THE EFFECT OF PERSPECTIVE TAKING AND IMAGINED CONTACTS ON PERCEIVED SIMILARITY

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Abstract

Several studies have shown that perspective taking may increase perceived similarity between two people via increased self-other overlap. However, there are reasons to doubt the efficacy of perspective taking, particularly due to the difficulty in leaving one's own perspective to view the world from another's. In two experiments, we tested the efficacy of perspective taking on increasing perceived similarity and, failing that, proposed a different method that may be more effective in increasing perceived similarity. The first study focused on perspective taking and was done with 95 participants (74% women) with a between-subjects design. The second study examined the effect of imagined contact with 59 participants (76% women) with a within-subjects design. The first experiment showed that perspective taking does not significantly affect perceived similarity, $t(94) = -.10$, $p = .92$, while imagined contact increases perceived similarity, $t(58) = -2.54$, $p < .05$. These experiments show that perspective taking does not improve perceived similarity, whereas imagined contact does increase perceived similarity. Practical implications are also discussed.

Keywords: imagined contact; perceived similarity; perspective taking; self-other overlap

INTRODUCTION

Perceived similarity has long been established as one of the main sources of attraction between two people (Berscheid et al., 1971). This attraction makes us more likely to initiate and maintain contact with others (Hampton et al., 2019). In other words, perceived similarity is the social glue that predicts relationship development and stability (Parkinson et al., 2018). Recently, there has been a resurgence in interest towards perceived similarity, specifically how perceived similarity affects how we regard others (Perey & Koenigstorfer, 2022), how we behave (Kneebone et al., 2018), and perhaps most notably, how we can experimentally manipulate perceived similarity itself (Erle & Topolinski, 2017). This last point, manipulating perceived similarity, is notable since perceived similarity typically increases after contact is established, or at least after we learn something about the person we are perceiving (Lo & Yao, 2019; Rossignac-Milon & Higgins, 2018).

In order to understand how perceived similarity can be manipulated, it is important to understand how the quality of the interaction affects perceived similarity. First, perceived similarity is partially defined by our initial assessment of a target (Thielmann & Locke, 2022). If we judge a person positively prior to interaction, we are more likely to assume similarity. Second, only interactions where similar attitudes are expressed increase perceived similarity (Montoya & Horton, 2013). Finally, similarity in attitudes more central to our identity affects perceived similarity more strongly than peripheral attitudes (Treger & Masciale, 2018). A concrete example of this would be how religious attitudes more strongly affect perceived similarity than preferences in laptop brands.

In this study, we aim to understand better how to manipulate perceived similarity experimentally. One particularly well-known method is called perspective taking, or the act of seeing the world through another's eyes (Erle & Topolinski, 2017; Selvanathan et al., 2017). More specifically, perspective taking increases perceived similarity by cognitively thinking about what a target is experiencing, which would highlight the similarities shared

by the perspective taker and the target, thus increasing perceived similarity (for review, see Gasiorek & Hubbard, 2017). Certain researchers have taken this interpretation a step further, suggesting that perspective taking increases self-other overlap, or the notion that the observer and target are part of the same identity (Brown et al., 2009).

Despite the support perspective taking has received, several issues remain. One particularly debated point lies in how exactly perspective taking affects perceived similarity. Rarely do studies explain this mechanism beyond suggesting that perspective taking helps perceivers imagine what others are thinking. Recent studies also admit that "it is unclear how empathic outcomes are achieved (Erle & Topolinski, 2017, p. 10)". Certain studies even suggest that similarity must be established beforehand (Wolgast et al., 2020), since it is difficult to leave one's own perspective when observing the world (Cole & Millet, 2019; Damen et al., 2019).

In this study, we would also like to introduce a different method, which may feel more natural to the perceiver. Specifically, we would like to observe the effects of imagined contact on perceived similarity. Imagine contact has long been touted as an effective way to reduce anxiety when interacting with new people, as it helps the perceiver feel more familiar with their target (Crisp & Turner, 2012; Miles & Crisp, 2014). Since positive attitudes toward a person strengthens perceived similarity (Thielmann & Locke, 2022), it stands to reason that imagined contact should also increase perceived similarity to another person if they do not know their target. Imagined contact has also been linked to an increase in self-other overlap (Vezzali et al., 2013).

