Replication

Projection of Visceral Needs

Satisfaction of the Need and Similarity of the Target Person as Moderators

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Abstract: People's immediate needs influence how they perceive other's needs – people project their needs onto others. Two studies sought to replicate and extend previous research by identifying moderators of need projection: need satisfaction and a global sense of similarity. Projection increased when a strong need to quench one's thirst was induced and not satisfied (Study 1). Projection of the need to quench one's thirst increased when existing thirst and the global sense of similarity with the target person were high, but again only when the need was not satisfied (Study 2). Visceral needs influence judgments about other people's needs when the individual is experiencing the need in a given moment; lingering effects are not observed once that need is satisfied.

Keywords: projection, visceral needs, need satisfaction, global similarity

Experiencing visceral needs (e.g., hunger pains) or psychological needs (e.g., loneliness) orient people to thoughts and behaviors related to fulfilling or satisfying those needs (Aarts, Dijksterhuis, & De Vries, 2001; Ariely & Loewenstein, 2006; Atkinson & McClelland, 1948; Balcetis & Dunning, 2010; Kappes, Schwörer, & Oettingen, 2012; Loewenstein, 1996; Przybylski, Murayama, DeHaan, & Gladwell, 2013; Risen & Critcher, 2011; Veltkamp, Aarts, & Custers, 2008). Needs even affect how we interpret other people's internal states (O'Brien & Ellsworth, 2012; Van Boven & Loewenstein, 2003). Van Boven and Loewenstein (2003) observed that people's assumptions of how others feel in need-related situations are based on how they think they themselves would feel, given that they were in those situations.

However, there is limited empirical research identifying the specific conditions that influence people's views of others' visceral needs. O'Brien and Ellsworth (2012) demonstrated that need projection is curbed when individuals perceive target persons as dissimilar on a specific dimension (e.g., political orientation). We want to build on this research because we think that a person's sensitivity to others' needs has important interpersonal implications. For instance, need projection can be a mechanism that could either elicit or hinder empathy. Viewing others as possessing the same needs could elicit empathic feelings toward them (Hodges & Wegner, 1997). On the other hand, viewing others as not possessing the same needs might undermine need projection and thus empathy (as suggested by Nordgren, McDonnell, & Loewenstein, 2011; O'Brien & Ellsworth, 2012).

The present research sought to conceptually replicate and extend past relevant findings in three ways. First, we tested whether the satisfaction of a current need would curb projection. As needs are thought to arise as a result of deprivation, they should stimulate activities and behaviors that reduce or eliminate the deprivation through satisfaction (e.g., Hull, 1943, 1952; Spence, 1956; for reviews, see e.g., Gollwitzer, Kappes, & Oettingen, 2011; Kenrick, Griskevicius, Neuberg, & Schaller, 2010; McClelland, Atkinson, & Clark, 1949; Reeve, 2008). Thus, once a need is met, that need state as well as the satiated state should no longer be activated and therefore not projected.

Second, we investigated whether having a global sense of similarity to a target person would moderate the projection of needs just as having a specific sense of similarity has been previously shown to be a moderator. O'Brien and Ellsworth (2012) noted that being similar or dissimilar in terms of political orientation can be "affectively charged and can activate strong ingroup/outgroup membership or ally versus enemy dynamics." We tested whether having a general sense of similarity with another person, defined as "an idiosyncratic and subjective sense that one is similar

to a target group/person" (Ames 2004a, 2004b), would also moderate need projection.

And finally, we tested whether people project their needs onto real people as they have been shown to project their needs onto hypothetical target persons. Prior research showed that people project their needs onto fictitious characters in hypothetical situations (e.g., hikers lost in the woods). If more individuating information about target persons is provided, projection might be hampered (or enhanced) because people can use such information to infer either more similarity or dissimilarity with the person, and thereby project more or less. Thus, we examined whether individuals would also project their needs onto real target persons.

Study 1: Need Satisfaction as Moderator

Method

Participants and Design

One hundred twenty-six participants (104 females; M_{age} = 19.26, SD_{age} = 1.19) from a large university in the US completed a paper-pencil study alone in an experimental room to fulfill a partial requirement for an introductory psychology course. The study utilized a 2 (Thirst: weak vs. strong) × 2 (Water provided: yes vs. no) factorial design.

