



Replication Study

It takes two: A replication



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ABSTRACT

In their original study, Zaki, Bolger, and Ochsner (2008) suggest that interpersonal factors may explain the lack of correspondence between affective empathy and empathic accuracy in previous work. Specifically, Zaki et al. found evidence that perceivers' affective empathy may only be related to empathic accuracy when the expressivity of the target is high. We attempted a high powered replication of this original study, but did not replicate the original result. In our study, empathic accuracy was not significantly predicted by either perceiver affective empathy or target expressivity, nor was it predicted by their interaction. We discuss differences in measures, sample, and stimuli that may have contributed to discrepancies between our results and those of the original study and theoretical implications.

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1. Introduction

As social animals, humans possess a remarkable capacity to understand and experience other people's perspectives. This ability – known as empathy – is associated with pro-social behavior, building close relationships, and maintaining friendships (Batson & Powell, 2003; Eisenberg & Miller, 1987; Maner et al., 2002; McCullough, Worthington, & Rachal, 1997). Empathy often involves attempts to infer others' thoughts and feelings and thus heavily informs people's understanding of those around them. Without the ability to do this accurately, people would largely be at a loss in attempting to make sense of other people and effectively navigate their social environment.

Although numerous working definitions of empathy have been proposed over the years, research suggests that empathy itself is a multidimensional construct comprised of both cognitive and affective aspects (Davis, 1983; Marshall & Maric, 1996; Rogers, Dziobek, Hassenstab, Wolf, & Convit, 2007). Affective empathy refers to the tendency to feel concern and compassion for another's needs. Cognitive empathy, on the other hand, refers to a perceiver's capacity to understand a person's internal states and is often measured as the accuracy with which the perceiver can assess the thoughts and feelings a given target is experiencing (Ickes, Stinson, Bissonnette, & Garcia, 1990). These two kinds of empathy are thought to be distinct but connected, with some models proposing that affective empathy was a phylogenetic precursor of cognitive

empathy (Batson, Early, & Salvarani, 1997; De Waal, 2008; Preston & de Waal, 2002).

Despite the presumed association between these two types of empathy, previous research has failed to demonstrate a consistent relationship between trait measures of affective empathy and performance measures of empathic accuracy (Hall, 1979; Ickes et al., 2000; Levenson & Ruef, 1992). Zaki, Bolger, and Ochsner (2008) suggest that these null findings may reflect a failure to take into account the interpersonal nature of empathy. That is, empathy is affected not only by a perceiver's own empathic ability but also by characteristics of the target. In their experiment, Zaki et al. (2008) found evidence that there is a relationship between a perceiver's trait affective empathy and empathic accuracy, but only when the target is high on expressivity. This finding supports the use of an "interactionist if-then approach to predicting interpersonal outcomes (p. 402)."

In this way, Zaki et al.'s (2008) approach deviates from previous perceiver-driven approaches that fail to take into account important characteristics of the target and perceiver-target relationship. Although much previous research has addressed the factors that influence empathic accuracy (Ickes, 1993; Roberts & Strayer, 1996), this work has tended to focus on the traits of the perceiver. Fleenor's (2004) work illustrates the importance of understanding both the person and the situation when examining people's behavior. For empathic accuracy, this suggests that it's important to examine not only the person's level of empathic concern (personality trait), but also the situation he or she is in (i.e. target expressivity).

Indeed, there have been several independent findings across multiple stimulus video sets and paradigms that have found a pos-

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itive relationship between target expressivity and perceiver empathic accuracy. In 1998, Snodgrass and colleagues found that expressivity predicted accuracy more than perceivers' "sensitivity," using an interview paradigm (Snodgrass, Hecht, & Ploutz-Snyder, 1998). In 2011 and 2012 another group in collaboration with Zaki and colleagues demonstrated that target expressivity predicted accuracy for healthy perceivers, but less so for perceivers with schizophrenia (Harvey, Zaki, Lee, Ochsner, & Green, 2013; Lee, Zaki, Harvey, Ochsner, & Green, 2011).

Given the importance of these findings, we decided to conduct a replication of Zaki et al. (2008). This replication is designed to provide an estimate of the relationship between trait measures of affective empathy and performance measures of cognitive empathy (empathic accuracy) via a pre-registered, independently conducted replication of the original study, using similar materials and a common protocol.

If our study replicates the findings reported by Zaki et al. (2008) we should find a significant effect of target expressivity such that empathic accuracy increases as targets' expressivity increases. In addition, we should find an interaction effect between targets' expressivity and perceivers' affective empathy to predict empathic accuracy. More specifically, greater target expressivity should improve the empathic accuracy of perceivers high in affective empathy more than perceivers with low affective empathy.