Therefore, this study has two main objectives, though both revolve around experimentally manipulating perceived similarity. The first objective is to observe whether perspective taking can increase perceived similarity. For this study, we will be doing a replication of a study conducted by Brown et al. (2009). The study conducted by Brown et al. (2009) is one of the few studies to directly address this issue by showing how perspective taking affects perceived similarity by increasing self-other overlap. Unfortunately, that study only has 37 participants, thus having low statistical power (Button et al., 2013). The second objective is to introduce imagined contact as a viable way to increase perceived similarity. These two objectives will be answered in two separate studies, particularly because the imagined contact experiment was done after the perspective taking experiment and used a much simpler data collection method.

H1: Perspective taking will increase perceived similarity via increase in self-other overlap.

H2: Imagined contact will increase perceived similarity via increase in self-other overlap.

STUDY 1

This study will be a replication of the experiment done by Brown et al. (2009), which found that perspective taking increases perceived similarity between two casual acquaintances. We aim to improve the reliability of this original study by conducting the same experiment with over 100 participants. We also chose this study to replicate due to the method of perspective taking used, where participants try to imagine what their target does in a day from the perspective of said target. Recent studies have exclusively focused on visuospatial perspective taking, or the act of pinpointing the location of an object from another's perspective (e.g., Cole & Millet, 2019; Erle & Topolinski, 2017). An inclusion of other in self (IoS) scale (Aron et al., 2004) was used as a manipulation check on the perspective taking task. The IoS scale was developed as a way to measure self-other overlap, or the degree to which a person feels another person's identity overlaps with him/herself and serves as an indication of perceived closeness between two people.

METHOD

This study used a between-subjects experimental design. The study consists of two sections. Each section may be completed on separate days. The first section is the same for all participants and consists of an informed consent form, followed by a self-complexity measuring tool (Linville, 1987). In the second section, participants were asked to select a casual friend, fill out a control group form or a perspective taking form, followed by an other-complexity form.

Participant

Participants were recruited via an online participant recruitment service called Gardata (Gardata, n.d.), which were then randomly split into two groups using www.random.org. The authors requested that Gardata (n.d.) recruit participants with the following criteria: 18 years old or more, Indonesian citizenship, graduated from or is currently pursuing a bachelor's degree. No other inclusion or exclusion criteria were applied in this study. Age was not recorded beyond a statement from the participant confirming that they are 18 years old or above. The authors shared all their data collection materials with Gardata (n.d.), and these materials were forwarded to people in the Gardata network who have agreed to participate in this study.

One hundred twelve people participated in this study (73.53% women). Ten participants were excluded for failing to complete the other-complexity task. During data analysis, data from 7 participants were excluded because they rated 1 or 7 on the IoS scale, too low or high for casual friends, since by definition a lack of overlap implies no relationship and high overlap implies very close relationship (Aron et al, 2004). Of the remaining 95 participants, 46 (48%) participants were placed in the control condition, and the remainder were placed in the perspective taking condition. Participants received a financial reward for participating in the experiment, though the exact amount was undisclosed by Gardata (Gardata, n.d.). We simply paid a lump sum, and some of that fee was paid to the participants.

