

1. INTRODUCTION

Empathy is central to the human experience. Perhaps what is remarkable about this phenomenon, is that it represents a mental connection between ourselves and others; one which persists across contexts, cultures, or even physical distance. Whether we're sharing in the joy of a best friend's wedding announcement, or whether we feel the loss of strangers displaced from their homes in times of war and disaster — we are vicariously experiencing another's emotions through the phenomenon of empathy. Given the enduring quality of this phenomenon, it is no wonder that researchers have tried to understand the mechanisms by which it enhances social relationships.

Being heard and empathized with has positive effects on the *receiving end* — particularly for those in close relationships. In marriages and friendships, individuals feel more satisfied with their relationship when they think their partner or friend is empathic and responsive to their needs (S. Cohen, Schulz, Weiss, & Waldinger, 2012; Cramer & Jowett, 2010; Mark H. Davis & H. Alan Oathout, 1987). Perceptions of empathy are also instrumental in relationships that are less intimate. When patients believe their physician empathizes with them, it increases patients' sense of interpersonal trust and partnership with their doctor (Hojat et al., 2010; Sung Soo, Stan, & Mark, 2004). Likewise, when people feel that teachers (Teven & Hanson, 2004), therapists (Moyers, Houck, Rice, Longabaugh, & Miller, 2016), and police officers (Oxburgh & Ost, 2011; Walsh & Bull, 2012) are empathic, they feel more socially connected and cared for. Conversely, a *lack* of empathy damages professional relationships, leading to increased rates of relapse and drop-out during therapy (Moyers & Miller, 2013), and heightened symptoms of posttraumatic stress disorder (PTSD) among victims of rape (Maddox, Lee, & Barker, 2011). Therefore, feeling empathized with has measurable effects on a person's sense of connection to others.

Despite the robust literature on the beneficial impact of receiving empathy, much less is known about how sharing and understanding others' emotions affects the *empathizer*. As social creatures by nature, we experience empathy on a daily basis in many of our social interactions (Nezlek, Feist, Wilson, & Plesko, 2001). Whether we're sharing in a close friend's sorrow, or reading about an Olympic athlete's win in the news, we often feel a tangible sense of connection that extends across a coffee table or through a web browser (Kramer, Guillory, & Hancock, 2014). However, very little work has investigated whether *experiencing* empathy engenders and enhances feelings of social connection.

Past research does suggest that higher levels of empathy might facilitate the creation and maintenance of social relationships (M.H. Davis & H.A. Oathout, 1987; Mark H. Davis & Oathout, 1992; Denham et al., 2003; Eisenberg & Fabes, 1992; Eisenberg & Miller, 1987; Fincham, Paleari, & Regalia, 2002; Franzoi, Davis, & Young, 1985; M.E. McCullough, Worthington Jr, & Rachal, 1997), while lower levels of empathy may be associated with greater loneliness and fewer friendships (M.H. Davis, 1983; Jobe & Williams White, 2007). Although these studies establish an important link between experiencing empathy and social connection, it is difficult to determine the causal direction of this relationship. Further, researchers have primarily focused on negative empathy (i.e., vicariously experiencing others' *negative* emotions) and its relationship to outcomes like self-other overlap, social connection, and loneliness. As a result, it is unclear if experiencing positive empathy (i.e., vicarious positive emotions) also fosters social connection, and uniquely contributes to improved social relationships (Morelli, Lieberman, & Zaki, 2015).

Positive and negative empathy may differentially impact feelings of social connection because they differ qualitatively in their effects on the person experiencing them. In particular,

sharing others' negative emotions may trigger fast and strong psychosomatic responses that feel costly and stressful (Chikovani, Babuadze, Iashvili, Gvalia, & Surguladze, 2015; Taylor, 1991; van Lissa et al., 2017), which may degrade social connection if the empathizer feels burdened and resentful – subsequently leading to caregiver burnout (Takai et al., 2009; Ybema, Kuijer, Hagedoorn, & Buunk, 2002). On the other hand, sharing others' positive emotions is less taxing, and should cause individuals to build social resources by developing stronger social connections (Fredrickson, 2001). This has been found in emerging research which shows that positive empathy is associated with increased emotional support provision among friends (Morelli-Vitousek, Kwok, Lieberman, & Zaki, 2018).

