

MISPERCEPTIONS

The Better-than-Average Effect Drives Norm Misperceptions

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### Abstract

This research examined whether the better-than-average (BTA) effect is a possible explanation for norm misperceptions. Data from an online study demonstrates that people perceive their risk and proenvironmental behavior as more socially approved than the same behavior in others, suggesting that norm misperceptions are driven by the BTA effect. This suggestion is further substantiated by the observation that when a proenvironmental lifestyle is important to a person, that person's perception that their proenvironmental behavior is more socially approved of than the same behavior in others becomes more pronounced. This moderator effect of importance is typically reported in the BTA literature. Norm misperceptions were also more pronounced when behaviors were framed in a socially disapproving manner when compared to those framed in a socially approving manner. This framing effect underpins that the BTA effect drives norm misperceptions. We expect that these findings advance the conceptualization of interventions based on social norms and contribute to BTA literature.

*Keywords:* Social Influence, Norm Misperception, Better-than-Average Effect, Risk Behavior, Sustainable Behavior, Framing

## 1 Norm Misperceptions Determine Behavior

Social norms exert a powerful influence on human behavior. Counterintuitively, *perceived* social norms have a more powerful influence on behavior than *actual* social norms (e.g., Perkins & Berkowitz, 1986). Yet, it is unclear what determines the difference between perceived and actual social norms—a phenomena that is often referred to as *norm misperception*. The research presented in this paper tests the extent to which a better-than-average (BTA) effect in comparative judgment becoming evident in a person's tendency to judge their own abilities, skills, and personality traits as "better" than those of others, might explain norm misperceptions. By allowing a more accurate prediction of norm misperceptions, our findings advances the understanding of social norms and refines our understanding of how social norms influence behavior.

Norm misperceptions form the core of norm-based interventions. These so-called *personalized normative feedback* (PNF) interventions leverage norm misperceptions to reduce risk behavior (e.g., drinking alcohol) and promote proenvironmental behavior (e.g., energy conservation). The concept of PNF interventions is based on social norm theory (Perkins & Berkowitz, 1986) and it builds upon the phenomena that people seek conformity to social norms. In short, social norm theory conceptualizes that norm misperceptions more accurately predict behavior than actual norms, and suggests that informing a person about norm misperceptions leads that person to a behavioral change towards actual norms. While people typically overestimate the prevalence of risk behavior, they tend to underestimate the prevalence of proenvironmental behavior. By providing information about the actual norm, PNF interventions correct the perceived social norm and capitalize on the human tendency to adjust one's behavior to it (i.e., the perceived social norm; e.g., Dotson, Dunn, & Bowers, 2015; Miller & Prentice, 2016; Neighbors et al., 2010). For example, during a PNF intervention against drinking on a university campus, students were individually informed about norm misperceptions and told how the actual prevalence of drinking was lower than

their perception of the norm. The authors of that study found that students who drank due to their exaggerated perception of the drinking norm consequently reduced their drinking to conform (Neighbors, Larimer, & Lewis, 2004).

PNF interventions are most commonly used to discourage risk behavior, such as excessive drinking amongst youth adults. Indeed, most research on PNF interventions and norm misperceptions has focused on drinking behavior. Two aspects of this evidence are particularly important: First, perceived drinking norms are a stronger predictor of drinking than the actual drinking norm (Perkins, Haines, & Rice, 2005). Second, young adults that greatly overestimate drinking norms also demonstrate a relatively high level of alcohol consumption (Perkins, 2007). Interindividual variation in the extent of norm misperceptions of drinking exists, but norm misperceptions persist across diverse countries, cultures, and gender (Page, Scanlan, & Gilbert, 1999). Furthermore, overestimations of social norms also occur in association with other risk behaviors such as smoking (Hancock & Henry, 2003), drug consumption (Perkins, 2003), and the use of sun protection (Reid & Aiken, 2013) or seat belts (Linkenback & Perkins, 2003).