Procedure

Participants were first given an informed consent form, followed by the self-complexity task. The self-complexity task was done on a separate Excel spreadsheet, which the participants had to access via a link provided in the Google Form. Since the original study was done in English, the authors hired translators to help in the process of translating back translating the measuring tools. The translators were professional translators who have had years of experience in translating documents from English to Indonesian and vice versa. Participants were then given the option to immediately proceed with the second section or to complete the second section on a separate day.
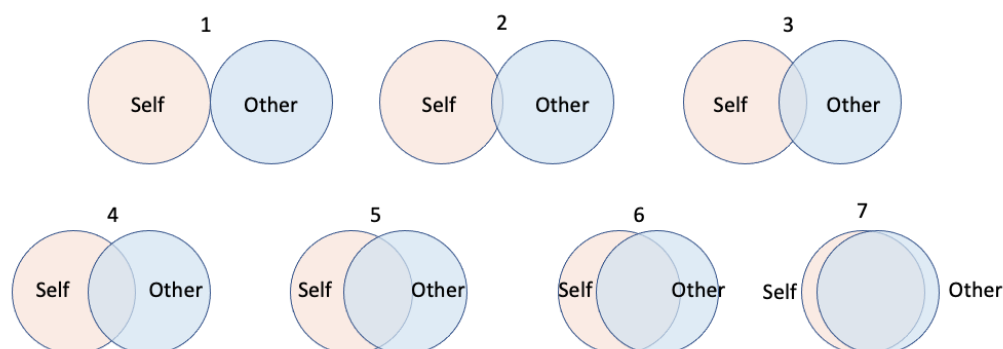

Figure 1. Inclusion of Other in Self Scale

In the second section, participants in the perspective taking group were asked to choose a casual friend and then asked to take that friend's perspective. These participants then had to write about a day in the life of their chosen friend. Conversely, participants in the control group were asked to write about their own day. Next, all participants were asked to complete the inclusion of other in self scale (Aron et al., 2004), a single-item questionnaire shown in Figure 1. Afterward, participants were asked to guess their friend's cognitive complexity using the same method used to measure self-complexity. After the participants had finished filling out all the measuring instruments, the researcher gave a debriefing sheet explaining the study's purpose.

Data analysis

Self-complexity was measured using a trait sorting task designed by Brown et al. (2009). Participants were given a list of 60 different traits (e.g., smart, reliable) and asked to group these traits based on relevant self-aspects. Self-complexity was derived using the H statistic, with the following formula:

$$H = \log_2 - \frac{(\sum_i n_i \log_2 n_i)}{n} \qquad (1)$$

Where n is the total number of attributes (60) and n_i n_i is the number of attributes contained in each combination of attribute groups i made by participants[1]. This analysis will result in a number that is based on the number of self-aspects the participant identifies, and the number of times the same trait was used across all self-aspects. If a trait is used in multiple self-aspects, this implies an overlap in self-aspects, which reduces self-complexity. All data analysis is done using R.

Perceived similarity was assessed by comparing the absolute difference in self and other complexity. In other words, perceived similarity is defined as the numerical distance between self-complexity and other complexity. Comparisons between self and other-complexity were done using *t*-test analysis.

STUDY 2

The second study aims to see whether a different approach would result in increased perceived similarity, specifically by using imagined contact, or imagining an interaction between an observer and their target (Crisp & Turner, 2012; Miles & Crisp, 2014). Similar to perspective taking, imagined contact has also been linked to increased self-other overlap (Vezzali et al., 2013). This approach may have several advantages over perspective taking. It does not require the observer to ignore their own perspective and allows the observer to identify attitudes freely where similarity matters most.

METHOD

Unlike the first study, this study follows a within-subjects experimental design, chosen due to the requirement for fewer participants and the financial limitations of the authors.

Participant

For this study, we requested participants who were 18 years or older, Indonesian citizens, and either pursuing or obtaining a bachelor's degree. Additionally, we requested for participants living in urban areas with an age limit of 35 years old. The reason for this is because the imagined contact task will be done towards a random stranger selected from stock photos, and we wanted to control for the extraneous variables of age and appearance.

We collected data from 59 participants (76.27% women). The average age of the

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[1]To count the number of group n_i combinations, each attribute will be classified as part of group 1, group 2 and so on. Attributes that fall into 2 groups will be counted as a combination alone.

