

Summary

Mind-reading in hierarchy: Does the impact of social status on theory of mind change depending on mood and group membership?

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Introduction

Theory of mind (ToM) refers to the ability to accurately predict others' subjective mental states such as their beliefs, intentions, desires and goals (Wellman, 2014). It is a skill that helps individuals read others' mind and adjust their behaviors in accordance with others' psychological worlds. As such, it positively predicts quality of social relationships and also allow individuals to guard themselves against the social threats that may come from negative social encounters (Epley, 2019). Research shows that ToM is at the intersection of social and cognitive skills, meaning that both cognitive abilities (e.g., executive functions) and social-contextual factors (e.g., cultural norms, peer interactions) impact the degree to which individuals can deploy their mind-reading capacity (Wellman, 2014; Perez-Zapata et al., 2016).

Among the social-contextual factors that influence ToM, social status of individuals come to the fore (Mast et al., 2020). Social status defines the ease with which individuals have access to important social and material resources such as respectability, recognition and money. Findings demonstrate that individuals in low social status usually display higher ToM performance than those in high social status (Galinsky et al., 2006; Van Kleef & Lange, 2020). It is argued that having access to social and material resources make high-status individuals more focused on their self, discouraging them from understanding relative perspectives of others. In contrast, those in low social status get more attuned to others' perspectives as they know that focusing on others may help them change their disadvantaged position (Kraus, Côté, & Keltner, 2010). However, other studies also pointed out that certain moderating factors such as empathy levels of individuals or their understanding of social status (e.g.,

ways of achieving it) can buffer the negative impact of social status on ToM (Blader et al., 2019; Wang, 2020). Hence, it has been suggested that further research is needed to understand under what conditions social status influences ToM and whether alternative moderators that help high-status individuals read others' mind better can be found (Galinsky et al., 2016; Mast et al., 2020). The current study aimed to investigate two possible moderators: individuals' current mood (positive/negative) and the group membership (based on social status) of the person whose mind is to be read (ingroup-identical social status/outgroup-different social status).

Studies demonstrate that individuals' current mood can significantly relate to their motivation to reason about others' minds, with those having negative mood taking others' perspectives better than those having positive moods (Converse et al., 2008). It has been argued that negative moods bolster other-orientedness and mind-reading as a way to look for possible rewards in social interactions and to increase current mood (Clare & Huntsinger, 2007). In contrast, positive moods make people more self-oriented and thus discourage reading others' subjective minds (Bodenhausen et al., 1994). Interestingly, the mechanism through which mood may impact mind-reading looks very similar to the process through which social status exerts its effect on mind-reading. In other words, in both factors having a certain disadvantage, being low in either social status or mood, renders people more open to understanding others' minds as those minds may reveal significant information which may help people change their unfavorable circumstances. Moreover, it is also likely that findings of studies testing the effect of social status on ToM may also confer significant information on how mood impacts ToM. It is possible that people assigned to low social status groups

in experimental paradigms may experience significant reduction in mood and hence, the effect of social status on ToM may be confounded with the effect of mood on ToM. Therefore, it is important to critically disentangle the two factors to better understand how each one of them uniquely and also in interaction with each other influences mind-reading.

Finally, it is also of importance to test how social status impacts mind-reading when the person whose mind is of interest is from one's own social status (ingroup) or from another social status (outgroup). Research highlights that individuals read their ingroup members' minds better than minds of outgroups because perceived similarity with ingroup members makes the mind-reading process cognitively easier (Ekerim-Akbulut et al., 2020; Perez-Zapata et al., 2016). In line with simulation accounts of mind-reading, it is argued that individuals anchor their own self when they should understand what others think and this anchoring process is easier if the person to be understood is from a familiar social group (Woo & Mitchel, 2020). Shared social status might also have the same facilitating effect, making people better infer each others' minds when they perceive each other equal in reaching material or social resources.

In short, the primary objectives of the current study were (1) to investigate the impact of social status (low/high) on mind-reading; (2) examine the influence of mood (positive/negative) on mind-reading; (3) explore the effect of group membership based on social status (ingroup-same social status/outgroup-different social status) on mind-reading; and finally (4) test if the impact of social status on mind-reading varies depending on individuals' mood (positive/negative) and the group membership of the target person (ingroup/outgroup member).

Method

Participants

The sample consisted of 112 university students ($n_{\text{male}} = 32$) between the ages of 18-30 ($M = 20.34$, $SD = 1.73$). Majority of the participants were from low to middle income families.