PNF has also been used to promote proenvironmental behavior. Unlike risk behavior, proenvironmental behavior seems to have unclear or absent perceived social norms rather than biased social norms (Miller & Prentice, 2016). Consequently, PNF interventions used to promote proenvironmental behavior do not assume to correct biased collective norm misperceptions. Instead, these PNF interventions work by eliciting self-awareness about one's behavior and its position in the distribution by activating one's motivation to be more on one side of the median than the other (Harries, Rettie, Studley, Burchell, & Chambers, 2013; Miller & Prentice, 2016). For example, a PNF intervention to promote proenvironmental behavior can take the form of a door hanger informing households about energy consumption norms in the neighborhood. In fact, repeated studies have shown that learning that neighbors are demonstrating more energy conserving behaviors (e.g., turning off unnecessary lights)

than themselves has led subjects to reduce household energy consumption (Allcott, 2011; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).

So far, research on PNF interventions has focused on establishing intervention effectiveness rather than on exploring how norm misperceptions work. And there is considerable evidence on the effectiveness of PNF interventions (e.g., LaBrie, Hummer, Neighbors, & Pedersen, 2008; Neighbors et al., 2004; Reid & Aiken, 2013), including two meta-analyses (see Dotson, Dunn, & Bowers, 2015; Zimmerman, 2014), yet PNF interventions have their limitations (see Clapp, Lange, Russell, Shillington, & Voas, 2003; DeJong et al., 2009; Werch et al., 2000). A way to better understand the boundaries of successful PNF interventions is by gaining insight into underlying mechanisms of norm misperceptions. It seems noteworthy that the lack of empirical research on underlying mechanisms of norm misperceptions is caused by a lack of theoretical explanations for norm misperceptions. Social norm theory starts with the assumption that there is a norm misperception, but the theory does not provide a conceptual framework to predict the direction and magnitude of norm misperceptions (see Perkins & Berkowitz, 1986).

Promising indications of how to conceptualize the direction and magnitude of norm misperceptions can be found in research that combines literature on social norms and the BTA effect. In general, research on the BTA effect is vast, and it has been suggested that the BTA effect emerges due to a combination of motivational and cognitive factors when comparing oneself to another with respect to abilities, skills, or personality traits (e.g., Logg, Haran, & Moore, 2018). Yet, only one recent study examines the BTA effect regarding social norms. This study found that people not only reported to more distinctively support socially approved sociopolitical issues (e.g., endorsing gender equality) than others, they also report to more markedly reject socially disapproved sociopolitical issues (e.g., animal testing). In line with motivational accounts of the BTA literature, this effect was stronger when (1) issues were

personally important and (2) when the normative attitudes of others were estimated before indicating own normative attitudes (Stavrova, Köneke, & Schlösser, 2016).

The tendency to judge oneself to be more in line with what is socially approved than others may not only be a manifestation of the BTA effect but also of the norm misperception phenomena. In fact, it seems that whether a behavior is considered to be socially approved of or socially disapproved of shapes the judgment of social norms. In general, a low level of risk behavior and a high level of proenvironmental behavior are considered socially approved, whereas a high level of risk behavior and a low level of proenvironmental behavior are socially disapproved. In addition to this “naturalized” disapproval/approval of risk and proenvironmental behaviors, how the behavior is framed might also exert a different influence. When a subject is asked to estimate risk behaviors, for example, it may make a difference whether the question has been framed in a socially approved manner (e.g., “How many times did you refuse to take drugs?”, “How many times did you recycle your waste glass?”) or in a socially disapproved manner (e.g., “How many times did you take drugs?”, “How many times did you miss to recycle you waste glass?”).

With that in mind, we hypothesize that people estimate their own risk behaviors and proenvironmental behaviors (versus that of others) more distinctively in favor of themselves when the focus is on a socially disapproved of form of the behavior (e.g., taking drugs, miss to recycle) compared to when the focus is on a socially approved form of the behavior (e.g., refusing drugs, recycling). The rationale behind this hypothesis is that social disapproval is a stronger indicator of motivation for behavior that distinctively favors oneself more than others. Based on the finding that the BTA effect is driven by a self-serving bias, we argue that focusing on social disapproval activates *self-protection strategies*, whereas focusing on social approval activates *self-enhancing strategies*. This is essential because self-protection strategies can be more powerful drivers of self-serving biases than self-enhancing strategies (Bosone & Martinez, 2017; Roese & Olson, 2007; Sedikides & Alicke, 2018). Interestingly,

this seems to go along with observations regarding deviations of social norms. More specifically, the observations showed that norm deviations in the socially approved direction led to comfort, which serves self-enhancement. In contrast, norm deviations in the socially disapproved direction led to discomfort, which requires self-protection (Abrams, Marques, Bown, & Dougill, 2002; Abrams, Marques, Bown, & Henson, 2000; Alicke & Sedikides, 2009; Miller & Morrison, 2009; Morrison & Miller, 2008).