participants was 22 years, with an age range of 18-32 years (M = 22.17; SD = 4.24). All participants come from Jakarta. All participants were recruited using a paid research participant service called Gardata (Gardata, n.d.). Participants were not directly rewarded by the researcher, but part of the fees paid to Gardata were directed to research participants.
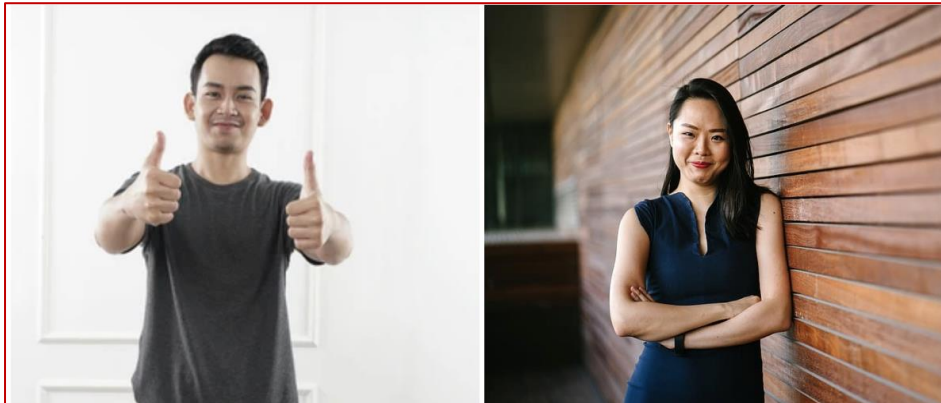

Figure 2. Photographs Used for Imagined Contact Task

Procedure

Data were collected online in one session using Google Forms. First, participants filled out an informed consent form. Participants were then given photos of a bogus target and asked to make up a fictional story about an activity that the participants did together with this stranger. The participants were free to choose any activity they wished. Afterward, participants were asked to measure perceived similarity using a Likert scale with one item adapted from research by Erle and Topoliski (2017) that reads: "How similar do you feel to the target?". Possible responses ranged from 1 (very dissimilar) to 6 (very similar). Additionally, a modified self-other overlap scale consisting of the IoS (Aron et al., 2004) and perceived closeness (Myers & Hodges, 2012) items were measured. The IoS item is similar to the one described in the previous study, except modified to only contain six response options. Perceived closeness was added to support the IoS scale and read: "How close do you feel to your target?". Possible responses ranged from 1 (not close at all) to 6 (very close). These three questions were asked before and after the imagined contact task was conducted. Additionally, the authors tested the reliability of the self-other overlap scale using a Cronbach's Alpha analysis.

Several control variables were used to ensure that external factors did not influence the analysis. First, the age and sex of the target used were confirmed to be the same as the participants (Wolgast et al., 2020). The stranger shown corresponded to the gender of the participants (see Figure 2). Before the imagined contact task, participants were asked to rate their first impressions of the target. Participants' first impression of the photo was measured using three items adapted from Frantz and Janoff-Bulman (2000). Participants were asked to rate, on a Likert scale (1-6), how much they felt the target displayed was (1) kind, (2) friendly, and (3) honest. The reliability of all three items was then tested using the Cronbach's Alpha analysis. The average of three items were then combined into a "first impression" score. Participants were also asked to rate on a Likert scale (1-6) how enjoyable they felt the experience they wrote about was.

Data analysis

A *t*-test was conducted to observe the differences before and after the imagined contact task was conducted. A correlation analysis was also conducted to see if the researchers could detect any relationship between enjoyment of imagined activity and change in perceived similarity.

RESULTS AND DISCUSSION

For the first study, the average participants' self-complexity ($M = 2.25$; $SD = 1.00$) was higher than their friends' perceived complexity ($M = 1.70$; $SD = 0.84$). The mean absolute difference between self-complexity and peer complexity was only slightly higher in the perspective taking group ($M = 0.63$; $SD = 0.86$) than in the control group ($M = 0.62$; $SD = 0.58$). IoS was also slightly lower in the perspective taking group ($M = 3.18$; $SD = 0.86$) than the control group ($M = 3.20$; $SD = 0.83$), indicating that participants felt closer to their friends if they did not take perspective at all.

Table 1.
Inclusion of Other in Self Descriptive Statistics and Absolute Differences in Cognitive Structure

		IoS		Abs. Diff.	
Condition	n	M	SD	M	SD
Control	46	3.20	0.83	0.62	0.58
PT	49	3.18	0.86	0.63	0.86

Note. IoS = The Inclusion of Other in Self Scale. Abs. Diff. = Absolute Difference, the absolute numerical distance between self-complexity and other complexity. PT = Perspective Taking.