Measures

Demographics: Participants were asked to indicate their age, monthly income and the presence of depressive symptoms.

Mood: The Geneva Emotion Wheel (Scherer, Shuman & Fontaine, 2013) was administered to assess participants' mood before and after mood induction. This scale includes twenty different emotions, requiring participants to indicate the specific emotion they are currently experiencing. Emotions on the right side of the

scale are positive (e.g., happy, joyful, proud), whereas emotions on the left side are negative (e.g., sad, guilty, regretful). In addition to indicating type of the emotion, participants also choose the intensity of their emotion by marking one of the five circles ranging from small to big as indicators of intensity. The circles as indicators of emotion intensity were quantified from 1 to 5 for positive emotions and from -5 to -1 for negative emotions, with higher scores indicating higher emotion intensity.

Theory of Mind: Strange Stories (Happé, 1994) was used to measure ToM performance. Consisting of 8 mind-reading stories, this task assesses participants' ability to infer mental states of the characters in the story through various situations such as white lies, persuasion, and misunderstanding. For the purposes of the current study, story characters' professions as indicators of their social status were made explicit. Thus, half of the stories were about low status characters (e.g., cleaning person) whereas the other half was about high social status (e.g., lawyer) characters. Therefore, participants were asked to read and infer minds of both high and low social status individuals. Their responses were coded for mind-reading accuracy by two separate coders as in previous studies and coders were consistent with each other ($\alpha = .97$; 95% [CI] = [0.94, 0.99]).

State Anxiety: Participants' state anxiety was measured with the Turkish version of the State Anxiety Subtest of The State-Trait Anxiety Inventory (Öner ve Le Compte, 1985). It consists of 20 items (e.g., "I am currently anxious" rated on a 4-point Likert scale (Cronbach's $\alpha = .94$), with higher scores indicating higher state anxiety.

Vocabulary Knowledge: Vocabulary knowledge was measured with the ACEP Vocabulary Knowledge Scale prepared by Gülgöz (2004), and administered in multiple-choice format requiring participants to find the synonyms of 24 different words from five different options (Cronbach's $\alpha = 0.77$).

Procedure

Data collection started after receiving ethical approval from the university's Scientific Research and Publication Ethics Committee (Decision No: 2022/04-6). The data were collected in the laboratory and the process took approximately 40-45 minutes. Firstly, participants were asked to indicate their current mood on the Geneva Emotion Wheel. Then, they were randomly assigned to either teacher (high social status) or student (low social status) role. The participants were told that teacher's responsibility is to teach sign language alphabet to the student and the student's responsibility is to learn the alphabet. They were told that after teaching, the participant in the teacher role will make a quick

exam to the student to see how many letters the student could remember. Then, to manipulate mood states of the participants both teachers and students were given feedback through little feedback cards about their teaching/learning performance regardless of their actual performance. Some participants were given positive (“you’ve done a great job”) and some were given negative feedback (“sorry, you could have done way better”). After receiving feedback, participants were again asked to report their mood and its intensity. Finally, they were given mind-reading stories which required them to infer minds of individuals from low and high status groups, and also completed the questionnaire forms to report their demographics, state anxiety levels and vocabulary knowledge.

Results

Results of 2 (social status: low, high) x 2 (mood: positive, negative) x 2 (group membership: ingroup, outgroup) Mixed Design Analysis of Variance showed that social status ($F(1, 97) = .47; p = .49, \eta^2 = .01$) and group membership ($F(1, 97) = .20; p = .66, \eta^2 = .00$) did not have significant main effects on ToM, but there was a significant main effect of mood, ($F(1, 97) = 6.83; p = .01, \eta^2 = .07$) on ToM. Individuals in positive mood ($M = 5.92, SD = .13$) had higher ToM performance than those in negative mood ($M = 5.31, SD = .19$). Neither two-way nor three-way interactions of social status with mood and group membership were not found to be statistically significant. However, simple effect analyses showed that among the participants in low social status group, ToM scores of those with positive mood were higher than ToM scores of those with negative mood, ($M_{\text{difference}} = .68, SD = .31, p = .03, \text{Cohen's } d = 3.08, 95\% \text{ CI} = [.06, 1.30]$). Among those in high social status group, ToM performance did not differ between positive and negative moods, ($M_{\text{difference}} = .53, SD = .34, p = .12, \text{Cohen's } d = 2.30, 95\% \text{ CI} = [-.14, 1.21]$). In addition, among participants in low social status groups, those in positive mood understood mental states of outgroup members more accurately than those in negative mood, ($M_{\text{difference}} = .88, SD = .40, p = .03, \text{Cohen's } d = 3.16, 95\% \text{ CI} = [.08, 1.67]$). A similar pattern was not observed among participants in high social status who understood the mental states of outgroup members equally well in positive and negative mood states, ($M_{\text{difference}} = .73, SD = .38, p = .08, \text{Cohen's } d = 2.47, 95\% \text{ CI} = [-.10, 1.55]$).