Taken together, given that negative and positive empathy has shown to be associated with such diverse outcomes, it is likely that they represent distinct pathways to enhanced social connection. More specifically, since vicarious negative emotion may come at a cost for the empathizer, it is important to consider the untapped potential of positive empathy for fostering social connection.

1.1. Aims

In the present study, we tested if positive and negative empathy represent causal pathways to enhancing an individual's sense of social connection. As discussed, limited research has been conducted through the perspective of the *empathizer* – therefore, our primary goal was to implement and test a brief empathy induction in a controlled experimental setting.

This comprised a brief perspective-taking instruction to increase state empathy (high empathy condition); which was based on past research that found that perspective-taking can increase an individual's emotional resonance with another person, leading to enhanced empathy (Batson, 2011; Zaki & Ochsner, 2012). As a means of comparison, we developed an alternative

instruction which required participants to remain objective during the experiment (low empathy condition). To elicit feelings of empathy, we instructed participants to read a hand-written letter that either recounted the fictitious writer's positive or negative life experience.

We hypothesized that an empathy induction would enhance an empathizer's feelings of a) empathy, b) social connection to the target, and c) connection to others in general.

2. METHODS

2.1. **Participants**

We recruited a total of 313 undergraduate student participants from the University of Illinois at Chicago's Psychology Subject Pool. To determine an appropriate sample size, we performed an a-priori power analysis which indicated that 80 participants were required for each of four conditions ($N = 280$ total). This is in accordance with Cohen's (J. Cohen, 1988) suggested sample size to detect medium-sized effects with slightly more than 80% power. We excluded 16 participants based on a-priori criteria: if they suspected that experimental stimuli were not real, if they could not recall the content of the stimuli or instructions given, or were identified by the experimenter to be unusually inattentive during the experiment. The remaining 297 participants were mostly female (66.3%), of similar age ($M = 18.90$, $SD = 1.10$), and ethnically diverse (42.1% Hispanic or Latino/a, 20.2% White or Caucasian, 15.2% South Asian, 9.8% East Asian, 9.4% Black or African American, 7.4% Middle Eastern, 2.4% Pacific Islander, 2.4% Other, 0.7% American Indian, 0.7% Multiracial).

2.2. **Procedure**

The first phase of the study was conducted at the beginning of the academic semester during a mass-testing period, where all students taking the Introduction to Psychology class completed a series of surveys. During this time, participants completed a Qualtrics survey as part of the present study, which comprised several instruments that we administered separately from the main experiment to prevent demand characteristics.

Subsequently, those who completed the survey were qualified to sign up for the second phase of the study, that was conducted throughout the rest of semester. This comprised an in-person lab session that was facilitated by a trained experimenter. We employed the use of an

experimental manipulation, with a 2 (Event: positive, negative) x 2 (Empathy: high, low) between-subjects factorial design. See *Figure 1*.

After participants provided informed consent, they were asked to randomly select a number from one to ten, which corresponded with a hand-written letter that they received. Subsequently, they were told that the letter was written by a participant from an earlier study, who was recounting a personal experience. In actuality, participants were randomly assigned to one of two letters describing a a) positive or b) negative event, which corresponded to our experimental conditions. The letters described a personal experience of a student who had either received financial aid for their studies, or who had not been able to obtain financial aid for their studies. The letters had been previously been rated by participants from Amazon MTurk in a pilot test to ensure that they were comparable in evoking an emotional response.

Next, participants were randomly assigned to one of two conditions asking them to either 1) take the perspective of the target, or 2) to remain objective while reading the letter. The instructions were as follows:

1) **Perspective-taking Condition.** While you are reading the letter, try to imagine how the person who wrote it feels about their experience and how it has affected his or her life. Try not to concern yourself with attending to all the information they wrote. Just concentrate on trying to imagine how the person who wrote the letter feels.

