Consumers Believe That Products Work Better for Others

EVAN POLMAN
IGNAZIO ZIANO
KAIYANG WU
ANNELEEN VAN KERCKHOVE

Consumers tend to see themselves in a positive light, yet we present evidence that they are pessimistic about whether they will receive a product's benefits. In 15 studies ($N = 6{,}547$; including nine preregistered), we found that consumers believe that product efficacy is higher for others than it is for themselves. For example, consumers believe that consuming a sports drink (to satisfy thirst), medicine (to relieve pain), an online class (to learn something new), or an adult coloring book (to inspire creativity) will have a greater effect on others than on themselves. We show that this bias holds across many kinds of products and judgment-targets, and inversely correlates with factors such as product familiarity, product usefulness, and relationship closeness with judgment-targets. Moreover, we find this bias stems from consumers' beliefs they are more unique and less malleable than others, and that it alters the choices people make for others. We conclude by discussing implications for research on gift-giving, advice-giving, usership, and interpersonal social, health, and financial choices.

Keywords: perceived product efficacy, self-other differences, stimulus sampling, linear mixed-effects modeling, perceived uniqueness, perceived malleability

Why do people buy products? Research in consumer behavior has identified situational and dispositional factors that influence whether consumers will buy a product, such as persuasive and sensory appeals, competitors' offerings and prices, and buyers' values, goals, needs, emotions, finances, social network, and identity. Despite its breadth, nearly all of this research takes for granted one of the main reasons people buy products: for the benefits they expect to receive from consuming them. While products can serve multiple benefits and purposes, consumers' expectation that a product will deliver on its promised purpose is known as its *perceived product efficacy*. When consumers believe products are more efficacious, they are more likely to purchase them (Folkes, Martin, and Gupta 1993). In this article, we examine whether consumers believe products will be as efficacious for themselves as for other consumers, a factor that is likely to influence their interpersonal decisions, such as what product (and how much of it) they choose for others.

Evan Polman (evan.polman@wisc.edu) is an associate professor of marketing and the Kuechenmeister-Bascom Professor in Business at University of Wisconsin–Madison, USA. Ignazio Ziano (ignazio.ziano@grenoble-em.com) is an assistant professor of marketing at Grenoble Ecole de Management, France. Kaiyang Wu (kwu62@wisc.edu) is a Ph.D. student in marketing at University of Wisconsin–Madison, USA. Anneleen Van Kerckhove (anneleen.vankerckhove@ugent.be) is an associate professor of marketing at Ghent University, Belgium. Please address correspondence to Evan Polman. Supplementary materials are included in the web appendix accompanying the online version of this article.

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SELF-OTHER DIFFERENCES IN PERCEIVED PRODUCT EFFICACY

Products, including material possessions, are viewed as part of the extended self (Belk 1988). As such, they contribute to self-concept, self-identity, and self-other closeness (Beggan 1992; Polman and Maglio 2017; Wicklund and Gollwitzer 1982). Given that consumers tend to make

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judgments in a self-enhancing manner (Dunning 2007), one might expect consumers to believe that products will work better for themselves than for others. After all, products deliver results desired by consumers. To date, however, the research literature is thin when it comes to people's judgments of how well products will work for themselves compared to others. Related research on product judgments has found that, as compared to themselves, consumers believe others are willing to pay more for products (Frederick 2012; Kurt and Inman 2013), seek more product variety (Ratner and Kahn 2002), buy fewer products with their money (Polman, Effron, and Thomas 2018), and consider performance-enhancing products as a natural enabler of their own abilities but an unfair embellishment of other people's (Williams and Steffel 2014).

What has not been studied in the literature are people's perceptions of how well products work for themselves compared to others. This question is of theoretical importance because one of the primary goals of research in psychology is uncovering how people make sense of others' responses to causal effects (Hastie and Pennington 2000; Malle 1999). For instance, to interact with others, people need to intuit others' minds and predict how others react to the stimuli in their environment (Waytz, Schroeder, and Epley 2014). In a consumer context, there is perhaps no stimulus more relevant or ubiquitous than a product stimulus. In the United States alone, products are so prevalent that Americans own, on average, 300,000 of them (MacVean 2014)—generating myriad opportunities in which judgments of others accompany judgments of products. Accordingly, our research sheds light on scholarship on social judgment by examining the environmental stimuli that envelope consumers' everyday lives: products. Moreover, because we study product efficacy judgments, our research adds to a fundamental area in consumer behavior. It stands to reason that product purchases are based on prospective consumers' beliefs of product efficacy, yet the lion's share of research on consumer behavior focuses on the effects of internal dispositions and/or external situations. The literature overlooks a more obvious and common reason for why people buy products: the benefit that people expect to receive from consuming them.

For practical reasons too, it is valuable to link self-other differences with product efficacy judgments. These judgments will likely guide people's behavior toward others. As social animals, consumers not only look out for themselves but take care of others—for example, by buying caregiving products for others (Garcia-Rada et al. 2021). In various ways, people help others by giving them money, advice, favors, gifts, or medicine to improve others' well-being. These offerings vary in how much they help others. In terms of goods and services, not all consumer products are equally efficacious (just like not all advice is equally effective), meaning that *how much* of a product people choose for others may be just as important as *what* product people choose for others. Such, then, by believing that others benefit more or less from products' efficacy, people may choose different amounts of products for them—which can directly influence others' well-being or health.

Research on Perceived Product Efficacy

As research has shown, details of a product's supposed efficacy are often on display, illustrated and described on packaging and in advertisements (Zhu, Billeter, and Inman 2012). Studies have found that highlighting a product's benefits changes consumers' beliefs about its efficacy and whether they choose to buy it (Chae, Li, and Zhu 2013; Dawar and Parker 1994; Kupor and Laurin 2020). In fact, consumers' product efficacy beliefs have been found to increase *actual* product efficacy through a placebo effect (Brasel and Gips 2011; Irmak, Block and Fitzsimons 2005; Van Bergen, Irmak, and Sevilla 2020). Moreover, perceived product efficacy alters consumption volume. Consumers use more of a product when they believe it is less effective (Lin and Chang 2012; Zhu et al. 2012).

Research has not only identified the effects of product efficacy beliefs but also what changes these beliefs. For example, selling products in single-serve packages signals to consumers that the products they contain will more than adequately fulfill their purpose (Ilyuk and Block 2016). In advertisements, the spatial closeness between a product and its purported benefit increases product efficacy perceptions (Chae et al. 2013). For instance, consumers believe that an anti-cockroach spray is more effective when it is pictured very close to, rather than far from a dead cockroach. Likewise, advertisements that include visuals of the intermediate steps toward an intended benefit, such as showing gradual hair loss treatment results versus visualizing only the binary before-and-after results, will more persuasively communicate perceived product efficacy (Cian, Krishna, and Longoni 2020). Similarly, indicating that the likelihood of a product's side-effect has changed from 2% to 3% versus from 4% to 3% increases a side-effect's perceived impact, despite the event-likelihood is the same (Maglio and Polman 2016). So too will highlighting how many people produced a product, as well as presenting multiple replicates of it—both of these factors lead consumers to perceive products as more efficacious (Maglio et al. 2020; Van Bergen et al. 2020).

Social Factors

Although existing research has identified antecedents of perceived product efficacy, this stream of literature has not examined social factors. Critically, social factors permeate consumer behavior, from shopping in the presence of others, making joint purchasing decisions, choosing gifts,

to making choices that are judged or influenced by others (Argo and Dahl 2020; Gorlin and Dhar 2012; Liu, Dallas and Fitzsimons 2019). Indeed, consumers often purchase products for others (Polman 2018; Wu, Moore, and Fitzsimons 2019) and with others (Brick et al. 2021; Garcia-Rada, Anik, and Ariely 2019)—both decisions that are plausibly affected by how much consumers believe products will affect others. This possibility is consistent with several major theories in psychology that have been found to underscore decision makers' unique style when making choices for others, such as their construal level (Polman and Emich 2011), regulatory focus (Liu et al. 2018; Polman 2012a), self-regulation (Polman and Vohs 2016), loss aversion (Polman 2012b), information search tendencies (Polman 2010), and affect (e.g., risk-as-feelings; Sun, Polman, and Zhang 2021). Thus, in our research, we examine not only the judgments that consumers make of products' effects for themselves but for others too.

Past findings would suggest that consumers believe they receive more utility from products than others because they see themselves in a more positive light—for example, as more likely to receive good things in life (Klein 1997; Weinstein 1980). In complement, theories of motivated reasoning, self-serving attributions, and positive illusions (Alicke 1985; Kunda 1990) would suggest that people view products as benefitting themselves more than others. While these theories could bear on people's judgments of how their product usage compares to others' product usage, we hypothesize that when it comes to predicting a product's efficacy, two distinct self-serving biases will perversely work in parallel to produce a nonself-serving bias in perceived product efficacy. The first bias, perceived uniqueness, describes consumers' belief they are more unique than others, which should lead them to believe they require more custom, fine-grained products than others to receive potential benefits. The second bias, perceived malleability, describes consumers' common belief they are more consistent than others—more rooted, less variable—and thus less likely to be swayed by products' effects. Thus, we argue that despite a pervasive tendency for self-assessments to be self-serving (Alicke 1985; Dunning, Heath, and Suls 2004), consumers tend to think that products—which deliver results desired by consumers—will work better for others. That is, when comparing how much benefit of using a white noise machine, or a work productivity app, or revitalizing energy sports drink stacks up to others' respective usage or consumption, consumers will believe that they receive less benefit, believing that products work less efficaciously for themselves than for others. Formally, we hypothesize:

> **H1:** Consumers believe that the same products are more efficacious for others compared to themselves.