Procedure

Adapted from prior research (e.g., Aarts et al., 2001; Kappes et al., 2012), participants were given a plate containing two differently flavored jelly beans and two pieces of chocolate. Half the participants were asked to eat three salty crackers after each of the two food samples supposedly to cleanse their palates. For these participants, the resultant consumption of six crackers was thought to create a strong need to quench their thirst, as eating salty crackers can be expected to make people thirsty. The other half of participants never consumed any crackers – thus these participants were not made thirsty.[1]

Then, half of the participants who were made thirsty and half of those who were not made thirsty were given a cup of water to drink (8 ounces): "You may drink some water now *before* answering the rest of the questionnaire. Please drink all of the cup's content." The other half of participants (of those who were made thirsty and those who were not made thirsty) were instead told: "You may drink some water *after* answering the rest of the questionnaire. You may drink all of the cup's content after you are done." As a manipulation check, participants indicated their thirst level on an answer scale ranging from 1 (= *not at all*) to 7 (= *extremely*).[2]

As the dependent variable, we assessed the projection of being thirsty (see Gollwitzer et al., 2011) by asking participants two items: "How badly do you think other students [on campus] want to drink water right now?" and "How committed do you think other students [on campus] are to quenching their thirst right now?" using a 1 (= *not at all*) to 7 (= *extremely*) scale (α = .79).

Results and Discussion

We conducted a 2 (Thirst: weak vs. strong) × 2 (Water Provided: yes vs. no) ANCOVA on participants' assumptions regarding other students' thirst, adjusting for participants' baseline thirst level and found the predicted interaction effect, $F(1, 121) = 6.25$, $p = .014$, $\eta^2_p = .05$, observed power = .70. As shown in Figure 1, participants in the strong thirst/water not provided condition ($M = 4.84$, $SD = 1.45$) indicated that other students were thirstier than participants in all other conditions – the strong thirst/water provided condition ($M = 3.65$, $SD = 1.23$), $t(60) = 3.50$, $p = .001$, $d = .89$; the weak thirst/water provided condition ($M = 3.55$, $SD = .95$), $t(62) = 4.23$, $p < .001$, $d = 1.07$; and the weak thirst/water not provided condition ($M = 3.66$, $SD = .93$), $t(60) = 3.81$, $p < .001$, $d = .98$. There were no differences among these three latter conditions, $ps > .74$. As noted in the Electronic Supplementary Material, ESM 1, the same effect was observed without controlling for participants' baseline thirst level.

Study 2: Need Satisfaction and Perceived Similarity as Conjoint Moderators

Method

Participants and Design

Forty-two participants (18 females and one specified as "other"; M_{age} = 33.35, SD_{age} = 16.06) were invited to a paper-pencil study at a major park in a large city. Participants were randomly assigned to either the need unsatisfied condition ($n = 18$) or the need satisfied condition ($n = 24$).

[1] As a baseline, we measured participants' thirst level (as well as various other states such as hunger and fatigue) before any experimental manipulations to ensure there were no preexisting differences.

[2] A 2 (Thirst: weak vs. strong) × 2 (Water provided: yes vs. no) ANOVA on the experienced thirst level confirmed that our manipulation of thirst was effective (see full report of analysis in ESM).

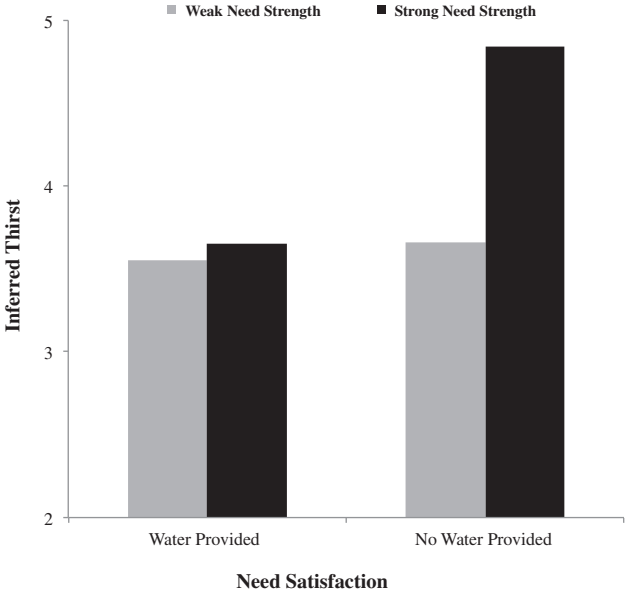

Figure 1. Other students on campus: Inferred thirst as a function of induced need (weak vs. strong) and need satisfaction (water provided vs. not provided) (Study 1).