Table 2.
Effect of Perspective Taking on IoS and Perception of Similarity

	Control		PT		t
	M	SD	M	SD	
IoS	3.20	0.83	3.18	0.86	0.06
PS	0.62	0.58	0.63	0.86	-0.10

Note. PT = Perspective Taking. PS = Perceived Similarity.

The distribution of data for self-complexity, friend complexity, and the absolute difference between self-complexity and perceived friend complexity was normal. There were no variables with skewness above 2.0 or kurtosis above 7. The Shapiro-Wilk test also showed that the three variables had a normal distribution ($p = .01$).

A *t*-test analysis presented in Table 2 found no statistically significant difference in IoS between the control condition and perspective taking, $t(94) = .06$, $p = .95$, indicating that manipulation was unsuccessful.

Perspective taking also did not produce a statistically significant difference in the absolute difference between self and other complexity between control conditions and perspective taking conditions, $t(94) = -0.10$, $p = .92$. This result can be seen in Figure 3 where the distribution of the absolute difference for the perspective taking condition ("P") is almost the same as the distribution of the control condition. Participants in the perspective taking condition ($M = .63$) had slightly lower perceived similarity than in the control group ($M = .62$), indicating a lower perceived similarity for the manipulation group.
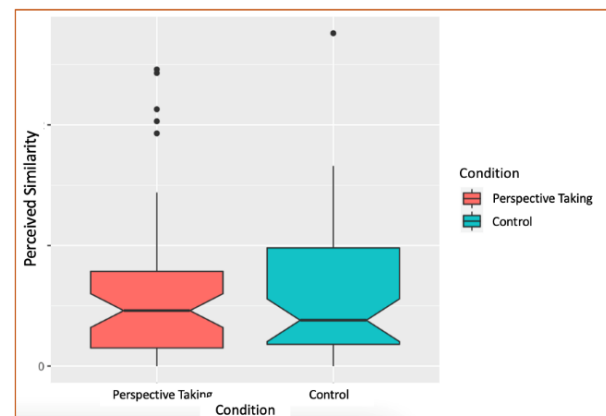

Figure 3. Distribution of Perceived Similarity for Perspective Taking and Control Conditions

From the data obtained, no significant difference was found between the control and the perspective taking conditions, $t(94) = -0.10$, $p = .92$, indicating that perspective taking does not affect the perception of similarity between an individual and his or her friends. In other words, perspective taking did not make participants feel closer or more similar to their friends.

In the second study, the first impression scale has a Cronbach's Alpha of .91, while the self-other overlap scale has a Cronbach's Alpha score of .84. These scores indicate that all questions related to first impressions and self-other overlap measure similar constructs. After analyzing the average scores of the three items on the first impression scale, participants tended to have a positive first impression of the target ($M = 4.18$; $SD = 1.04$). The photos displayed for the female participants had a higher first impression score ($M = 4.36$) than those for the male participants ($M = 3.88$). Participants also generally enjoyed the activities they created ($M = 4.34$; $SD = 1.37$).

Table 3. Effect of Imagined Joint Activities on Perceived Closeness and Similarity

	Before		After		*t*
	M	*SD*	*M*	*SD*	
PC	3.05	1.37	3.93	1.31	-3.57***
PS	3.20	1.41	3.85	1.16	-2.54**

Note. $n = 59$. PC = Perceived Closeness. PS = Perceived Similarity.
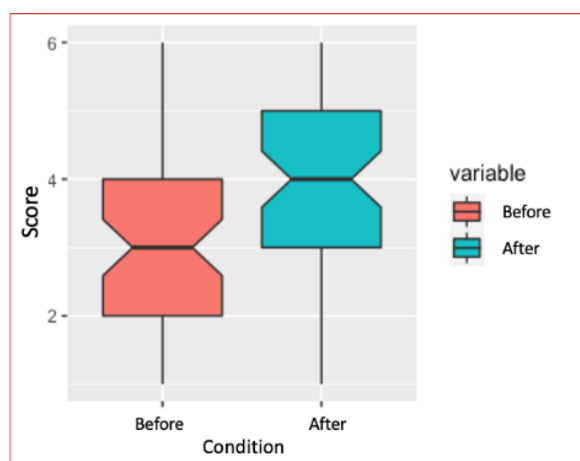**$p < .01$
***$p < .001$