PERCEIVED UNIQUENESS AND PERCEIVED MALLEABILITY

From the perspective of self-serving perceptions, it is likely that consumers tend to believe they are more unique than others. Uniqueness is a socially desirable trait (Ruvio, Shoham, and Makovec Brenčič 2008), and people tend to believe they possess socially desirable traits (Pedregon et al. 2012). Studies show that consumers are motivated to maintain a sense of uniqueness when expressing opinions or engaging in behaviors (Berger and Heath 2007; Givi and Galak 2020; Reich, Kupor, and Smith 2018). The display of deviant opinions and behaviors is seen as a signal of "strong character, strong convictions, and autonomy" (Simonson and Nowlis 2000, 51). In support, people find the idea of being different from others to be intrinsically rewarding (Fromkin and Snyder 1980; Snyder 1992).

As with most self-serving biases, social comparisons may play a role: consumers may not just think they are unique but more unique than others (Alicke 1985). This could have implications for how well consumers believe products work for themselves as compared to others. Because products are designed for large numbers of consumers, products often follow some degree of a "one size fits all" classification. If consumers view themselves as more unique than others, and different from "all," then they may assume products will not work as well for them.

For products that contain multiple versions or categories, such as clothing and its respective sizes (e.g., XS-XL), consumers tend to reject simplifying themselves into single categories, believing they are represented as possessing multiple, contrasting traits and preferences (cf. self-complexity theory; Linville 1985). Instead of extending this reasoning to others, consumers tend to generalize others into single categories (Barasz, Kim, and John 2016). Indeed, consumers believe they are less knowable than others (Williams and Gilovich 2008), less explainable by science than others (Mata, Simão, and Gouveia 2020), less predicted by artificial intelligence than others (Longoni, Bonezzi, and Morewedge 2019), and less classifiable than others—for example, viewing themselves as both tough and sensitive (Sande, Goethals, and Radloff 1988). If people believe they possess a greater mixture of incompatible traits than others, they may think a product is ill-equipped to serve their multifaceted selves as well as it serves others. Thus, we hypothesize:

> **H2:** Consumers believe that the same products are less efficacious for themselves than for others because they believe they are more unique than others.

Different literatures support the view that people may consider themselves to be less malleable than others. In the social influence literature, people incorrectly report that they would not be susceptible to the conformity

manipulations used famously by Solomon Asch (Diekmann et al. 2013). Similarly, research in the communications literature has shown that consumers believe that others are more influenced by advertising than they are (Davison 1983). In this vein, psychology research has found that people believe they are less affected by decision-making biases than others (Pronin, Gilovich, and Ross 2004) and less emotionally affected by experiences (Jung, Moon, and Nelson 2020). People believe their personalities, preferences, and values are relatively stable, especially when forecasting change (Quoidbach, Gilbert, and Wilson 2013). Indeed, when making choices, people choose more variety for others (Ratner and Kahn 2002), as if believing that others' preferences are more subject to variation than their own.

A perceived difference in the efficacy of products for oneself versus others might also stem from an asymmetry between perceptions of one's own changes versus others' changes. To illustrate, when people try to lose weight, the perceived change they see in their own body might be rather modest. People may frequently check on their progress, and thus the small changes that occur in between frequent judgments go relatively unnoticed. However, when someone else's weight changes, their loss or gain could seem greater because interactions with others are less frequent compared to the daily judgments people make of themselves. Thus, a perceived difference in the efficacy of products for oneself versus others might also stem from an overgeneralized observable asymmetry between people's perceptions of their own changes versus others' changes. Altogether, people may think that others are more malleable than they are. Thus, we hypothesize:

> **H3:** Consumers believe that the same products are less efficacious for themselves than for others because they believe they are less malleable than others.

OVERVIEW OF STUDIES

In 15 studies (including nine preregistered studies and five studies located in the web appendix), we show that people think products work better for others (see table 1). In theoretical terms, we demonstrate why this effect occurs (and why it does not). In doing so, we contribute to the heretofore separate literatures on perceived product efficacy and self-other biases in consumer research. We introduce to the literature two novel biases, self-other differences in perceived uniqueness and perceived malleability, that produce a third novel bias, perceived product efficacy.

In empirical terms, we conducted studies with stimulus sampling and linear mixed-effects models (LMEM). These methods, rare in consumer behavior research, provide a conservative test of our predictions by accounting for the random stimulus variation that is typical yet often ignored in experimental data (for a discussion, see Judd, Westfall, and Kenny 2012). In addition, we conducted tests of the process by separately manipulating both putative mediators, perceived uniqueness and malleability (using the causal chain method), and testing each in a statistical parallel mediation pathway (using the bootstrapping method).

In practical terms, we investigated two downstream consequences of perceiving that others benefit more from products (what product and how much of it people choose for others); and we tested seven potential moderating factors of the effect, including product factors (e.g., product usefulness) and social factors (e.g., self-other closeness). The web appendix contains additional studies aimed at reinforcing our evidence and testing alternative explanations. All data, materials, and preregistrations are available at: https://tinyurl.com/y8cpay8w.

STUDY 1: ROBUSTNESS OF THE BASIC EFFECT

In study 1 (preregistered), we tested if participants perceive that the same products are more efficacious for others than for themselves. We adopted a "participants-within-condition" design (Westfall, Kenny, and Judd 2014, 9), in which participants are nested within the condition and products are crossed with conditions. In this design, both "participant" and "product" are random factors, whereas the "experimental condition" is a fixed factor. By testing multiple and diverse products, and treating the product stimuli as a random factor, we can assess whether the predicted self-other difference will generalize to the population of all products (Brauer and Curtin 2018; Judd et al. 2012), which helps ascertain the external validity of our findings. When stimuli are treated as fixed factors, as they often are in consumer behavior research, the conclusions can only safely be made about the stimuli that are specifically tested (Fontenelle, Phillips, and Lane 1985; Judd et al. 2012; Wells and Windschitl 1999). However, with our approach, we can assess the extent to which the predicted self-other difference in perceived product efficacy will generalize not only to participants but also to products.

Method

We invited all 234 students of an undergraduate marketing class in the United States to participate in our study. We received 225 participants (89 females, $M_{age} = 19.87$, $SD_{age} = 1.15$) and randomly assigned each into one of two judgment-target conditions (self vs. other). In the "self" condition, we asked participants to evaluate 25 products' efficacy for themselves; in the "other" condition, we asked participants to evaluate the same 25 products' efficacy for others. Two measures, per product, were used to assess perceived product efficacy (see appendix A for products and measures; the order of products was randomized). As

TABLE 1

SUMMARY OF FINDINGS

Study	Finding
1	Main self-other effect; stimulus-sampling; four product-attributes (familiarity, popularity, frequency of use, usefulness) moderate main effect
2	Main self-other effect; within-subjects design
3A	Main self-other effect; robust to relationship closeness and judgments of multiple others: friends, family, coworkers, boss, neighbors, celebrities
3B	Main self-other effect; robust to judgments of product users and nonusers
4A	Measured uniqueness mediator: people believe they are more unique than others
4B	Manipulated uniqueness mediator: people believe products work less well for more unique others
5A	Measured malleability mediator: people believe they are less malleable than others
5B	Manipulated malleability mediator: people believe products work better for more malleable others; no moderation by consumers who are users
6	Ruled out above-average explanation; found downstream effect: people buy products for others because of main self-other effect
7	Main self-other effect; field study; found downstream effect: people serve less of a product to others because of main self-other effect
WA1	Parallel mediation with uniqueness and malleability mediators
WA2	Main self-other effect; robust to different levels of product efficacy, from low, medium, to high
WA3	Main self-other effect for social distancing
WA4	Main self-other effect for vaccines
WA5	Main self-other effect

Note: "Main self-other effect" refers to the belief that products are more efficacious for others than for the self.

an example, for moisturizer, we asked participants for their levels of agreement to "using a moisturizer will help to hydrate [*my*/*other people's*] skin" and "[*my*/*other people's*] skin will be hydrated quickly after using a moisturizer." Participants responded to the items from 1 (*strongly disagree*) to 7 (*strongly agree*); their responses were averaged. We included an attention check, which all participants passed.

We used 25 different product stimuli to achieve reasonable power for the subsequent analysis. In this study, because "product" is treated as a random factor, the number of product stimuli is as important as the number of participants (Westfall et al. 2014). If only a few product stimuli are tested, a study will not have enough statistical power to detect a reliable effect. For our participants-within-condition design, Westfall et al. (2014) suggest that to achieve reasonable power, the number of stimuli needs to be at least 16. Testing 25 different product stimuli is therefore sufficient.

As preregistered, we used a linear mixed-effects model (LMEM) to analyze the data. Recent research has suggested that LMEM is an appropriate analytic method for testing experimental effects when multiple random factors are involved because it allows researchers to specify the corresponding (often present, though ignored) random effect structure in experimental data (Barr et al. 2013; Brauer and Curtin 2018; Judd, Westfall and Kenny 2017). As we noted, in this study, both "participant" and "product" are random factors, and the condition "judgment-target" is a fixed factor. These three factors create three types of nonindependence in the data: the ratings could be more similar (1) because they were made by the same participant; (2) because they were made for the same product; and (3) because they were made for the same product in the same condition of judgment-target. Not accounting for this triple source of nonindependence results in increased Type-I error (Judd et al. 2012), yet LMEM with a random effect structure resolves this error-inflation issue. Following Barr et al.'s (2013) suggestions, we included a by-participant random intercept to control for the nonindependence caused by participants and a by-product random intercept to control for the nonindependence caused by products. In addition, Barr et al. (2013) suggest that a by-product random slope for any predictor that varies within products should be included. Thus, we also added a by-product random slope to capture the nonindependence caused by the judgment-target condition and "product" factor. Adding these two random intercepts, plus the random slope in our LMEM, enables us to account for the triple source of nonindependence.