2) **Objective Condition.** While you are reading the letter, try to be as objective as possible about the experience the other person wrote about and how it has affected his or her life. To remain objective, do not let yourself get caught up in imagining what this person has been through and how he or she feels as a result. Just try to remain detached as you read the letter.

After the participants read the letter, they were asked to complete a Qualtrics survey which assessed their a) feelings of social connectedness toward the target, and b) toward others in general.

2.3. **Measures**

2.3.1. **State Empathy**

This was a self-report inventory of the emotions felt toward the target. Empathy for positive events was measured as the average of how delighted, uplifted, pleased, joyful, and cheerful subjects felt. Empathy for negative events was measured as the average of how uncomfortable, pained, bothered, unpleasant, and distressed subjects felt. Previous studies have used similar emotion reporting inventories to assess for state empathy (Cusi, 2012; Derntl, Seidel, Schneider, & Habel, 2012; Thoma, Norra, Juckel, Suchan, & Bellebaum, 2015). Additionally, we examined compassion, which was measured as the average of how sympathetic and compassionate subjects felt. 12 items were rated on a seven-point Likert scale ranging from 1 (not at all) to 7 (extremely).

2.3.2. **Connection to Target**

Connection to the bogus participant who wrote the letter was measured with four items. Participants indicated how much they liked, felt similar to, and felt warmly toward the target. Items were rated on a seven-point Likert scale ranging from 1 (not at all) to 7 (very). They also reported how close they felt using the Inclusion of Other in the Self scale (Aron, Aron, & Smollan, 1992). The latter was rated on a seven-point Likert scale which corresponded to images of overlapping circles representing “self” and “other” — that ranged from 1 (no overlap) to 7 (almost complete overlap).

2.3.3. **General Connection to Others**

Connection to others in general was measured with four items. Subjects reported how much they felt connected to others, isolated from others, felt that there were people they can relate to, and that they had a lot in common with the people around them. Items were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

2.3.4. **Trait Negative Empathy**

The Interpersonal Reactivity Index (IRI) is a self-report measure of trait empathy. We administered the two sub-scales pertaining to a) Perspective-Taking: the tendency to spontaneously adopt the psychological point of view of others, b) Empathic Concern: having other-oriented feelings of sympathy and concern for unfortunate others (M.H. Davis, 1983). In the present study, we focused on empathic concern — which pertains to trait negative empathy. 14 items were rated on a seven-point Likert scale ranging from 1 (does not describe me at all) to 7 (describes me very well).

2.3.5. **Trait Positive Empathy**

The Positive Empathy Scale is a seven-item measure of trait positive empathy (Morelli et al., 2015). It measures one's tendency to vicariously share in the positive emotions of others. For example, "When someone else is enthusiastic, I can't help but be enthusiastic too." Items were rated on a five-point Likert scale ranging from 1 (does not describe me at all) to 5 (describes me very well).

2.3.6. **Loneliness**

The UCLA Loneliness Scale is a 20-item measure of loneliness (Russell, 1996). It measures one's subjective feelings of social isolation and loneliness. Items were rated on a four-point Likert scale ranging from 1 (never) to 4 (often).

2.4. **Statistical Analyses**

We tested our primary hypothesis that subjects in the high empathy (perspective-taking) conditions would experience more empathy, feel more connected to the target, and feel more connected to others in general — compared to subjects in the low empathy (objective) condition. We also tested whether the effect of empathy on connection would differ for positive events than for negative events. These analyses were conducted by using planned contrasts.

For all analyses, we included dispositional positive empathy, perspective taking, empathic concern, and loneliness as covariates. Because an assumption of ANCOVA-type analyses is that the covariates do not interact with the main independent variables, we also tested whether these covariates interact with the planned contrasts. For adjusted group means, all covariates were set to their mean values.

3. RESULTS

3.1. **Manipulation Check**

To confirm that the manipulation of empathy worked, we tested whether subjects in the high empathy condition felt more positive and negative empathy than those in the low empathy condition.

3.1.1. **Positive Empathy**

As anticipated, when subjects read the positive letter, they felt more positive empathy in the high empathy condition ($M_{\text{adjusted}} = 4.97, SE = .17$) than in the low empathy condition ($M_{\text{adjusted}} = 4.05, SE = .17$), $t(263) = 3.83, p < .001$. This demonstrated the efficacy of the perspective-taking instruction in eliciting positive empathy for the positive letter.