In this research, we conducted an online study to test the hypothesis that there are norm misperceptions for a wide range of risk and proenvironmental behaviors and that these norm misperceptions are driven by the BTA effect. Therefore we examined whether people who consider a proenvironmental lifestyle as important were more prone to report that they show more proenvironmental behaviors than others. We also tested whether people were more prone to report that they show less risk behaviors and more proenvironmental behaviors than others when the framing of the behavior puts one's self-view at stake (i.e., when the focus is on social disapproval vs. social approval). Both the importance and the framing effect are linked to the BTA effect and suggests that a self-serving bias motivates people to portray themselves in a more socially approved light.

## **2 Method**

### **2.1 Sample**

A sample of 535 participants was recruited (73% female;  $M_{Age} = 25.90$ ;  $SD_{Age} = 7.85$ ) through diverse German-speaking social media platforms (e.g., Facebook, ronorp.net) and mailing lists. As incentive, participants who finished the study were eligible to be entered into a draw for one of four vouchers, each worth 100 Swiss Francs.

### **2.2 Design**

The mixed factorial design of the online study included *perspective* (self vs. others) as a within-subjects factor and *framing* (socially approved vs. socially disapproved) as a between-subjects factor. Half of the participants were given behaviors that were all framed in

a socially approved manner, and the other half of the participants were given behaviors that were framed in a socially disapproving manner. All participants then had to evaluate their own behavior (self), as well as give their estimate of the social norm (others).

### 2.3 Material and Procedure

For preregistration and study material see <https://osf.io/jcu2v/>. The online study was organized in three parts. In the first part, participants were asked to estimate how frequently they showed 10 risk behaviors and 10 proenvironmental behaviors on an 8-point scale (with an additional *no answer* option). Depending on the nature of the behavior, the 8-point scale used either of the following units: “day” (from 0 = 0 out of 7 days per week on average to 7 = 7 out of 7 days per week on average) or “situation” (from 0 = 0 out of 7 situations to 7 = 7 out of 7 situations). All 20 behaviors were shown in a random order.

In the second part of the study, participants were asked to estimate the frequency of the same 10 risk behaviors and the 10 proenvironmental behaviors amongst their friends. Again, an 8-point scale was used and behaviors were shown in a random order.

Ten different risk behaviors were used (e.g., alcohol consumption), many of which have been subject to PNF interventions. Similarly, we used 10 different proenvironmental behaviors (e.g., towel reuse and recycling). Although some of these proenvironmental behaviors have already been addressed by studies on PNF interventions, it is not evident if the norm misperceptions effected these behaviors (see e.g., Miller & Prentice, 2016).

Note that the questions asking participants to estimate risk and proenvironmental behaviors (both their own and that of others) were formulated as “desirable” acts in the socially approved condition ( $n = 241$ ) and formulated as “undesirable” acts in the socially disapproved condition ( $n = 294$ ). For alcohol consumption, for instance, participants in the socially approved condition read “On how many days in an average week do you refrain from drinking alcohol?” In contrast, participants in the socially disapproved condition read “On how many days in an average week do you drink alcohol?”

In the third part of the study, participants filled in a scale that measured the participant's proenvironmental concern (Haws, Winterich, & Naylor, 2014) to map how important the participant perceived the proenvironmental lifestyle to be on a scale consisting of six items (e.g., "I would describe myself as environmentally responsible",  $\alpha = .90$ ). And finally, participants provided sociodemographic information.