Results

We averaged participants' responses to the two efficacy items to create one perceived efficacy measure per product (products' αs ranged from .47 to .91). In support of hypothesis 1, we found participants believed that products were more efficacious for others ($M = 4.93$) than for themselves ($M = 4.75$), $F(1, 137.09) = 4.46$, $p = 0.04$, $d = 0.13$. We conducted a second analysis among only products with αs greater than .70, the typical cutoff for the α agreement-level. Of the 25 products, 21 products' αs exceeded .70. With this analysis, we found a virtually identical effect; participants believed that products were more efficacious

for others ($M = 4.88$) than for themselves ($M = 4.65$), $F(1, 123.47) = 6.01$, $p = 0.02$, $d = 0.16$. Note, we do not report the omnibus standard deviations because LMEM is not a variance-based analysis; accordingly, in LMEM, a standard deviation does not provide an interpretable statistic (though, see table 2 for descriptive statistics per product and condition).

Discussion

By adopting a participants-within-condition design and applying LMEM to analyze the data, we demonstrated that the self-other difference in perceived product efficacy is robust; it generalizes across individuals and products.

Because we examined 25 products, our study enables us to test if the self-other difference is moderated by different product attributes. Specifically, we conducted a preregistered post-test in which we polled 316 participants from Amazon Mechanical Turk (MTurk) to rate each product on four dimensions: familiarity ("How familiar would you rate the following products?"); popularity ("How popular would you rate the following products?"); frequency of use ("How often would you say the following products are used?"); and usefulness ("How useful would you rate the following products?"). Participants responded from 1 (*not at all*) to 7 (*very*). We then averaged across the judgments participants made for each respective dimension (per product), which furnished a respective average dimension rating for each product (see table 2 for product ratings). Next, we individually regressed the self-other difference in perceived product efficacy on each product rating. In doing so, these analyses test whether the size of the self-other difference in perceived product efficacy is related to the different product dimensions, such as a product's familiarity. Because the dependent variable is the size of the self-other effect, these regressions test if the respective product dimensions moderate the self-other effect—that is, which kinds of products demonstrate a larger or smaller self-other difference in perceived product efficacy. For each product rating, we found an inverse relationship between the product rating and the self-other difference in perceived product efficacy. Thus, the results show that the self-other difference in perceived product efficacy is moderated by products' popularity ($b = -0.09$, SE $= 0.04$, $p = .029$), frequency of use ($b = -0.10$, SE $= 0.04$, $p = .027$), usefulness ($b = -0.13$, SE $= 0.04$, $p = .001$), and to a lesser extent, familiarity ($b = -0.06$, SE $= 0.04$, $p = .096$). For example, as a product decreases in popularity, the self-other difference in perceived product efficacy increases.

In subsequent studies (studies 2–7, WA1–5), we attempt to determine what explains the self-other difference in perceived product efficacy, whether this difference manifests among multiple and unique judgment-targets, and what consequences it could have for behavior. Given that the subsequent studies focus less on the effect's generalizability (i.e., the motivation is not to show that the findings are robust across products, as was the case here in study 1), we no longer treat "product" as a random factor. Instead, the only random factor in the following studies is the "participant" factor. As Judd et al. (2017) point out, when a study has only one random factor, LMEM produces the same results as standard regression-based approaches (e.g., ANOVA, *t*-test). Hence, because study 1 finds that the effect is indeed robust across products, for simplicity and ease of understanding, we use standard regression-based approaches in the following studies.

STUDY 2: WITHIN-SUBJECTS COMPARATIVE DESIGN

Study 2 (preregistered) examines the self-other difference using a conservative test in which the judgment-target factor (self vs. other) is a within-subjects factor. The test is conservative because, unlike a between-subjects design in which participants assess products for themselves or others, this study allows participants to simultaneously assess products for themselves *and* others. Thus, participants might recognize that it would be irrational or inconsistent to asymmetrically believe that products work better for others.

Method

We recruited 600 participants from MTurk and received 601 participants (270 females, $M_{age} = 39.05$, $SD_{age} = 12.06$). We presented participants with four products (stomach relief medicine, bronzing cream, sleeping pills, and e-cigarette) with four respective effects (helping with stomach pain, helping to suntan, helping to sleep, and damaging one's health), in randomized order. For each product, we asked participants how much it would trigger its effect for themselves in comparison to the average American. Participants responded on a scale from 1 (*definitely more effective for me*) to 4 (*equally effective for me and for the average American*) to 7 (*definitely more effective for the average American*). Participants used a slider scale with a midpoint indicating that the target product is as effective for others as it is for themselves, with endpoints indicating that the product is more effective for the self or more effective for the average American.

Results and Discussion

We submitted participants' responses to the four product ratings to a one-sample *t*-test that compares participants' perceived efficacy rating per product with the midpoint value, 4, which is the point that indicates that a product is equally effective for the average American and the self. For each product, we found a significant self-other difference, suggesting that when directly comparing judgments

TABLE 2

DESCRIPTIVE STATISTICS OF PERCEIVED PRODUCT EFFICACY PER CONDITION (STUDY 1)

Product	Self (SD)	Others (SD)	Cohen's *d*[a]	Familiarity	Popularity	Frequency of use	Usefulness
Moisturizer	5.89 (1.02)	5.71 (0.94)	(0.18)	5.86	5.89	5.71	5.68
Productivity app	4.65 (1.26)	4.84 (1.05)	0.17	4.36	4.42	4.27	5.07
Relaxation lamp	3.95 (1.39)	4.38 (1.20)	0.33	3.02	3.31	3.09	3.61
White noise sound machine	4.10 (1.54)	4.81 (1.08)	0.54	4.25	3.78	3.58	4.15
Coloring book	3.68 (1.43)	4.28 (1.39)	0.42	5.76	4.94	4.07	3.63
Percussion massage gun	5.43 (1.22)	5.26 (1.00)	(0.16)	3.00	3.35	2.90	3.76
Energy lamp	3.63 (1.40)	4.16 (1.20)	0.40	2.87	3.22	2.98	3.39
Deep sleep pillow spray	3.93 (1.38)	4.20 (1.25)	0.21	2.82	3.03	2.98	3.19
Energy drink	5.29 (1.45)	5.34 (0.87)	0.04	5.82	6.02	5.29	4.55
Sunscreen	6.01 (1.10)	5.96 (0.98)	(0.06)	6.05	5.73	5.40	5.85
Plant-based oil extract	4.36 (1.38)	4.51 (1.24)	0.11	3.90	4.06	3.76	3.86
Bronzing cream	4.70 (1.48)	4.96 (1.22)	0.20	3.80	4.00	3.55	3.04
Granola bar	5.08 (1.38)	5.18 (1.17)	0.08	5.96	5.56	5.29	4.98
E-cigarette	5.36 (1.17)	5.54 (1.03)	0.17	4.69	4.92	4.52	2.90
Aromatherapy diffuser	4.20 (1.49)	4.55 (1.14)	0.27	4.30	4.15	3.80	3.80
Elderberry	4.19 (1.12)	4.42 (1.00)	0.22	3.16	3.14	2.96	3.42
Sports drink	4.80 (1.40)	4.99 (1.04)	0.15	5.77	5.83	5.34	4.65
Online courses	4.67 (1.34)	4.76 (1.30)	0.07	4.48	4.40	4.21	5.35
Language-learning app	4.92 (1.14)	4.86 (1.07)	(0.06)	4.83	4.63	4.14	5.58
Vocabulary-learning app	5.06 (1.07)	5.11 (1.05)	0.05	4.00	4.04	3.74	5.19
Self-help book	4.40 (1.18)	4.53 (1.28)	0.10	4.89	4.81	4.27	4.71
Tempurpedic mattress	4.81 (1.25)	5.06 (0.95)	0.22	4.60	4.79	4.40	5.05
Steroids	4.86 (1.54)	5.34 (1.18)	0.35	3.98	3.85	3.44	3.45
Cooking lessons	5.62 (1.05)	5.38 (1.00)	(0.24)	4.93	4.72	4.17	5.41
Whitening strip	5.07 (0.98)	5.03 (0.98)	(0.04)	5.07	5.18	4.57	4.64

[a]Cohen's *d*s of negative values are in parentheses.

of products' efficacy for the self and others, participants believed that products were more efficacious for others than for themselves: specifically, for stomach relief medicine ($M = 4.45$, SD = 1.17, $t(600) = 9.42$, $p < .001$, $d = 0.38$); bronzing cream ($M = 4.72$, SD = 1.33, $t(600) = 13.27$, $p < .001$, $d = 0.54$); sleeping pills ($M = 4.62$, SD = 1.29, $t(600) = 11.70$, $p < .001$, $d = 0.48$); and an e-cigarette ($M = 4.51$, SD = 1.40, $t(600) = 8.96$, $p < .001$, $d = 0.37$). Given that participants could provide seemingly unbiased responses in this study, these effect sizes are surprising. Making judgments and choices in a "joint evaluation" mode, as tested here, can have a debiasing effect (Bazerman et al. 2011; Ordóñez et al. 1995), yet we still observed the self-other difference. Moreover, study 2 showed that the self-other difference persisted when participants compared themselves with an average American. One might think that products would work in an average way for an average American. But our participants nonetheless believed that products work less well for themselves, even against an average other.