To determine discriminant validity, we also evaluated participants' positive empathy in response to reading the negative letter. As expected, when subjects read the negative letter, they felt just as much positive empathy in the high empathy condition ($M_{\text{adjusted}} = 1.33, SE = .18$) as in the low empathy condition ($M_{\text{adjusted}} = 1.25, SE = .18$), $t(263) = 0.33, p = 0.739$. The difference in positive empathy was significantly greater in the positive event condition than in the negative event condition, $t(263) = 2.39, p = .017$. Overall, the five items pertaining to positive empathy demonstrated good reliability ($\alpha = .97$).

None of the covariates had significant effects, all $ps \geq .105$.

In summary, the manipulation successfully changed subjects' positive empathy when the target experienced a positive event.

3.1.2. **Negative Empathy**

As anticipated, when subjects read the negative letter, they felt more negative empathy in the high empathy condition ($M_{\text{adjusted}} = 4.22, SE = .15$) than in the low empathy condition

($M_{\text{adjusted}} = 3.06$, $SE = .15$), $t(257) = 5.35$, $p < .001$. This demonstrated the efficacy of the perspective-taking instruction in eliciting negative empathy for the negative letter.

To determine discriminant validity, we also evaluated participants' negative empathy in response to reading the positive letter. When subjects read the positive letter, they also felt more negative empathy in the high empathy condition ($M_{\text{adjusted}} = 2.47$, $SE = .14$) than in the low empathy condition ($M_{\text{adjusted}} = 1.94$, $SE = .14$), $t(257) = 2.56$, $p = 0.011$, although the difference was smaller than when subjects read the negative letter, $t(257) = 2.12$, $p = 0.035$. Overall, the five items pertaining to negative empathy demonstrated good reliability ($\alpha = .84$).

There were two significant effects of the covariates. There was a significant interaction between dispositional perspective taking and the letter condition, and a significant interaction between dispositional perspective taking and empathic concern. Participants who were higher in perspective taking had less of a difference in negative empathy when they read the negative vs. positive letter, $B = -.35$, $t(257) = 2.16$, $p = .032$, and participants who were higher in empathic concern had more of a difference in negative empathy when they read the negative vs. positive letter, $B = .59$, $t(257) = 2.76$, $p = .006$.

In summary, the manipulation successfully changed subjects' negative empathy when the target experienced a negative event, and to a smaller extent when the target experienced a positive event.

3.2. **Social Connection**

We tested whether subjects felt more connected to the target, and more connected to others in general, when they empathized. We also tested whether the effect of empathy on connection was greater when subjects empathized with the target's positive event than when they empathized with the target's negative event.

3.2.1. Connection to Target

Connection to the target was measured as the average of how much subjects liked the target, felt similar to the target, felt warmly toward the target, and rated greater overlap with the target on the Inclusion of Other in the Self Scale (Aron, Aron, & Smolian, 1992). Overall, these items demonstrated good reliability ($\alpha = .79$).

Supporting our prediction, when subjects read the positive letter, they felt more connected to the target in the high empathy condition ($M_{\text{adjusted}} = 5.13$, $SE = .14$) than in the low empathy condition ($M_{\text{adjusted}} = 4.27$, $SE = .14$), $t(257) = 4.47$, $p < .001$.

Additionally, when subjects read the negative letter, they felt more connected to the target in the high empathy condition ($M_{\text{adjusted}} = 4.96$, $SE = .14$) than in the low empathy condition ($M_{\text{adjusted}} = 3.95$, $SE = .14$), $t(257) = 4.94$, $p < .001$.

There was no interaction of letter with empathy condition, $t(257) = .52$, $p = .603$, nor was there a three-way interaction with empathic concern, $t(257) = .66$, $p = .511$.