Discussion

This study examined the moderator role of mood and group membership in the effect of social status on

theory of mind for the first time. Findings showed that social status and group membership based on social status did not have a main effect on mind-reading performance of individuals, pointing that these two variables may be considered in interaction with other factors in terms of their impact on mind-reading. In contrast, mood itself appeared to be influencing individuals’ mental state understanding performance, with those having positive mood inferring minds of others better than those having negative mood. This finding suggests that when individuals feel positive emotions, they could be more motivated to see the world from another’s perspective. Also, it is known that negative emotions have detrimental role in attention and concentration (Brinker et al., 2013; Nahum et al., 2023), which may underlie why people having negative moods had difficulty in understanding others’ mental states.

Although interaction effects were non-significant in general, simple effect analyses of the current study demonstrated that among the low status individuals those feeling negative emotions found it harder to understand others’ minds compared to other low status individuals who feel positive emotions. This highlights that feeling negative emotions make low status individuals at a double disadvantage in that they could not concentrate on others’ individuals view points when they are experience both higherarchical and emotional difficulties. In contrast, those at high social status feel more resilient against the impact of negative mood as high status individuals feeling neative emotions perform equally with other high status individuals feeling positive emotions. It appears that individuals low status is a risk factor for mind-reading and feeling negative emotions further aggravates it for mind-reading. Although these findings are at odds with earlier studies which found both low status (Galinsky et al., 2006) and negative mood as facilitators of mind-reading (Converse et al., 2008), our results support in general the idea that mind-reading is an effortful process that requires attention, inhibitory control and shifting which are very open to the negative influence of negative emotions and perceived social disadvantages (Epley, 2019).

Furthermore, our analyses also showed that double disadvantage seen in mind-reading was more pronounced toward outgroup members, namely the high status individuals. In other words, when the target was a high status person, low status individuals who feel negative emotions showed poorer mind-reading than low status individuals who feel positive emotions. However, difference in mind-reading did not occur between those feeling positive emotions and those feeling negative emotions when the target was from ingroup, specifically from low social status. This findings shows that low status

individuals could be very dependent on their mood state when they have to take high status individuals' mental states. The disadvantage experienced in status and mood together shows itself when individuals are asked to understand someone who does not experience a higherarchical difficulty. In contrast, high status individuals appeared to be uninfluenced by their mood state regardless of the target being ingroup or outgroup member. As such, together these findings pointed for the first time that both mood and group membership had critical roles in the effect of social status on mind-reading.

The current study has its limitations as well as strengths. Firstly, in our study social status manipulation was based on social hierarchical rules while social status indicators in mind-reading stories were mostly based on jobs that confer economical status. This discrepancy might have influenced the direct impact of social status on mind-reading. Secondly, we did not investigate the impact of specific moods on mind-reading but focused on moods under general negative vs. positive categories. Certain differences between emotions within the same category (e.g., sad vs. anger or happiness vs. enthusiasm)

may be critical to better understand how emotions impact perspective taking (Adams et al., 2000; Epley, 2019). Finally, our interaction effects were non-significant despite the significant simple effects, which indicates that similar studies should be conducted with larger samples to uncover the effects with higher statistical power.

In short, this study contributed to our understanding of how social context influences individuals' mind-reading performance depending on their mood and group membership. It appears that compared to those from high social status, individuals from low social status groups experience more difficulty in inferring minds of high status individuals when they feel negative emotions. Therefore in hierarchical relationships it might be of importance to help low status individuals improve their mood states so that they can better understand subjective perspectives of their outgroup members, particularly high status groups. Otherwise, sense of disadvantage and lack of empathy arising from poor mentalizing may run the risk of impairing quality of social interactions between high and low status groups (Blader et al., 2016).