STUDIES 3A AND 3B: MULTIPLE OTHERS

In this pair of studies, we sought to test the effect among different kinds of judgment-target others, from friends to coworkers to celebrities (study 3A). We also tested judgment-targets specifically described as product users or nonusers (study 3B). When thinking about how well products work for others, consumers may imagine those others to be product users. If so, the effect could be chalked up to an artifact of our studies' materials, which may be prompting participants to imagine others whom they are judging as *users* of the products in question and therefore as people who benefit from using the products (or else they would not continue to buy them). Thus, we manipulated the usership of judgment-targets to test whether the self-other bias is limited to perceived product users or to people more broadly. Second, we measured the relationship closeness of judgment-targets to the self, which allowed us to test if self-other closeness influences the asymmetrical effect of perceived product efficacy. As closeness to others increases, the bias could change in kind—for example, consumers may know more about closer others and may therefore state with more accuracy how much a product would affect them.

Method

In study 3A (preregistered), we recruited 1,050 participants from MTurk and received 1,113 participants. We randomly assigned participants to one of seven conditions and asked them to answer two questions concerning the efficacy of a device designed to improve mood. The judgment-target varied by condition: participants made product efficacy judgments for the self, a friend, a coworker, a boss, a distant family member, a neighbor, or a celebrity. For example, in the "self" condition, participants

answered, "How much do you think a device that is supposed to improve your mood would help you?" and "How quickly do you think your mood would improve after using a device that is supposed to improve your mood?" By contrast, in the "friend" condition, participants answered the same two questions for a friend. All participants responded to the questions on a scale ranging from 1 (*not at all*) to 7 (*a lot*, *very quickly*; per question respectively). In addition, we asked participants how close the imagined judgment-target is to the self on a scale ranging from 1 (*not at all*) to 7 (*very close*).

In study 3B (preregistered), we recruited 600 participants from MTurk and received 610 participants. We randomly assigned participants to one of four conditions and asked them to answer the first question from study 3A concerning the efficacy of a device that is designed to improve mood (as preregistered). As in study 3A, the judgment-target varied by condition: participants made product efficacy-judgments for the self, other, other user, or other nonuser. For example, in the "other non-user" condition, participants answered the question, "Thinking of others who have never used a device that improves their mood, how much do you think using the device would help them?"

Results

In study 3A, we averaged participants' responses to the two items that assess the dependent variable, perceived product efficacy ($\alpha = .83$). We conducted a one-way ANOVA among the seven conditions on perceived product efficacy and found a significant effect, $F(6, 1102) = 5.88$, $p < .001$, $\eta^2 = 0.031$—a difference that was qualitatively the same when we ran a one-way ANCOVA with self-other closeness as a covariate, $F(6, 1100) = 19.60$, $p < .001$, $\eta^2 = 0.088$. In this analysis, we found that self-other closeness had a positive effect on perceived product efficacy, $b = 0.28$, SE $= 0.03$, $p < .001$, indicating that closeness to the judgment-target (regardless of whether the target is a friend or a celebrity, for example) influenced how much products were thought to work for others.

Next, we compared perceived product efficacy in the "self" condition with each of the other six judgment-target conditions, while controlling for the significant effect of self-other closeness. Because we conducted six separate analyses, we ran Tukey tests that adjust for multiple pairwise comparisons. Encouragingly, with this conservative test, we found that perceived efficacy was significantly lower in the "self" condition ($M = 3.19$, SD $= 1.74$) as compared to every other judgment-target condition, all ps $< .001$, $ds > 0.74$ (see figure 1).

In study 3B, we conducted a one-way ANOVA among the four conditions on perceived product efficacy and found a significant effect, $F(3, 606) = 5.70$, $p < .001$, $\eta^2 = 0.027$. As in study 3A, we compared perceived product efficacy in the "self" condition with each of the other three judgment-target conditions. Because we conducted three separate analyses, we again ran Tukey tests. We found that perceived product efficacy was significantly lower in the "self" condition ($M = 4.80$, SD $= 1.53$) as compared to each other judgment-target (see figure 1): with "other" ($M = 5.38$, SD $= 1.28$, $t(606) = 3.81$, $p < .001$, $d = 0.43$), with "other user" ($M = 5.20$, SD $= 1.23$, $t(606) = 2.64$, $p = .042$, $d = 0.30$), and with "other non-user" ($M = 5.30$, SD $= 1.21$, $t(606) = 3.26$, $p = .006$, $d = 0.37$). Of import, there were no significant differences between the three judgment-target other conditions ("other," "other user," and "other non-user"), $F(2, 454) = 0.77$, $p = .462$, which suggests that when people think of others, they are indifferent to whether others are users or nonusers when making product efficacy judgments.

Discussion

In studies 3A and 3B, we found that the predicted self-other difference did not differ by the description of the target-other. The effect was robust to friends, coworkers, neighbors, celebrities, etc.—even when we controlled for participants' subjective closeness to the target-others (study 3A). Furthermore, study 3B found the effect was present regardless of whether participants imagined others as product users or nonusers.

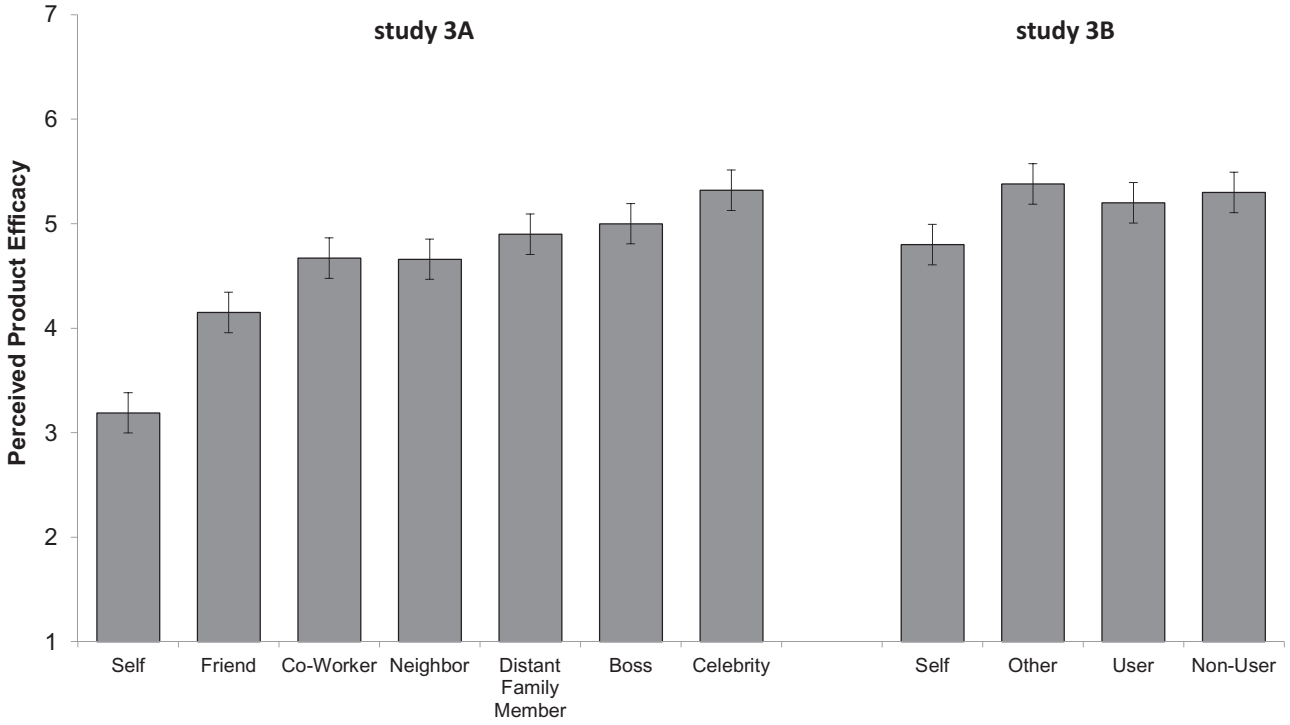
Given that we have so far observed an overall net effect in believing that products work better for others, across various products in different study designs (studies 1–2) and multiple others (studies 3A and 3B), we carried out the following four studies to investigate the underlying mechanisms of this bias by examining whether perceptions of uniqueness and malleability give rise to more favorable assessments of products' efficacy for others than for the self. These studies explain why consumers, on average, believe that products work better for others.

STUDIES 4A AND 4B: MEDIATING ROLE OF PERCEIVED UNIQUENESS

In this pair of studies, we tested hypothesis 2, namely whether perceived uniqueness causally mediates the relation between self-other judgment-target and perceived product efficacy. Spencer, Zanna, and Fong (2005) proposed that strong inferences of a causal chain can be made if the independent variable and mediating variable are both manipulated. To that end, self-other judgment-target was manipulated in study 4A, and perceived uniqueness was manipulated in study 4B. In study 4A, we tested whether people think that they are more unique than others. In study 4B, we manipulated people's perceptions of others' uniqueness and tested if altering the levels of a judgment-target's perceived uniqueness is predictive of how well products will be perceived to work for a respective

FIGURE 1

PERCEIVED PRODUCT EFFICACY FOR MULTIPLE JUDGMENT-TARGETS (STUDIES 3A–3B)



judgment-target. Taken together, the results of studies 4A and 4B could indicate that self-other judgment-target influences perceived uniqueness and that perceived uniqueness influences perceived product efficacy.