### **3 Results and Discussion**

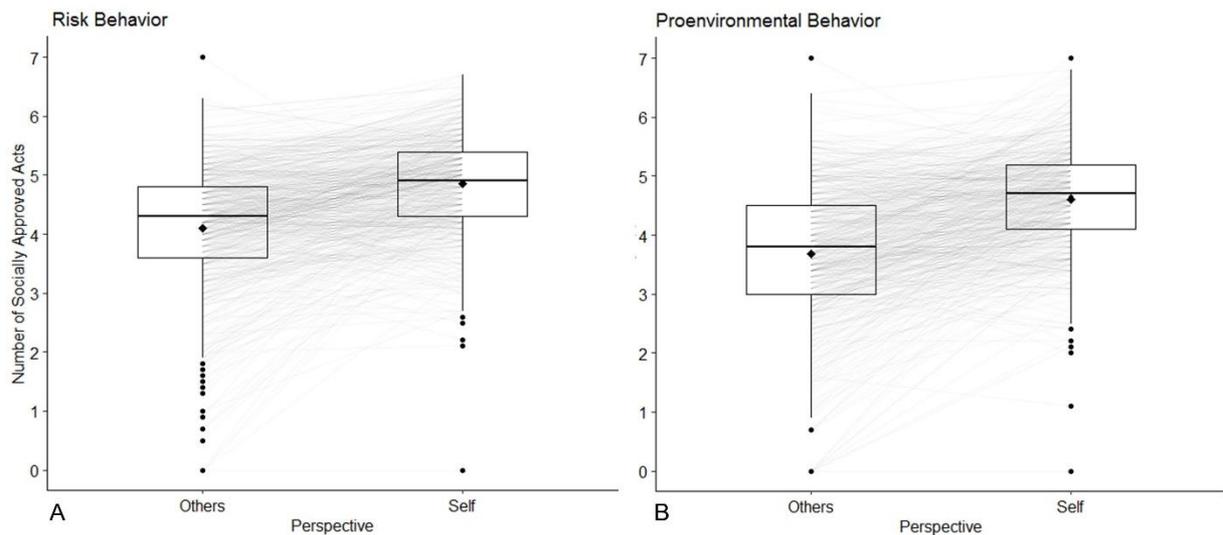
#### **3.1 Replicating the "Reign of Norm Misperceptions"**

Prior to the analysis, we recoded all the behavioral estimates of participants in the socially disapproved condition. This was done to place the behavioral estimates of both sets of participants on the same scale. For subsequent analyses, a high (low) estimate for risk behaviors and proenvironmental behaviors was used to indicate socially approved (socially disapproved) behavior from 0 ("*Socially approved behavior has not been shown at all*") to 7 ("*The socially approved behavior has always been shown*").

In order to test our main hypothesis and determine whether norm misperceptions occur for risk and proenvironmental behavior, we computed paired t-tests. Therefore, we averaged the participants' estimates for their own behavior and that of others separately for risk behaviors and proenvironmental behaviors.

In line with the hypothesized norm misperception for risk behavior, participants reported showing a higher frequency of socially approved behavior ( $M = 4.85$ ,  $SD = 0.84$ ) than others ( $M = 4.10$ ,  $SD = 1.07$ ,  $t(534) = 16.22$ ,  $p < .001$ , 95% CI [0.66, 0.84],  $d = .78$ ); see Figure 1A. As expected, participants also reported showing a higher frequency of socially approved proenvironmental behavior ( $M = 4.61$ ,  $SD = 0.90$ ) than others ( $M = 3.68$ ,  $SD = 1.18$ ),  $t(534) = 18.55$ ,  $p < .001$ , 95% CI [0.83, 1.03],  $d = .89$ ); see Figure 1B.

Performing separate paired t-tests for each single behavior revealed that the hypothesized norm misperceptions occurred in 18 of 20 behaviors. More specifically, norm misperceptions were found in the hypothesized direction for all behaviors (all  $ps < .001$ ) except for wearing bike helmets (risk behavior; 95% CI [-0.06, 0.43]) and using reusable coffee-to-go cups (proenvironmental behavior; 95% CI [-0.34, 0.12]).



*Figure 1.* Visualization of norm misperceptions. The boxplots highlight that the direction of the norm misperception is the same for both risk behavior (A) and proenvironmental behavior (B), namely that people report more socially approved behavior for themselves than for others. The lines represent an individual's estimates of their own behavior and that of others. The aggregate of lines therefore visualizes the variation of norm misperceptions among individuals.