2. Method

The materials and procedure for a replication of the original Zaki et al. (2008) study were developed in collaboration with the lead author of the original article.

2.1. Target phase

As in Zaki et al. (2008), the study had two phases. First, in the target phase, we created a series of stimulus videos by recording 10 people (targets) as they discussed emotional events in their lives. Each target discussed 4 of the most positive and 4 of the most negative personal life events that they felt comfortable sharing while being video recorded. After discussing these events, targets used 9-point Likert scales to make summary ratings of the overall valence and arousal of the emotion they had experienced while speaking and completed the 10-item Berkeley Expressivity Questionnaire (BEQ; Gross & John, 1997) which assessed emotional expressivity (e.g. "I am an emotionally expressive person"). Finally, the targets viewed their own videos and made continuous ratings of the valence of the emotion they had felt at each moment while speaking using a sliding 9-point Likert scale (1 = *extremely negative*, 9 = *extremely positive*). A subset of stimulus videos were chosen for use in the second phase of the study. One target's videos were excluded for not following video creation instructions, leaving a total of 9 targets in the analyses. Similar to Zaki et al. (2008), of the remaining videos ($n = 72$), 48 were chosen (24 positive, 24 negative) based on comparable means and standard deviations on the summary ratings of overall arousal. We included 9 targets, as compared to the 11 used in the original study, thus we have slightly lower power to detect effects across targets.

2.2. Perceiver phase

2.2.1. Participants

Following Button et al. (2013) a direct replication of the sample size used to find the significant interaction in the Zaki et al. (2008) study ($N = 33$), which achieved nominal statistical significance ($p \sim 0.02$), would be underpowered. Our original G*Power (Faul, Buchner, Erdfelder, & Lang, 2008) analysis indicated a required

sample size of 128 participants to achieve at least 80% power to detect a medium effect size ($r = 0.25$; Cohen, 2016). Therefore, we increased the number of observations and perceivers in the current study and should have much greater power to detect effects across participants.¹

We recruited introductory psychology students from the subject pool at the University of Alabama. Participants were recruited until we reached at least the planned sample size of 128. Including participants who signed up after we reached this goal, we ended up with a final sample of 142 participants (ages 18–23).

2.2.2. Procedure

In the perceiver phase, participants (perceivers) viewed and responded to the videos created during the target phase. Perceivers first completed the 28-item Interpersonal Reactivity Index (IRI; Davis, 1983), a measure of trait empathy. This index is comprised of four separate constructs: empathic concern (e.g., "I often have tender, concerned feelings for people less fortunate than me"), perspective-taking (e.g., "I believe that there are two sides to every question and try to look at them both"), fantasy (e.g., "I really get involved with the feelings of the characters in a novel") and personal distress (e.g., "In emergency situations, I feel apprehensive and ill-at-ease"). Then, each perceiver viewed 20 target clips (randomly selected from the pool of target videos, with the limitation that each perceiver viewed 10 positive and 10 negative clips) and continuously rated how positive or negative the target was feeling using the same scale as the targets. The dependent measure, empathic accuracy, was determined by the correlation between target's ratings of their own feelings and perceiver's ratings of target's feelings.

There are three known differences from the original study. First, we created our own target videos. This had the advantage of allowing us to test the generalizability of the original results (e.g., do the effects extend to different targets, discussing different events?). One disadvantage, however, is that we used 9 targets (versus the 11 used in the original study), and thus have slightly reduced power to detect the effects of target expressivity. Second, we increased the number of perceivers from 33 to 128, substantially increasing our power to detect main effects and interactions involving perceivers' affective empathy and empathic accuracy. Third, we used the IRI instead of the original study's Balanced Emotional Empathy Scale (BEES; Mehrabian & Epstein, 1972) to measure trait affective empathy. Because we used a different measure of affective empathy, discrepancies between our results and those of the original study may reflect this methodological change (a point to which we will return in the Discussion).

We based our predictions on the empathic concern subscale of the IRI, as it is the subscale that shares the greatest amount of conceptual overlap with the BEES (Davis, 1983). As such, based on the results of Zaki et al. (2008) we predicted that perceivers' scores on the empathic concern subscale should interact with target expressivity, with higher levels of empathic concern predicting greater empathic accuracy when target expressivity is high. We made no specific predictions about the perspective taking, fantasy, or personal distress subscales of the IRI, although we report the results for all subscales.

Overall, we included a total of 9 targets, 48 target videos (24 positive, 24 negative – with some videos repeated across conditions) and 142 perceivers in our analyses. We excluded 161 accuracy scores for participants who failed to respond over the length of the video segments. This left a total of 2457 accuracy scores.

¹ We based our original power analysis on perceivers, but we did not run a similar power analysis for targets. Thus, our decisions about power were based on maximizing the power to detect perceiver effects, but not target effects.

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