Method

In study 4A (preregistered), we recruited and received 400 participants from MTurk (189 females, $M_{age} = 36.94$, $SD_{age} = 11.03$). We randomly assigned participants into two conditions (judgment-target: self vs. other), and asked participants to answer three questions that measure perceived uniqueness. In the "self" condition, we asked participants to indicate how unique they are, how distinctive they are, and how much they think they stand out. In the "other" condition, we asked the same three questions but asked participants to judge someone else's uniqueness, namely "MTurker #161." Participants responded to each question on a scale ranging from 1 (*not at all*) to 9 (*a lot*). We included an attention check ("Have you ever had a fatal heart attack?"), which 19 participants failed. We excluded these participants from our analyses (per the preregistration), leaving a sample of 381 participants. The results are statistically indistinguishable from analyses that include the participants who failed the attention check.

In study 4B, we recruited 400 participants and received 406 participants from MTurk (147 females, $M_{age} = 38.48$, $SD_{age} = 14.41$). We asked participants "How effective would bronzing cream be in helping [*you*/*the average American*/*a highly unique American*] get a suntan?" for three judgment-targets: the self, the average American, and a "highly unique American." Participants responded to each question on a scale ranging from 1 (*not at all*) to 7 (*very much*). We included the same attention check as in study 4A; 38 participants failed it. We excluded these participants from our analyses, thus rendering a sample of 368 participants. The following results are statistically indistinguishable from analyses that include the participants who failed the attention check.

Results

In study 4A, we averaged participants' responses to the three items that assess uniqueness to create the dependent measure, perceived uniqueness ($\alpha = .89$). Supporting our prediction, participants believed that they were more unique ($M = 6.04$, $SD = 1.70$) than other people ($M = 4.99$, $SD = 2.03$), $t(379) = 5.50$, $p < 0.001$, $d = 0.56$. Hence, the results of study 4A provide empirical evidence for the self-other difference in perceived uniqueness.

In study 4B, to find out whether perceived uniqueness predicts perceived product efficacy, we conducted a repeated-measures ANOVA, which showed a significant effect of judgment-target on perceived product efficacy, $F(2, 734) = 28.54$, $p < .001$. With post-hoc comparisons, we found that participants rated the bronzing cream as more effective for the average American ($M = 4.72$, SD = 1.52) than for themselves ($M = 4.47$, SD = 1.72), $p_{Tukey} < .001$, $d = 0.21$. Likewise, participants rated the bronzing cream as less effective for the highly unique American ($M = 4.25$, SD = 1.54) than for both themselves, $p_{Tukey} < .001$, $d = 0.18$, and the average American, $p_{Tukey} < .001$, $d = 0.39$.

STUDIES 5A AND 5B: MEDIATING ROLE OF PERCEIVED MALLEABILITY

In this pair of studies, we tested hypothesis 3, namely whether perceived malleability causally mediates the relation between self-other judgment-target and perceived product efficacy. Using the same approach as in studies 4A and 4B, we employed the causal chain method by manipulating and testing the effect of self-other judgment-target on perceived malleability (study 5A) and of perceived malleability on perceived product efficacy (study 5B). In study 5A, we tested whether people think that others are more malleable than they are themselves. In study 5B, we tested whether altering the levels of a judgment-target's perceived malleability is predictive of how well products will be perceived to work for a respective judgment-target. Taken together, the results of studies 5A and 5B could indicate that self-other judgment-target influences perceived malleability and that perceived malleability influences perceived product efficacy. We also measured self-usership in this study, which allowed us to test a potential moderator—namely, whether the product usership of participants affects how much efficacy they ascribe to products and whether this might alter the self-other difference in perceived product efficacy.

Method

In study 5A, we recruited 200 participants and received 219 participants from MTurk (109 females, $M_{age} = 38.43$, $SD_{age} = 12.72$). We randomly assigned participants to two conditions (judgment-target: self vs. other) and asked them to answer five questions that measure perceived malleability. In the "self" condition, we asked them to indicate how consistent they believed their emotions, physical health, physical appearance, tastes, and overall state would be in the near future. In the "other" condition, we asked the same five items, but we asked participants to indicate how much they believed other peoples' states would be consistent (e.g., "other people's emotions will change in the near future"). Participants responded to each question on a scale ranging from 1 (*extremely disagree*) to 9 (*extremely agree*).

In study 5B (preregistered), we recruited 600 participants and received 612 participants from MTurk (324 females, $M_{age} = 38.01$, $SD_{age} = 12.83$). We randomly assigned participants to three conditions (judgment-target: self vs. other vs. stoic-other). We asked participants about the perceived efficacy of a coloring book on three items: using a coloring book will help to inspire creativity; using a coloring book can produce a long-lasting effect; and creativity will be boosted quickly after using a coloring book. According to condition, participants were instructed to report the coloring book's perceived product efficacy for themselves, for others, or, in the "stoic-other" condition, for someone described as "a resilient person, whose physical condition and emotional state are not easily molded."

We next asked participants to indicate their judgment-targets' perceived malleability on three items: how much they agree that the judgment-target's emotions and physical condition will change in the near future, in addition to the extent the judgment-target will change overall. Participants responded to all measures on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). As a robustness check, we conducted a confirmatory factor analysis on the three malleability items and the three efficacy items. Zhao, Lynch, and Chen (2010) suggested this approach to assess if mediators are sufficiently distinct from outcome measures in a causal chain. If one factor fits the data, then the variables risk measuring the same construct; however, if two factors fit the data, then the measures are distinct. In support of the constructs' differentiation, a two-factor model fit the data very well, CFI = .996, RMSEA = .045, whereas a one-factor model failed to fit the data, CFI = .654, RMSEA = .397.

Finally, we also measured product self-usership by asking participants, "Do you use a coloring book?" (with a choice of "yes" or "no"). We included the same attention check as in studies 4A and 4B; 17 participants failed it. We excluded these participants from our analyses (per the preregistration), leaving a sample of 595 participants. The results are statistically indistinguishable from analyses that include the participants who failed the attention check.

Results

In study 5A, we averaged participants' responses to the five items that assess malleability to create the dependent measure, perceived malleability ($\alpha = .72$). Supporting our hypothesis, participants believed that others were more malleable ($M = 5.92$, SD = 1.13) than they were themselves ($M = 4.95$, SD = 1.43), $t(217) = 5.59$, $p < 0.001$, $d = 0.76$. Thus, the results of study 5A provide empirical evidence for the self-other difference in perceived malleability.

In study 5B, to determine if perceived malleability predicts perceived product efficacy, we first checked the

perceived malleability manipulation. We averaged participants' scores to the three malleability items ($\alpha = .89$). The manipulation was successful; an ANOVA showed a significant effect of judgment-target, $F(2, 592) = 32.10$, $p < 0.001$, $\eta^2 = 0.098$. With post-hoc comparisons, we found that participants rated themselves as less malleable ($M = 5.66$, SD = 1.74) than others ($M = 6.19$, SD = 1.48), $p_{Tukey} = .006$, $d = 0.31$, consistent with the results of study 5A. We also found that participants rated the stoic-other as less malleable ($M = 4.81$, SD = 1.90) as compared to participants' rating of their own malleability, $p_{Tukey} < .001$, $d = 0.49$, and others' malleability, $p_{Tukey} < .001$, $d = 0.80$.

Next, we checked if the manipulation of a judgment-target's perceived malleability affects the product efficacy that participants render on their judgment-target. We averaged participants' scores to the three product efficacy items ($\alpha = .92$), and conducted an ANOVA which showed a significant effect of judgment-target, $F(2, 592) = 17.70$, $p < 0.001$, $\eta^2 = 0.056$. Consistent with the perceived malleability findings, the post-hoc comparisons show that participants rated the coloring book as more effective for others ($M = 6.49$, SD = 1.61) than for themselves ($M = 5.90$, SD = 1.90), $p_{Tukey} < .001$, $d = 0.33$. However, participants rated the coloring book as less effective for stoic-others ($M = 5.39$, SD = 1.94) than for both themselves, $p_{Tukey} < .001$, $d = 0.28$, and others, $p_{Tukey} < .001$, $d = 0.60$.

Of import, we did not find that product self-usership had a moderating effect on the results. In our sample, 213 of 595 participants (35.8%) indicated that they used a coloring book. We conducted a 2 (user vs. nonuser) × 3 (judgment-target) ANOVA on perceived product efficacy. Both of the main effects were significant: users indicated the coloring book to have more efficacy ($M = 6.93$, SD = 1.41) than nonusers did ($M = 5.37$, SD = 1.87), $F(1, 589) = 119.25$, $p < .001$, $\eta^2 = 0.159$; as above, the coloring book was thought to have different efficacy, according to judgment-target, $F(2, 589) = 20.30$, $p < .001$, $\eta^2 = 0.054$ (the descriptive statistics are the same as reported above; more efficacy for others than the self, but less for stoic-others). Of import, the interaction was not significant, suggesting that for a coloring book, self-usership did not change the self-other difference in judgments of its efficacy, $F(2, 589) = 0.77$, $p = .463$, $\eta^2 = 0.002$.