### 3.2 The Influence of Framing

To explore whether norm misperceptions are moderated by the framing of the behavior, we conducted a separate multilevel analysis for risk and proenvironmental behavior. Behavioral estimates (for oneself and others) were used as response variables. *Perspective*, *framing*, and their interaction served as predictors. Behavioral estimates were modeled to be nested within participants. That is, the intercept of the linear mixed-effect model was modeled as random at the participants' level.

The analysis for risk behavior revealed a significant interaction effect,  $F(1, 533) = 11.01, p < .001$ . As depicted in Figure 2A, the difference between behavioral estimates for

oneself versus others is more pronounced for the questions that were framed in a socially disapproved of manner compared to the questions that were framed in a socially approved of manner. Paired comparisons with Tukey adjustments were computed using the least-squares means R package and the results revealed that all paired comparisons were significant (all  $p$ s  $< .05$ ) except for the comparison between people estimates of others' behavior in the socially disapproved condition and the socially approved condition ( $p = .872$ ).

The analysis for proenvironmental behavior revealed a significant interaction effect,  $F(1, 533) = 10.85, p = .001$ . As depicted in Figure 2B, the difference between behavioral estimates for oneself and others is more pronounced for the questions that were framed in a socially disapproved of manner than the questions that were framed in a socially approved of way. Similar to the paired comparisons for risk behavior, there were two paired comparisons that were not significant. More specifically, there was no significant difference between the participants' estimates of (1) others' behavior in the socially disapproved condition and the socially approved condition ( $p = .344$ ), and estimates of (2) their own behavior in the socially approved condition and the socially disapproved condition ( $p = .198$ ). All other paired comparisons were significant (all  $p$ s  $< .001$ ).

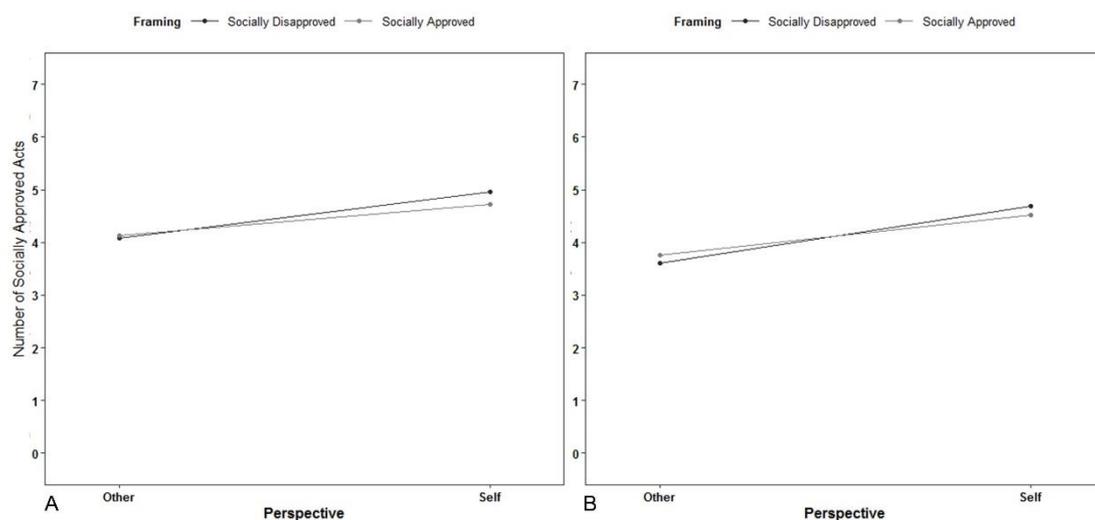


Figure 2. Visualization of the interaction of *perspective* (self vs. other) and *framing* (socially disapproved vs. socially approved) for risk behavior (A) and proenvironmental behavior (B).

### 3.3 Importance of Proenvironmental Lifestyle as a Moderator

To explore whether a proenvironmental lifestyle moderates the previously outlined effect (i.e., framing on norm misperception for proenvironmental behavior), we added environmental concern to the preceding linear mixed-effect model for proenvironmental behavior. The results revealed an interaction of *perspective*, *framing*, and *environmental concern*,  $F(1, 531) = 6.25, p = .013$ . As Figure 3 illustrates, the difference between behavioral estimates for oneself and others that varies for framing (socially disapproved vs. socially approved) is more pronounced for people with high (vs. low) proenvironmental concern.