Figure 4. Differences in Perception of Similarity Before and After Imagined Contact Manipulation

Perceived closeness generally increased, from an average of 3.05 ($SD = 1.37$) to 3.93 ($SD = 1.31$). *T*-test analysis showed that the changes for perceived closeness were statistically significant, $t(58) = -3.57$, $p < .01$, indicating that the manipulation was successful. Similarly, IoS increased from an average of 2.93 ($SD = 1.57$) before manipulation to 3.61 ($SD = 1.47$) after manipulation, indicating manipulation was successful. *T*-test for IoS before and after imagined contact activity was not significant at a 95% confidence interval, at $t(58) = -1.95$, $p = .06$. However, these results are quite close to the desired effect, and showed an increase in IoS after the imagined contact activity. Accordingly, perception of similarity increased from an average of 3.20 ($SD = 1.41$) before manipulation to 3.85 ($SD = 1.16$) after manipulation, $t(58) = -2.54$, $p < .05$.

Additionally, we checked to see if first impressions of target or enjoyment of activities might influence the amount of change in perceived similarity. We tested this by conducting a regression analysis between the first impression scale and the difference of perceived similarity before and after imagined contact. A similar analysis was also done between the enjoyment of activity scale and the difference in perceived similarity before and after imagined contact. To that end, we found no correlation between either the participants' first impression of the target ($r = .01$, $p = .20$) or the enjoyment of activities ($r = .02$, $p = .16$) and the changes in perceived similarity before and after contact. In other words, it appears that an increase in perceived similarity occurred regardless of how the participant perceived the target or the imagined activity.

This study was initially conducted to see whether perspective taking can increase the perception of similarity, even without any interaction between research participants and the target. However, after failing to replicate previous studies, the authors decided to test whether imagined contact might be better in increasing perceived similarity. The findings here contradicted previous studies on perspective taking (e.g., Brown et al., 2009;

Erle & Topolinski, 2017), though supported and even added upon the imagined contact theory (e.g., Vezzali et al., 2020).

The findings in this study suggest that perspective taking is insufficient to increase perceived similarity. Moreover, the authors found almost no difference between taking the perspective of and doing nothing. One key difference between this study and previous studies seems to be the data collection method. Where participants in previous studies (e.g., Erle & Topolinski, 2017) were invited to a data collection spot, this study was conducted online. Participants in this condition would likely feel less motivated to complete all parts of the questionnaire, or they could be distracted by other stimuli outside the researcher's control (Lefever et al., 2007). Additionally, participants' answers during the perspective taking task only described routine activities, such as waking up, taking a shower, and going to the office, implying that feelings were not involved. There was little to no mention of how the participants' friends felt. In other words, having similar attitudes matters most when those attitudes are central to our identity (Treger & Masciale, 2018). Without explicit instructions to seek meaningful similarities, it seems likely that participants will only focus on surface-level similarities. Additionally, putting oneself in another person's shoes is difficult to do when people are accustomed to looking at things from their own perspective (Damen et al., 2019). It is also possible that, with the awareness that other people are different from us, we may be less motivated to project ourselves onto others (Babakr et al., 2019). Therefore, this research emphasizes the importance of replicating previous studies (Fabrigar et al., 2020).

Second, perspective taking requires participants to be motivated (Wolgast et al., 2020) to take the perspective of others, and collecting data online may have reduced the effects of the attempted manipulation (Lefever et al., 2007). Perspective taking does require a high level of cognitive resources,

especially because it is difficult to get out of perspective alone (Damen et al., 2019). If the motivation to follow the research instructions is low due to the influence of filling out measuring instruments using the internet, perspective taking cannot be carried out optimally. Though it may be argued that this reflects a weakness in the study design, we suggest that interactions tend to happen more frequently online (Yin & Shi, 2022), this design better reflects real-world application than inviting people into a room to conduct perspective taking experiments.