SUMMARY OF PROCESS EVIDENCE

Taken together, studies 4A–4B and 5A–5B locate perceived uniqueness and perceived malleability as mediators in the causal chain between self-other judgment-target and perceived product efficacy. Going a step further, we conducted an additional preregistered study (study WA1; see web appendix for details and results) that assesses the mediations of perceived uniqueness and malleability differently. Extending studies 4A–4B and 5A–5B, we tested the mediators in tandem in study WA1 using a parallel process-by-mediation design and analysis. This study sheds more light on the pathways between judgment-target and perceived product efficacy. For example, in studies 4A and 5A, we found that the self-other effect of judgment-target on malleability was greater than the respective self-other effect on uniqueness (respectively, ds = 0.76 vs. 0.56). Therefore, we might expect that perceptions of malleability possess a more influential role in generating or altering product efficacy judgments than perceptions of uniqueness. Thus, study WA1 not only provides additional evidence by examining both mediators at once (in parallel) in a mediation-by-measurement design but allows us to compare the separate effects of each mediator on product efficacy perceptions (which we found to be statistically equivalent).

Notably, because we measured perceived malleability and perceived product efficacy in study 5B, we were able to test for both causal and statistical mediation in this study. In lock-step with the causal chain approach, we found that the self-other difference in perceived product efficacy was statistically mediated by the self-other difference in perceived malleability for both the self-vs.-other test, $b = -0.16$, SE = 0.05, 95% CI = [−0.26, −0.05], and self-vs.-stoic-other test, $b = 0.38$, SE = 0.09, 95% CI = [0.20, 0.57].

In summary, the results of study WA1 complement the causal chain findings from studies 4A–4B and 5A–5B. In all, we have evidence of both mediators using two different designs for assessing process: a mediation-by-moderation analysis in which we manipulated judgment-target and both mediators using the causal chain approach (in studies 4A–4B and 5A–5B); and a mediation-by-measurement analysis in which we measured and analyzed the mediators in parallel and individually using a bootstrapping approach (in study WA1). With these different analyses and methods (by separately manipulating and measuring each mediator), and the convergent results that they have rendered, we can conclude that the self-other uniqueness and malleability biases play an important role in asymmetrical perceptions of product efficacy.

STUDY 6: AN ALTERNATIVE EXPLANATION (ABOVE-AVERAGE EFFECT)

Having uncovered two explanations for the self-other difference in perceived product efficacy in five studies (studies 4A–4B, 5A–5B, and WA1), we next sought to test an explanation based on the above-average effect (Alicke 1985). Specifically, the results we have documented could also be due to consumers believing that they need products less than others do. That is, if consumers believe they would benefit less from using a moisturizer because they

believe their skin is better than others' skin, then they might view products that improve skin as having a smaller effect on themselves than on others.

If the self-other effect manifests because consumers believe they need a product's benefits less than others, then when we increase participants' own level of product need, they should perceive that a product will work better for themselves than for others. In study 6, we tested for this account and also examined a downstream effect of believing that products work better for others: whether people would buy the product for themselves or others.

Method

In study 6 (preregistered), we invited all 770 students of an undergraduate marketing class in the United States to participate in our study and received 606 participants. We manipulated whether participants would feel below or above average on their reading comprehension, then measured how efficacious they believe a reading aid would be for themselves versus others. Specifically, we altered participants' beliefs about their reading comprehension using the false-feedback paradigm (Ross, Lepper, and Hubbard 1975)—a method that changes people's beliefs about themselves (e.g., their skills). False-feedback inductions typically contain a quiz that participants take that ostensibly measures a skill or aptitude. Following the quiz, participants are randomly assigned a grade that indicates that they are below or above average on the purportedly measured skill or aptitude.

Using the false-feedback approach, we told participants they were taking part in a study of reading comprehension and that their task was to identify, from a list of 130 names, which of the names were of actual writers of books, magazine articles, and/or newspaper columns (the "Author Recognition Test," a verified test of reading skills by Aacheson, Wells, and MacDonald 2008). After they finished the test, we gave them a false grade. By random assignment, some participants were told that their reading comprehension was "below average, in the 39th percentile," whereas others were told it was "above average, in the 84th percentile."

Next, we asked participants to assess the efficacy of a reading aid, in the form of a pill, for themselves or others. Specifically, we asked participants, according to condition, "How much do you think taking a pill that is supposed to improve [*your*] reading comprehension would help [*you/other people*]?" "How quickly do you think [*your/other people's*] reading comprehension could improve after taking a month-long course of reading comprehension pills?" and "How effective would taking a reading comprehension pill change [*your/other people's*] reading comprehension?" Participants responded from 1 (*not at all*) to 7 (*a lot*, *very quickly*, *very effectively*; per question respectively). Next, we asked, "Would you buy a reading comprehension pill for [*yourself/someone else*]?" ("yes" or "no"). We then asked participants to answer four items included as control variables: "How new would you say are reading comprehension pills?", "How familiar are you with reading comprehension pills?", "How popular are reading comprehension pills?", and "How much do you think people use reading comprehension pills?". Participants responded from 1 (*not at all*) to 7 (*extremely*). Finally, we asked participants to respond to a manipulation check concerning the false feedback: "How good is your reading comprehension?". Participants responded from 1 (*below average*) to 7 (*above average*).

In sum, study 6 employed a 2 (judgment-target: self vs. other) × 2 (self-perceived skill-level: below- vs. above-average) design that allowed us to test whether people continue to think that a product works better for others even when they believe they are *worse than others* on the dimension that the relevant product aims to improve.

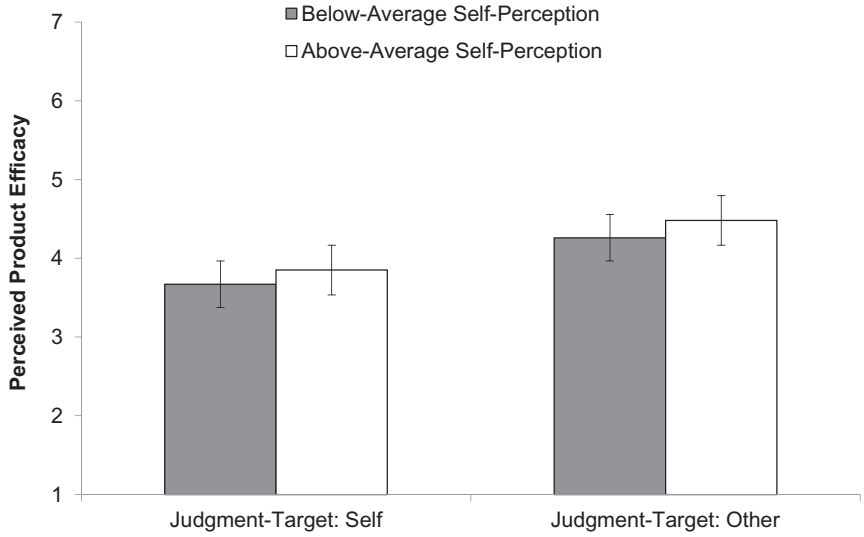
Results

To determine if the false-feedback manipulation was successful, we conducted a 2 (judgment-target) × 2 (skill-level) ANOVA on the manipulation check and found that participants in the below-average condition reported that their reading comprehension was worse than others' ($M = 3.57$, SD = 1.45) as compared to participants in the above-average condition ($M = 4.88$, SD = 1.31), $F(1, 601) = 135.36$, $p < .001$, $d = 0.95$ (no other effects in the ANOVA were significant). Participants in the below-average condition rated their reading comprehension significantly below the midpoint on the scale, $t(302) = 5.11$, $p < .001$, $d = 0.29$.

Having established that participants in the below-average condition believed their reading skills to be below average, we conducted the main test: a 2 (judgment-target) × 2 (skill-level) ANOVA on the dependent variable, the average score for the three items that measured perceived product efficacy ($\alpha = .87$). We found only a main effect of judgment-target, such that participants indicated that the reading aid would work better for others ($M = 4.37$, SD = 1.33) than for themselves ($M = 3.76$, SD = 1.57), $F(1, 602) = 26.80$, $p < .001$, $d = 0.42$ (see figure 2). Of import, the interaction was not significant, $F(1, 602) = 0.03$, $p = .857$ (nor was the main effect of skill-level, though it was marginal, $F(1, 602) = 2.93$, $p = .087$). This demonstrates that among participants who perceived themselves to be below average on the skill that the product aims to improve upon, there was a self-other difference in the product's perceived efficacy ($M_{self} = 3.67$, SD = 1.57 vs. $M_{other} = 4.26$, $SD = 1.36$), $F(1, 301) = 12.30$, $p < .001$, $d = 0.40$. Thus, we can rule out the putative above-average explanation in our results, since it cannot be the case that participants believe that products work better for others because they perceive themselves to have a "leg up" on the skill (or aptitude) that a product is supposed to improve. As we found in study 6,

FIGURE 2

PERCEIVED PRODUCT EFFICACY FOR SELF/OTHER ACCORDING TO SKILL-LEVEL (STUDY 6)



when participants were led to believe they would benefit by using the product, owing to their self-perceived below-average product-related skill-level, they continued to believe the product would positively affect others more.