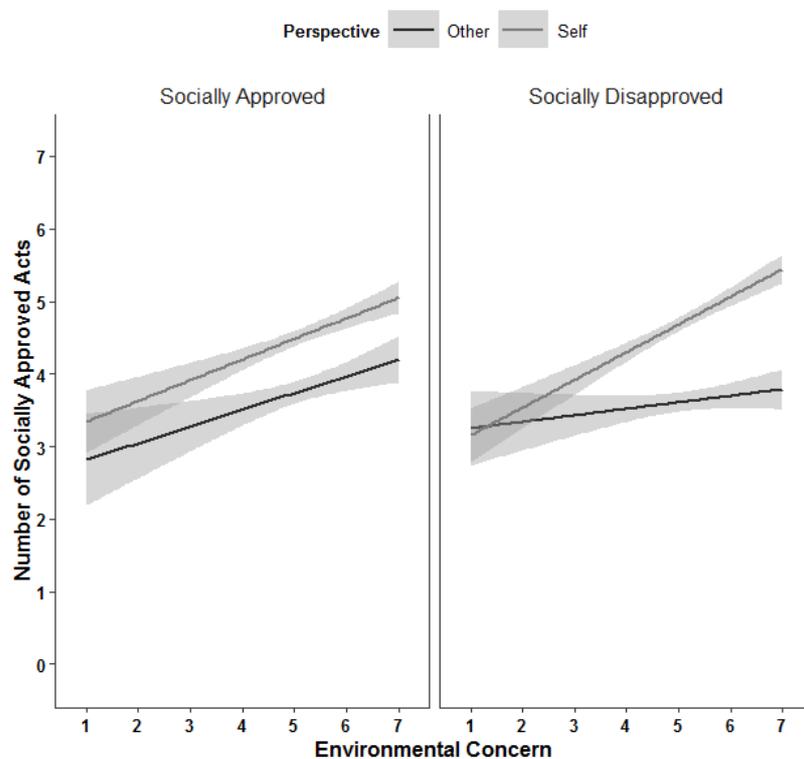


Figure 3. Visualization of the interaction of *perspective* (self vs. other) and the importance of a proenvironmental lifestyle (*environmental concern*) separately for the two types of *framework* (socially disapproved vs. socially approved).

## 4 General Discussion

This research aimed to test whether there are norm misperceptions for a wide range of risk and proenvironmental behaviors, and whether the BTA effect explains norm misperceptions. As hypothesized, we found norm misperceptions for risk and

proenvironmental behavior. In both domains people report their behavior as more socially acceptable than that of others. Further, we observed that the norm misperception for proenvironmental behavior was more pronounced for people who consider a proenvironmental lifestyle as important. Norm misperceptions were also more pronounced when the behaviors were framed in a socially disapproved of manner compared to a socially approved manner.

#### **4.1 Norm Misperceptions are Reality: Biased Perception of Risk and Proenvironmental Behavior**

Our findings contribute to the social norm literature by supporting the idea that norm misperceptions are common and not limited to drinking. Norm misperceptions have been repeatedly found to be associated with risk behaviors, yet it has never been proposed that there are norm misperceptions for proenvironmental behaviors. Rather, social norms for proenvironmental behaviors were said to be unclear or absent (see Miller & Prentice, 2016). Our findings address this knowledge gap and show a clear pattern wherein proenvironmental behaviors are subject to norm misperceptions. Like norm misperceptions of risk behaviors, norm misperceptions of proenvironmental behaviors have a characteristic BTA pattern, namely that people report their own behavior (versus that of others) as more socially approved.