Procedure

Participants' thirst was not induced (as was done in Study 1) but instead measured indirectly by the following question: "Knowing that the price of an 8 oz bottle of water is approximately $1.00, how much more than the regular price of water would you pay to quench your thirst right now?" using a 1 (= *$1.00 more*) to 7 (= *$4.00 more*) scale in increasing increments of $0.50.

At this point, the experimenter chose a target person who was in close proximity. A target person was anyone who was passing by a bench that was 10 feet in front of the water station. Participants first indicated how similar they viewed that person to themselves: "In general, how similar do you think that person is to you?" using a 1 (= *not at all*) to 7 (= *extremely*) scale. Then, participants in the need satisfied condition received an 8 oz bottle of water to drink and were told: "You may drink some water now *before* answering the rest of the survey. Please drink at least half of its content." The participants in the need unsatisfied condition were given an 8 oz bottle of water and told: "You may drink some water *after* answering the rest of the survey. You may drink its content after you are done."

We assessed the projection of being thirsty indirectly by asking participants about the target person's wanting to satisfy his/her thirst: "Knowing that the price of an 8 oz bottle of water is approximately $1.00, how much more than the regular price of water would that person pay to quench his/her thirst right now?" using a 1 (= *$1.00 more*) to 7 (= *$4.00 more*) scale in increasing increments of $0.50 (see Table 1 for means and standard deviations for the respective conditions).

Table 1. Study 2: Means, standard deviations, and correlations among key variables for need unsatisfied and satisfied conditions

	Mean	*SD*	1	2	3
Need unsatisfied condition					
Amount target person would pay more ($)	1.56	0.88		.61**	.07
Existing thirst level	1.27	0.47			.11
Target similarity	3.04	1.81			
Need satisfied condition					
Amount target person would pay more ($)	1.13	0.33		−.02	−.28
Existing thirst level	1.14	0.34			.37
Target similarity	3.83	2.12			

Notes. The dollar amount the target person would pay for water was participants' indication of how thirsty they perceived the target person to be. Existing thirst level was the participants' indication of his/her commitment to quench his/her thirst. Similarity was the participants' indication of the target person's similarity to themselves.

Results and Discussion

Projecting Onto Other People at the Park as a Function of Condition

Because of our small sample size and concerns of violation of the assumptions of regression models, we applied a robust estimator[3] on our analysis and found a significant three-way interaction among these variables, $b = -.65$, $SE = .27$, *Wald* $X^2 = 5.98$, $p = .01$, observed power = .18. To clarify this three-way interaction effect, we analyzed the two-way interactions of participants' existing thirst and perceived similarity separately for the respective conditions. A visual representation of the raw data is provided in ESM 1.

Need Unsatisfied Condition

We conducted a generalized linear model (GLM) analysis and entered participants' existing thirst level, the perceived similarity of the target person, and the interaction term to predict the target person's thirst in the need unsatisfied condition. We observed a significant interaction effect on the assumed amount of money the target person would be willing to pay for an 8 oz bottle of water, $b = .77$, $SE = .18$, *Wald* $X^2 = 18.81$, $p < .001$. As illustrated on the

[3] A robust estimator is an estimation technique designed to circumvent some limitations of traditional parametric methods, making it insensitive to small departures from the idealized assumptions, which have been used to optimize the algorithm. Thus, when regression models are vulnerable to outliers and not particularly robust to suspicions of heteroscedasticity (as is true for small sample sizes), a robust model is more appropriate (Cohen, Cohen, West, & Aiken, 2003).

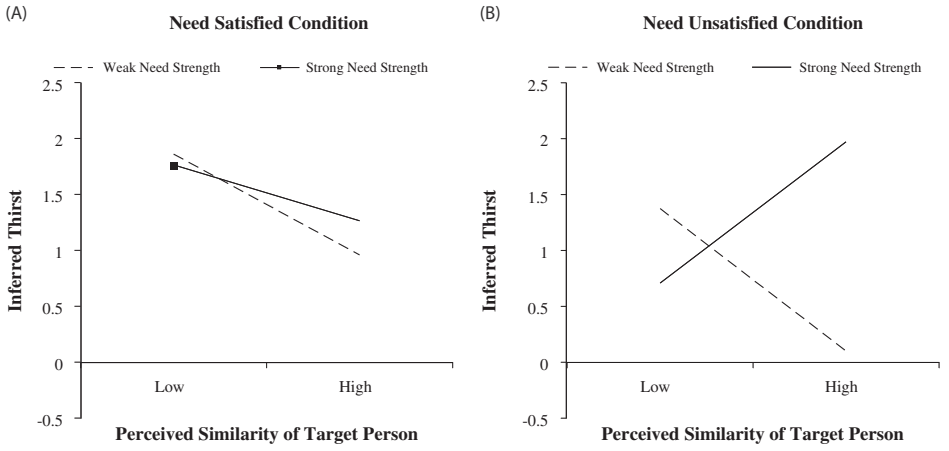

Figure 2. Another person at the park: Inferred thirst as a function of existing need (weak or strong) and the perceived similarity of the target person (low or high) by need satisfaction condition (Study 2).