Subjects who were higher in dispositional positive empathy felt more connected to the target, $B = .31$, $SE = .13$, $t(257) = 2.31$, $p = .022$, and subjects who were higher in dispositional perspective taking felt more connected to the target, $B = .48$, $SE = .17$, $t(257) = 2.79$, $p = .006$. Additionally, subjects who were higher in dispositional loneliness felt more connected to the target, $B = .29$, $SE = .14$, $t(257) = 1.99$, $p = .048$. There was no significant effect of empathic concern on connection to the target, $B = .02$, $SE = .21$, $t(257) = .11$, $p = .909$.

In summary, when subjects empathized with the target's positive or negative event, they felt more connected to the target. These findings are represented by *Figure 2*.

3.2.2. General Connection to Others

The items pertaining to social connection toward others in general demonstrated good reliability ($\alpha = .77$) When subjects read the positive letter, they felt just as connected to others in general in the high empathy condition ($M_{\text{adjusted}} = 5.19, SE = .11$) as they did in the low empathy condition ($M_{\text{adjusted}} = 5.00, SE = .11$), $t(257) = 1.22, p = .225$. Similarly, when subjects read the negative letter, they felt just as connected to others in general in the high empathy condition ($M_{\text{adjusted}} = 5.09, SE = .12$) as they did in the low empathy condition ($M_{\text{adjusted}} = 4.94, SE = 0.12$), $t(257) = 0.90, p = .370$. There was no interaction of letter and empathy condition, $t(257) = 0.18, p = .854$.

Subjects who were dispositionally lonely felt less connected to others in general, $B = -1.01, SE = .11, t(257) = -8.90, p < .001$. There were no other effects of the covariates, all $ps \geq .201$.

In summary, although the empathy manipulation changed how connected subjects felt *toward the target*, it didn't change how much they felt connected to others *in general*. These findings are represented by *Figure 3*.

4. DISCUSSION

Past studies on empathy have focused primarily on enhancing or measuring *negative* empathy; however, far less attention has been paid to vicarious *positive* emotion — the phenomenon of positive empathy. In the present study, we sought to examine both dimensions of empathy as distinct, but complementary pathways toward feelings of social connection. Consequently, we designed and tested a brief empathy induction in a controlled experimental setting. This allowed us to examine its effects on feelings of social connection from the perspective of the *empathizer*.

As anticipated, we found that the perspective-taking instruction significantly enhanced state empathy for both positive and negative events. Despite the brevity of the instruction and the limited emotional involvement in the task administered, we found a significant enhancement of state empathy toward the target; which allude to a general readiness for people to empathize with others when instructed to.

Given that the manipulation was effective, our primary goal was to examine if the empathy induction would lead to enhanced social connection. We found that social connection to the target was bolstered significantly among participants in *both* positive and negative empathy conditions, even though the participants had no direct contact with the target. The results demonstrate that targeted feelings of social connection can be fostered even in situations of limited engagement; resulting in heightened feelings of liking, warmth, similarity, and overlap in conceptualizations of self and other.

We experience the real-world implications of these findings on a daily basis through countless interactions, in person and online; providing us with fleeting opportunities to vicariously share in another person's emotions. Given that positive and negative empathy

represent unique pathways to enhanced social connection — the findings demonstrate our remarkable ability to feel connected to others in various contexts, whether they be inherently positive or negative.

4.1. **Empathy as a Social Precursor**

Translating these findings to the context of everyday life, one may ask what motivates someone to initiate a conversation with others at the checkout, to “like” a Facebook post, or to reach for our wallet to help a homeless man on the street? It is plausible that when we feel empathy for others, the accompanying feelings of social connection may act as a *precursor* to a host of social interactions. In fact, previous studies have consistently found that empathy is associated with building and maintaining interpersonal relationships (Mark H. Davis & Oathout, 1992; Denham et al., 2003; Fincham et al., 2002; Michael E. McCullough et al., 1998).

Consequently, such feelings of social connection may not only be beneficial for those in close relationships like romantic couples and families, but also those who are experiencing social isolation and loneliness. In the present study, we found that social connection can be enhanced toward unfamiliar targets, demonstrating that such inductions may be directed at various sources.