Our research advances the existing literature on norm misperceptions in terms of generalizability of the direction of norm misperceptions. So far, it is evident that norm overestimations occur for risk behavior, and it has been argued that norms for proenvironmental behavior might be subject to underestimation (see e.g., Miller & Prentice, 2016; Xenitidou, 2014). Our results confirm this pattern. Nevertheless, the uniform pattern across risk and proenvironmental behavior allows us to take a more general perspective without building on a vague classification of risk and proenvironmental behavior. In fact, our finding that people perceive their behaviors as more socially approved than others makes the

vague classification of risk and proenvironmental behaviors obsolete. This generalization is particularly interesting considering the need of research addressing conceptual questions of why and how norm-based interventions work.

#### **4.2 The BTA Effect as Explanation for Norm Misperceptions**

Our research has shown that people perceive their own risk and proenvironmental behavior as more socially approved of than that of others. This pattern is evidence in support of the hypothesized BTA effect as explanation for norm misperceptions. In various studies, BTA literature has shown that people tend to evaluate themselves more favorably than others on positive traits and less unfavorably on negative traits (Alicke & Sedikides, 2009; Brown, 2012; Roese & Olson, 2007; Sedikides & Alicke, 2018).

Going beyond this basic evidence in support of the hypothesized BTA effect, our findings show that norm misperceptions are moderated by the personal importance of the behavior. Specifically, we found norm misperceptions for proenvironmental behavior to be more pronounced when it was rated as personally important to have a proenvironmental lifestyle. This evaluation of personal importance is critical as it is a boundary condition of the BTA effect: there is substantial evidence that the BTA effect is more pronounced when the ability or trait in question is personally important (Brown, 2012). Thus, our findings further support the hypothesized BTA effect as explanation for norm misperceptions. Interestingly, this moderating role of importance is typically interpreted as evidence of the BTA effect to be motivational rather than cognitive-based (Brown, 2012; Sedikides & Alicke, 2018). Thus, the present research implies that norm misperceptions are motivational. In detail, it follows that norm misperceptions might have a self-serving purpose. In the BTA literature, it is well established that portraying oneself as better than others is driven by a self-serving bias (see e.g., Sedikides & Strube, 1997). Yet, further research is needed to clarify whether people report their behavior as more socially approved of due to the positive feelings caused by having a positive self-view.

Overall, using literature on the BTA effect to explain norm misperceptions seems promising, and we encourage researchers to use findings of the BTA literature to gain deeper insight into the norm misperception phenomena. For instance, it would be interesting to examine the role of the order when estimating one's behavior over that of someone else (i.e. self-other vs. other-self). This is because the BTA effect is stronger when people estimate others' behavior before they estimate their own behavior (Gold, 2008; Hoorens & Buunk, 1993; Otten & Van Der Pligt, 1996; Stavrova et al., 2016). This type of order effect would provide further evidence that self-serving bias can drive norm misperceptions.

### **4.3 Insight into Norm Misperceptions Improves Social Norm Conception**

The present research reiterates that it is of critical importance to be able to distinguish between the influence of actual and perceived social norms. Although social norm theory explicitly assumes that norm misperceptions exist (see Perkins & Berkowitz, 1986), there is no theoretical framework that factors in the prediction of the direction and magnitude of norm misperceptions. Given this lack within the existing theoretical framework, our findings could serve to advance the conceptualization of the occurrence of actual versus perceived social norms. Based on the BTA literature, it could be interesting to examine whether self-serving mechanisms might be useful considerations when explaining why norm misperceptions occur.

Furthermore, linking norm misperceptions and the BTA effect can more accurately conceptualize the effect of norm-based interventions—namely PNF interventions. This is interesting because research on PNF interventions would benefit from a more refined theoretical conceptualization of why, when, and how norm-based interventions work. So far, the main theory has been that the underlying mechanism of PNF interventions comes from the subject's need to conform to social norms. Yet, conformity might be only one of several mechanisms by which norm misperceptions lead to behavioral change. Support for this idea can be found, for example, in research where telling students, who were light drinkers, that they drink less than the average student led to reduced drinking (Neighbors et al., 2010).

Obviously, this behavioral change is not driven by the students' need for conformity because then they would have increased their drinking. Indeed, future research could examine to what extent the success of PNF intervention capitalizes on a person's desire to be better than the norm. By acknowledging that there might be parallel mechanisms that are responsible for the success of norm-based interventions, the research presented here could be a first step in the direction of a more advanced understanding of why, when, and how norm-based interventions work.

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