right side of Figure 2, participants who had *strong* existing thirst were *more likely* to think that the target person was also thirsty the more similar they perceived that person to be, $b = .47$, *Wald* $X^2 = 17.68$, $p = .001$. There was an analogous pattern for those who had *weak* existing thirst – they were *less likely* to think the target person was thirsty the more similar they perceived that person to themselves, $b = -.17$, *Wald* $X^2 = 17.84$, $p = .001$.

Need Satisfied Condition

We applied the same analysis to predict projection in the need satisfied condition and did not observe any interaction effect, $b = .12$, $SE = .20$, *Wald* $X^2 = .38$, $p < .53$ (see Figure 2A). This suggests that need strength and perceived similarity no longer affected projection for participants who had quenched their thirst.

Discussion

Van Boven and Loewenstein (2003) demonstrated that people project their visceral need states (hunger and thirst) onto others, biased in the direction of their currently deprived state. Going beyond these findings, we considered whether the projection of a given need would be effectively diminished once the need is satisfied. In Study 1, we observed that when participants were made thirsty by consuming salty crackers but could not quench their thirst, they projected their thirst onto other students. On the other hand, those who were made thirsty but quenched their thirst did not project. Moreover, participants who were never made thirsty in the first place (did not consume any crackers) did not project at all, whether they were provided with water or not. These findings demonstrate that it is important to have the active experience of the need in the moment to elicit projection.

O'Brien and Ellsworth (2012) demonstrated that having a specified sense of dissimilarity from a hypothetical target person (in their study, in terms of political orientation) hampers projection. In Study 2, a field study, we tested whether having a global sense of similarity (or dissimilarity) with the target person would moderate projection effects just as it has been shown for a specific sense of similarity/dissimilarity. Additionally, we tested whether need projection would also occur for real people and not just for hypothetical target persons. We observed that when people's needs were satisfied, they did not project onto the target person whether or not they had experienced a strong (or weak) existing need or perceived the person to be similar (or not). That is, the strength of people's needs and the global sense of similarity to the target person do not seem to matter when needs are satisfied. In contrast, people who did not drink water (did not have their need satisfied) and had a strong existing need to drink water did project their need onto the target person the more similar in general they perceived themselves to that person. These findings suggest that need projection occurs for real people (not just hypothetical persons) when the existing strength of the need and the global similarity of the target are high, but these findings are only obtained when the need is not satisfied. Interestingly, an analogous pattern was observed for people who did not drink water and had a weak existing need – they projected that the target person also had a weak need to the degree they perceived themselves as similar. This latter finding emphasizes the point that when people do not experience the need at all, they believe others do not experience that need either.

In sum, our findings of Studies 1 and 2 imply that unsatisfied needs in our everyday lives lead to inferring that similar others possess those same needs. Importantly, visceral needs influence judgments only when someone is actually experiencing that need in the moment but do not have lingering effects once that need is satisfied. However,

there are limitations of the present studies. First, both studies did not have adequate power (especially Study 2), and thus future studies should opt for much larger sample sizes. Second, because perceived similarity was defined in the most general sense, it is difficult to know which aspects of similarity are most influential. Future research might want to disentangle the specific aspects of similarity/dissimilarity that most effectively moderate need projection.

Our findings are important because in everyday life, having certain needs may lead to inappropriate assumptions about other people's needs with unfortunate consequences for interpersonal sensitivity and interpersonal interactions. For instance, parents and doctors may gauge their young children's or patients' hunger, thirst, fatigue, and bodily temperature based on how hungry, thirsty, tired, and warm/cold they themselves feel at the given moment. As a consequence, they may lose sight of their children's and patients' actual needs.

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Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at http://dx.doi.org/10.1027/1864-9335/a000286.

ESM 1. Text and Figure (PDF).
Additional analyses (manipulation check and an additional measure of hunger) for Study 1 are provided. And, a visual representation of the raw data for Study 2 is also provided.

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