4.2. **The Hidden Cost of Negative Empathy**

Despite these findings, our optimism must be nuanced with the understanding that empathy has certain limitations. For the purpose of our study, the empathy induction was brief and relatively benign. However, extreme levels of vicarious *negative* emotion may be inherently more distressing given that the empathizer experiences these emotions second-hand. Parallel forms of emotional burnout have been studied extensively in service professions like social work and healthcare (Riess, 2015; Wagaman, Geiger, Shockley, & Segal, 2015; Wilkinson, Whittington, Perry, & Eames, 2017). Therefore, this may suggest that in the context of *sustained*

experiences of negative empathy, a reduction of social connection may be adaptive in order to reduce emotional labor.

4.3. **Clinical Implications**

Given the potential limitations of negative empathy, the benefits of positive empathy should be explored in various applications; for example, in the context of treatment for Major Depressive Disorder (MDD).

MDD is characterized by depressed mood and an attentional bias toward negative stimuli (Gotlib, Krasnoperova, Yue, & Joormann, 2004). Furthermore, individuals with depression consistently experience increased loneliness (Hagerty & Williams, 1999). With regards to treatment, existing positive affect strategies like capitalizing, mindfulness, and gratitude have shown promise in the treatment of depression (Morgan, 2003; Teasdale et al., 2000; Wood, Froh, & Geraghty, 2010). Hence, the benefit of a positive empathy intervention may be two-fold: 1) a means of enhancing the empathizer's positive affect as an emotion-regulation strategy, while simultaneously 2) improving their sense of social connection with others. As such, future research could explore how empathy may be enhanced through skill-building interventions. However, more foundational research must be conducted to fully understand the mechanisms by which empathy can provide lasting benefits.

From the perspective of a therapist, the experience of empathy may bolster their sense of social connection toward their clients, consequently reinforcing the therapeutic alliance so central to the treatment process (Horvath & Luborsky, 1993; Martin, Garske, & Davis, 2000). At present, the experience of empathy is already employed in humanistic-existential approaches to treatment; which regard empathy as a central tenet to the therapeutic process (Rogers, 1966).

4.4. **Limitations**

While we were able to successfully design and test an empathy induction for the purpose of this study, the results were obtained in a highly controlled laboratory setting. Although such a design was suitable for preliminary testing, subsequent research may explore how such manipulations translate to real-world circumstances and populations — for example, in a therapeutic setting for patients seeking treatment, or occupational training for employees where an enhancement of empathy may be desirable.

Furthermore, future studies may explore the benefits of designing empathy inductions that require greater emotional engagement. In the present study, we found that participants were able to empathize from simply reading a short hand-written letter. This led to an enhanced sense of social connection toward the target — but *not* a broader sense of connection in general. This may be partly due to the brief nature of the task presented. Subsequent studies may include the selection of emotionally evocative stimuli that are more naturalistic; for example, social media content or real-life interactions with people. We anticipate that such considerations will increase the external validity of such manipulations, leading to a greater enhancement of feelings of social connection in everyday settings.

Based on previous research on such inductions, we used a simple perspective-taking instruction to increase the participants' empathy toward the target. However, the act of perspective-taking is considered a cognitive component of empathy, and future investigations may include behavioral aspects of empathy as well. In this regard, past studies have shown that empathy is associated with attentiveness toward the facial expressions of others (Choi & Watanuki, 2014; Jason et al., 2015). Therefore, future work on empathy inductions may include behavioral skill-building components to work in tandem with existing cognitive strategies.

4.5. **Conclusion**

In summary, the present study explored how positive and negative empathy offer distinct, but complementary pathways towards enhanced social connection. Based on our findings, we discussed how empathy inductions show promise as a means of fostering social connections in numerous real-world settings — including mental health interventions and occupational training. Future research on such inductions should continue to explore how empathy can be fully harnessed, leading to lasting enhancements in vicarious emotion and feelings of social connection.

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FIGURES

		Event	
		Positive	Negative
Empathy	High (Perspective Taking)	Positive Empathy Condition	Negative Empathy Condition
	Low (Remain Objective)	Objective Condition	Objective Condition

Figure 1. Experimental Design.