In contrast, imagined contact was found to make participants feel closer and more similar to their target, supporting the notion that imagined contact increases feelings of trust and liking towards others (Vezzali et al., 2020). While imagining the interaction with the target, the participant is allowed to imagine whatever activity he or she wants. This opens many possibilities for the participant to find meaningful ways to connect with their target (Tidwell, Eastwick & Finkel, 2013). Perceived similarity may arise because participants fill in their knowledge gaps about their target by imagining that the target enjoys the same things they do (Crisp & Turner, 2009). Projecting one's own identity results in an increase in self-other overlap, which according to the previous discussion, will increase the perception of similarity (Hampton et al., 2018; Montoya et al., 2013). Imagined contact may also be effective because it reduces negative feelings towards the target, such as anxiety, because participants are motivated to project positive qualities related to themselves on the target (Crisp & Turner, 2012). Perceived similarity may also increase because the qualities projected onto others are also qualities that are meaningful to the observer (Hughes et al., 2021), thus achieving what perspective taking purports to achieve. Interestingly, a few studies have suggested that contact works because it helps increase the tendency to take the perspective of others (Husnu & Crisp, 2015; Çakal et al., 2021), suggesting that imagined contact is better at inducing

perspective taking than using explicit instructions.

Second, the success of imagined contact manipulation may also be influenced by the participants' freedom to compose stories that fit their own identities. By giving participants the freedom to imagine, they are also free to project their identity onto the target and make assumptions that the target is similar in various aspects relevant to the participant. This statement cannot be proven by this research. However, some indications that imagined contact affects producing meaningful interactions due to the use of words such as "happy," "exciting," and "sad" and participant responses.

The findings of this research also present the novel idea that imagined contact increases perceived similarity. Previous research tends to suggest that imagined contact reduces anxiety towards others or increases empathy without fully explaining how this happens (Vezzali et al., 2013). This research provides a possible explanation as to why imagined contact might reduce anxiety between strangers. Some researchers have noted that perceived similarity is considered almost automatically when viewing others (Di Bernardo et al., 2017). This research simply confirms that notion and displays a direct link between imagined contact and perceived similarity.

Practically speaking, the results of this study can help increase motivation to interact during the Covid-19 pandemic. This pandemic has made us feel even more isolated from our peers and friends (Lippke et al., Fischer & Ratz, 2021). Although interaction can still be done through social media, this method of communication is unfortunately not as effective as face-to-face interaction (Dou et al., 2020; Mulqueen, 2019; Yin & Shi, 2022). In addition, with the option to interact with anyone, we are becoming more selective in choosing our friends (Bahns et al., 2019). By making imagined contact, we may be able to increase our motivation to re-engage with people we have long neglected.

There are a few limitations to this research. First, both studies, though related, cannot be directly compared with each other. They are, in fact, two different studies that seek to answer a similar question. Future studies could directly assess, using the same methods, a few different methods that could potentially increase perceived similarity. Second, this study does not take into consideration individual differences in *dispositional* perspective taking, or our natural ability to take another person's perspective (Wolgast et al., 2020). Though the effect of individual differences may be minimized, controlling for this variable may yield different results. Finally, most of the participants in this study were women and students in their early adulthood, so the study's results may not necessarily be generalizable to a larger population.

There are several recommendations for further research. First, future research could examine how imagining contact can influence a person's behavior. Just because we feel closer does not mean we will be closer. Future research can also examine what happens if what is imagined does not match reality. Will we be motivated to look for the middle point, or will there be a rebound effect? Research can also see if the technique used in this study will be found if the initial assessment of the target is negative. Research can also examine the effect of taking an affective/empathic perspective. This study focuses on cognitive perspective taking. The results of perspective taking can be different if participants are asked to focus on what the target feels (e.g., Buffone et al., 2017).

CONCLUSION

Two studies were conducted to observe the effects of perspective taking and imagined contact toward perceived similarity. Although both approaches have been linked to an increase in perceived similarity, only imagined contact was found to increase perceived similarity. This research presents evidence that imagined contact reduces

anxiety towards strangers by affecting perceived similarity.

CREDIT AND ACKNOWLEDGEMENT

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