In addition to testing the above-average explanation in this study, we also measured whether participants would buy the reading comprehension pills. Consistent with the self-other difference in perceived product efficacy, we found that participants were more likely to buy them for others (162/301; 53.8%) than for themselves (98/304; 32.2%), $\chi^2(1) = 28.80$, $p < .001$, $w = 0.22$—a pattern consistent with participants in the below-average condition, who were also more likely to buy them for others (78/152; 53.1%) than for themselves (48/151; 31.8%), $\chi^2(1) = 11.90$, $p < .001$, $w = 0.20$. Offering further support for this downstream effect, the self-other difference in purchase likelihood was directly related to (and mediated by) participants' self-other perception of product efficacy: the relation between judgment-target and purchase likelihood was mediated by participants' perceived product efficacy of the pills, $b = 0.11$, SE = 0.02, 95% CI = [0.07, 0.15].

Discussion

Plausibly, consumers might believe that products work better for others because they make more self-serving judgments about their own skills (e.g., reading comprehension), aptitudes (e.g., creativity), or health (e.g., skin)—thus believing that the effects of products on themselves will be smaller than for others (a case of diminishing returns). We did not find this to be the case. Even participants who indicated their reading comprehension was lower than that of others still believed that a reading comprehension product would work better for others than for themselves. Of import, this difference (like all the differences reported above) were qualitatively unchanged when the four covariates were included in the analyses, thus indicating that the patterns held when accounting for participants' perceptions of product newness, familiarity, popularity, and frequency of use (for full results, see table 3).

Study 6 also sheds light on whether the self-other difference is the result of anchoring and adjustment processes (Tamir and Mitchell 2013). It may be that consumers think first of a product's efficacy for themselves and adjust upward as though they have a lay-belief that products work better for others. If this were driving the effect, we would expect participants in the above-average condition to make downward adjustments when judging product efficacy for others. We did not find this to be the case, which places doubt on an anchoring and adjustment mechanism in our findings.

It is important to note that we had planned to exclude participants who spent less than 110 seconds on the "Author Recognition Test" (as indicated in the preregistration). Of the 606 total participants in our study, 51% spent less than 110 seconds, suggesting that our exclusion criterion was potentially too strict. That said, even with this criterion, all of the above effects remained significant (for full results, see table 3). This testifies to the strength of our results: Even when we removed half of our sample participants, and thus half of our statistical power, the effects were robust to the exclusion.

TABLE 3

RESULTS FOR MAIN ANALYSIS WITH CONTROLS AND EXCLUDED PARTICIPANTS (STUDY 6)

	Main effect Judgment-target	Main effect Skill-level	Interaction Judgment-target × skill-level
Main analysis			
Reading comprehension self-report	$F(1, 601) = 2.72$, $p = .10$, $d = 0.13$	$F(1, 601) = 135.36$, $p < .001$, $d = 0.95$	$F(1, 601) = 0.45$, $p = .50$, $d = 0.06$
Perceived product efficacy	$F(1, 602) = 26.80$, $p < .001$, $d = 0.42$	$F(1, 602) = 2.93$, $p = .09$, $d = 0.14$	$F(1, 602) = 0.03$, $p = .86$, $d = 0.00$
Analysis with controls			
Reading comprehension self-report	$F(1, 595) = 1.62$, $p = .20$, $d = 0.10$	$F(1, 595) = 142.34$, $p < .001$, $d = 0.97$	$F(1, 595) = 0.41$, $p = .52$, $d = 0.06$
Perceived product efficacy	$F(1, 595) = 29.19$, $p < .001$, $d = 0.44$	$F(1, 595) = 3.91$, $p = .05$, $d = 0.16$	$F(1, 595) = 0.08$, $p = .77$, $d = 0.00$
Analysis after excluding participants			
Reading comprehension self-report	$F(1, 292) = 2.74$, $p = .10$, $d = 0.19$	$F(1, 292) = 5.49$, $p = .02$, $d = 0.27$	$F(1, 292) = 0.11$, $p = .74$, $d = 0.00$
Perceived product efficacy	$F(1, 292) = 17.61$, $p < .001$, $d = 0.49$	$F(1, 292) = 0.87$, $p = .35$, $d = 0.11$	$F(1, 292) = 0.66$, $p = .42$, $d = 0.09$

Note: "Reading comprehension self-report" refers to the manipulation check (where we predicted a main effect of skill-level). "Perceived product efficacy" refers to the dependent measure (where we predicted a main effect of judgment-target).

STUDY 7: BEHAVIORAL IMPLICATIONS OF PERCEIVED PRODUCT EFFICACY

Our final study seeks to further underscore the relevance of perceived product efficacy not just in and of itself, but for other behaviors more generally. Going beyond product efficacy perceptions, study 7 includes another measure of interpersonal choice: how much (of a) product people choose for others. Moreover, we tested for the mediating role of perceived product efficacy on serving others, which allows us to assess an additional downstream implication as a direct result of perceived product efficacy.

Method

We recruited 218 undergraduate business students in France who participated for course extra credit (98 females, $M_{age} = 20.26$, $SD_{age} = 0.97$). Like study 2, this study employed a conservative within-subjects design with judgment-target (self vs. other) as the experimental factor in counter-balanced order.

Upon entering a lab, we presented participants with 30 transparent water cups (with a capacity of 30 ml. each) and two bowls, one labeled "self" and one labeled "typical." The bowls were randomly placed either to the left or right of participants. We asked participants how many water cups would be required for each judgment-target to completely satisfy their thirst—that is, their own thirst and a typical participant's thirst—on two sliders anchored from 0 to 30. We also asked participants how effective one cup and, separately, five cups, would be at satisfying each judgment-target's thirst. Participants responded to these four questions from 1 (*not at all*) to 7 (*very much*). Then we asked participants to distribute the number of cups they believed would be required to satisfy each judgment-target's thirst into its corresponding bowl. The amount of water (measured in cups) served by participants was independently verified by a research assistant. By supplying our measure of how much product people serve others as compared to themselves, this number is a laboratory analog akin to serving food or drink to others.

Results

We first tested our main effect (hypothesis 1) by examining how quenching participants think one small cup of water is and, separately, five small cups, for their own thirst versus someone else's thirst with paired *t*-tests (per the preregistration). The test was successful for both one cup and five cups. For one cup of water, we found that participants considered it less thirst-quenching for themselves ($M = 2.64$, SD = 1.42) than for someone else ($M = 3.06$, SD = 1.41), $t(217) = 6.10$, $p < .001$, $d = 0.41$. Likewise, for five cups of water, we found a similar pattern; participants considered five cups of water less thirst-quenching for themselves ($M = 4.22$, SD = 1.48) than for someone else ($M = 4.44$, SD = 1.46), $t(217) = 3.85$, $p < .001$, $d = 0.26$.

In light of finding that participants considered the same amount of water to be more thirst-quenching for others than for themselves, we tested (1) if this meant they would serve less water to others than to themselves. In particular, we tested (2) whether participants' thirst-quenching beliefs (about their own and others' water consumption) would explain how much water they would serve to others and themselves.

To answer the first question, we conducted a paired t-test on how much water participants would serve others and themselves. We found that participants would serve less water to others ($M = 10.44$, SD $= 6.26$) than to themselves ($M = 13.06$, SD $= 6.66$), $t(217) = 7.15$, $p < .001$, $d = 0.48$. A nonparametric test confirmed this analysis, Wilcoxon's $W = 14{,}412$, $p < .001$. To answer the second question, we conducted a within-subjects mediation test using the MEMORE macro for SPSS (Montoya and Hayes 2017) and tested whether the perceived quenching-efficacy of one cup of water could account for the relationship between judgment-target and how much water would be served to the judgment-target. Using a bootstrapping procedure, one thousand repeated random samples were taken from the data to compute this indirect effect. We found that the relation between judgment-target and amount-served was mediated by the perceived quenching-efficacy of a cup of water, $b = 0.37$, SE $= 0.18$, 95% CI $= [0.04, 0.78]$; likewise, we ran the same test with the measure of perceived quenching-efficacy of five cups of water, $b = 0.41$, SE $= 0.10$, 95% CI $= [0.22, 0.60]$.

Discussion

This study extended our effect to serving choices that people make for others. We showed that participants choosing how much water to serve opted for a higher-volume serving for themselves than for others. Further, we showed that perceptions of water thirst-quenching efficacy underlie this effect. At first glance, it could seem as if participants serve themselves more water because they are selfishly motivated to take more resources than they give to others. But this argument does not hold up, given that participants, on average, used fewer cups than were supplied. In other words, there was more than enough water to serve to others and the self—and no rent-seeking benefit to serving oneself more water. Relatedly, there could be a hospitable norm of serving more to others. We find the opposite effect in our study. This could be because our participants were prompted to think about how much the water would quench others. When the efficacy of others' product consumption is less highlighted or piqued, we might see evidence of participants serving more to others. Finally, a benefit to study 7 is the product that we tested—water—which is reasonably believed to be consumed by everyone. Therefore, consistent with previous studies, we did not find that others' usership (study 3B) or self-usership (study 5B) moderated the self-other difference in perceived product efficacy (a point to which we return in the General Discussion).