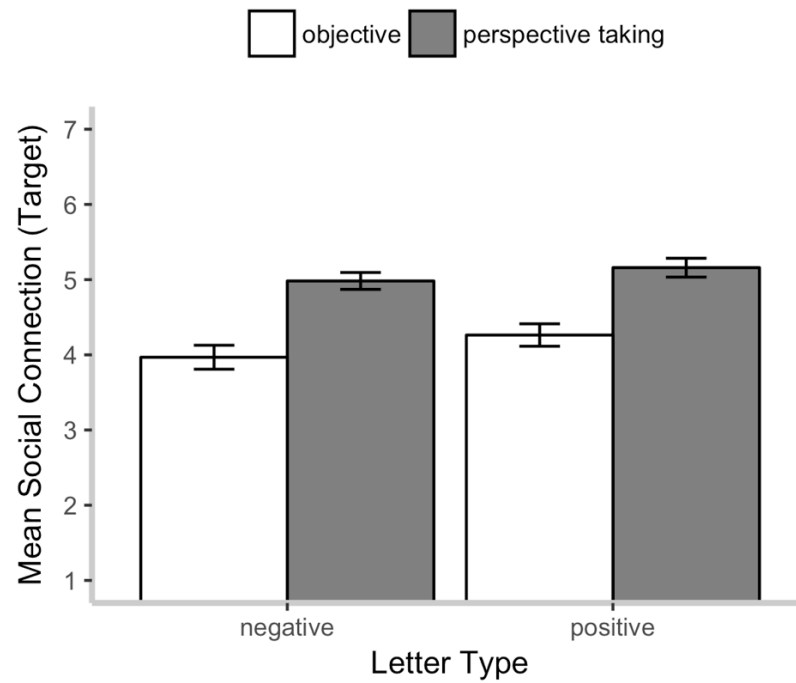


Figure 2. Mean levels of social connection (target) for participants who read the negative and positive letter, in the objective and perspective-taking conditions. The error bars represent the standard error of the mean.

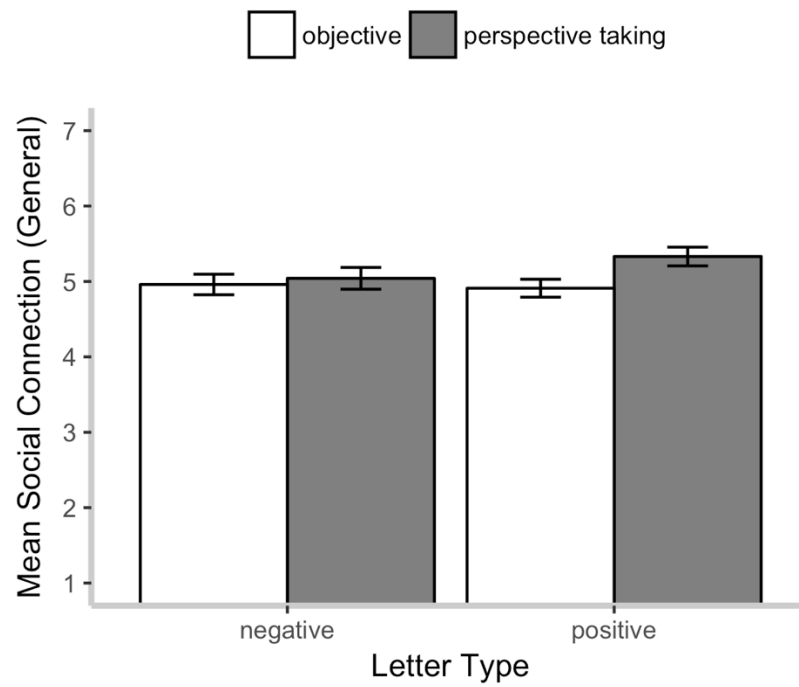


Figure 3. Mean levels of social connection (general) for participants who read the negative and positive letter, in the objective and perspective-taking conditions. The error bars represent the standard error of the mean.

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- DAHLIA | Online Intervention for People with Type-2 Diabetes
- LEAF | Life Enhancing Activities for Caregivers of People with Dementia
- IRISS | Intervention for those Recently Informed of their Seropositive (HIV) Status

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