GENERAL DISCUSSION

In 15 studies, we found consumers believed that a wide range of products, with both negative and positive effects, would be more efficacious for others than for themselves. All told, we tested the effect among 6,547 participants across several changes in procedure, design, and sample characteristics. We used stimulus sampling and within- and between-subjects designs, and asked different kinds of participants (American and French college students, and MTurkers) to judge different judgment-targets, from friends, coworkers, celebrities, and fellow MTurkers, to users and nonusers, to the average American, and to, of course, themselves. We uncovered five moderators for the effect: product familiarity, popularity, frequency of use, usefulness, and closeness with the judgment-target (and we tested two factors that appeared to show no moderating effect: other- and self-usership). We also found evidence for two mediators, which we tested in two ways with the causal chain and bootstrapping approaches. Finally, we ruled out a putative above-average explanation and documented two separate downstream effects, including one conducted in a behavioral study. The breadth of the studies and tests (of robustness, moderators, mechanisms, alternative explanations, and downstream effects) gives us confidence in our findings and conclusions.

Of note, study 1 explored perceptions of products' efficacy using stimulus sampling with data analyzed in LMEM, which accounts for multiple types of nonindependence in experimental data. This has the benefit of assessing the external validity of our findings. It also introduces a relevant and under-used method to consumer behavior research. The study of products is central to consumer behavior, and marketing researchers ought to be confident that their findings will generalize across product choices and judgments. Testing multiple products and analyzing "product" as a random factor in LMEM helps to assess our findings' generalizability. Typically, field studies are used to test generalizability, but it remains an open question even in most field studies whether the findings would apply to other products or purchases. Using stimulus sampling and LMEM mitigates this issue, and we advise other researchers to consider following suit to test if their findings are robust.

At first blush, our results could be viewed as a regression effect. When people estimate a product possesses lower efficacy for themselves, they might estimate higher product efficacy for others, because, in line with regressive reasoning, they adjust their judgments of a target dimension accordingly: when product efficacy is thought to be low for the self, people potentiate it higher for others. For three reasons, this cannot be the case in our data. First, a regression account assumes that we over-sampled low-efficacy products in our studies (products that the self considers low-efficacy). However, the average baseline efficacy for the tested products—that is, the average self-rating of efficacy for the 49 products tested across studies—was 4.52 (on a 1–7 scale), which is significantly greater than the scale midpoint, 4, $t(48) = 4.59$, $p < .001$, $d = 0.66$ (for

efficacy ratings per product, see table WA1). This suggests that we tended to test products with higher-than-midpoint levels of efficacy, which means that if regression were affecting our results, we would have found that people believe products work less well for others. Second, we conducted a quartile analysis of the products that we tested across studies by ranking them according to participants' self-rating of efficacy (in ascending order) and then calculating the average effect size for the self-other difference per quartile (see table WA1). The effect sizes were ds = 0.35, 0.27, 0.18, and 0.11, from the bottom to the top quartile, respectively. To be sure, the effect sizes decrease as baseline efficacy ratings increase. This is illustrative of a ceiling effect: as the baseline efficacy rating increases on a Likert scale (e.g., from 4.00 to 6.75, on a 1–7 scale), the possible maximal self-other difference logically decreases (from 3.00 to 0.25, on a 1–7 scale). It is noteworthy that even among products that are median-to-high-efficacy (products in the third quartile), the effect size, $d = 0.18$, is typical of effects in psychology (Funder and Ozer 2019). For context, a $d = 0.18$ effect size is larger than the effect of taking ibuprofen for pain relief. Finally, we conducted a study (study WA2) in which we manipulated products' efficacy as low, medium, or high. For all products, regardless of efficacy level, we found a significant self-other difference. Notably, for the products with the highest efficacy—a "very strong painkiller" (with baseline efficacy = 6.02, on a 1–7 scale) and a "very strong energy drink" (with baseline efficacy = 5.21, on a 1–7 scale)—we found large effect sizes, ds = 0.50 and 0.34, respectively (for a recent discussion on effect sizes; Funder and Ozer 2019). To wit, each of these three accounts would in itself rule out a regression explanation. By virtue of yielding three different accounts that are at odds with regression, we can be confident that our effects are robust to regression tendencies.

Theoretical Contributions

Our work contributes to the literature on perceptions of product efficacy. While prior research has identified several determinants of perceived product efficacy (Chae et al. 2013; Maglio et al. 2020; Van Bergen et al. 2020; Zhu et al. 2012), we added a social component to the literature by showing that product efficacy judgments are sensitive to judgment-target. We found that because people believed products were more efficacious for others, they were more likely to buy a product for others (study 6) and choose less of a product for others (study 7). For consumers, this is a reasonable response. If someone is especially susceptible to the effects of spicy food, it makes little sense to serve them large dollops of hot sauce. In our research, the perceived impact that an option would have on others reasonably affected the kind of option consumers chose for them.

It follows that more attention should be paid to perceived product efficacy. It precipitates a factor upon which all product-related choices may rest. To be sure, before buying a product, consumers typically speculate its efficacy (Olson and Dover 1979). More generally, before making a decision, people typically consider the impact their decision will have—such that the predicted impact of a choice's options will shape which option is ultimately chosen. This is especially the case in decisions involving donations, and the charities selected by potential donors to receive their money. As research has found, would-be donors consider the perceived impact their donation could have, such as whether an organization will use it effectively by extracting "the most" from their donation (Cryder, Loewenstein, and Scheines 2013; Polman et al. 2018; Sharma and Morwitz 2016; Smith, Faro, and Burson 2013).

Perceived product efficacy could play a role in other areas of research, including the rich literature on hedonic-utilitarian tradeoffs (Dhar and Wertenbroch 2000). In typical studies, hedonic product attributes are juxtaposed with utilitarian attributes (such as usefulness), and researchers examine the extent to which consumers prefer more or less indulgence (at the expense of more or fewer utilitarian benefits). When making choices for others, consumers prefer less utilitarian options, choosing to trade off products' functionality for other benefits. For instance, consumers choose to give less practical gifts to others (Baskin et al. 2014; Rim et al. 2019) and choose more hedonic and creative products for others (Lu, Liu, and Fang 2016; Polman and Emich 2011). This could suggest that consumers have a blind spot when making choices for others, preferring options that dazzle in the short run but have less usefulness in the long run (Yang and Urminsky 2018). But from a different perspective, based on our findings, consumers may be less concerned about a product's instrumental efficacy (when choosing a product for others) because even a product with lower perceived efficacy will be thought to precipitate a relatively positive effect on others.

In advice-giving, this same logic could clarify whether people tend to give less useful advice at the expense of giving more desirable advice (Danziger, Montal, and Barkan 2012) or more face-saving advice (Apfelbaum, Krendl, and Ambady 2010). Again, this pattern could be due to divergent self-other perceptions of efficacy. If people believe that others will gain more practical benefits from advice, then they may not feel they need to stress practical benefits as much. As a coda to this point, in a study conducted during the COVID-19 crisis with 210 MTurk participants (study WA3, conducted in March 2020), we tested whether people believe that others' social distancing is more effective than their own. We found they believed it was, $d = 0.67$, $p < .001$. Furthermore, in a separate study of 216 participants (study WA4, conducted in March 2021), we tested if people believe the COVID-19 vaccine is more effective for others than for themselves; again, they believed so, $d = 0.68$, $p < .001$. Together, these results suggest that

efficacy perceptions could form a type of *consumer hypocrisy*, whereby consumers may advise a course of action to others that they may not follow themselves (Polman and Ruttan 2012). Going a step further, this might suggest who is less likely to buy a new product (or engage in social distancing or get vaccinated). In our work, we found that perceived uniqueness and malleability are related to perceived product efficacy. When these beliefs are inversely correlated, such as when a consumer's self-perceived uniqueness is high and malleability is low, they may think that a product (or behavior) will have little effect on the self. On the other hand, when self-perceived uniqueness is low and malleability is high, a consumer may be easily persuaded by a product's effects—a profile that could characterize early adopters.

Researchers have found that people are more likely to use advice the more they have paid for it (Gino 2008). Although the sunk cost effect has been documented to underlie this difference, another reason could be that people perceive that paid advice is higher in quality, as though more expensive advice is more efficacious. We are reminded here of the work by Brookshire and Coursey (1987) which measured how much money people would pay to add trees to a park compared to how much they would accept to remove the same number of trees. People demanded more money to remove than what they would pay to add, which is consistent with loss aversion. However, perceived efficacy might play a role here too, such that perhaps losing trees feels like the park will serve its purpose less well, compared to the purpose the park serves when trees are added, all else equal. By this account, perceived efficacy could be related to loss aversion. Some scholars have suggested that loss aversion is a perceptual bias, a type of forecasting error that describes people only *predicting* that the impact of choices will be greater for loss-framed choices than for gain-framed choices; such that in reality, when people experience gains and losses, the impact is felt with equal pain and pleasure (Kermer et al. 2006). This would imply that consumers will make less risky choices for others in a loss (vs. gain) frame because they are concerned by the *perceptibly* larger impact a loss-framed choice will produce for others. In support of this idea, a meta-analysis on self-other decision making indeed found that consumers make less risky choices for others in a loss- versus gain-frame (Polman and Wu 2020).

Perhaps nowhere is perceived efficacy more relevant than in the area of medicine and drugs. As recent as 2016, research found that people thought black people could tolerate more pain than white people. Even medical students and residents believed this and made different treatment decisions as a result (Hoffman et al. 2016). Similarly, people believe that poor people are less sensitive to pain than rich people (Cheek and Shafir 2020; Summers et al. 2021). In our studies, we found that consumers believed that medical products work better for others—which would imply that they think they personally need *more* of the same product to receive the same benefits as others. Such a bias may lead consumers to over-medicate themselves, with potential detrimental side effects. In line with Hoffman et al.'s (2016) research, physicians may give their patients more or less medicine according to how much they think their patients will be affected by it.

In this vein, research could be conducted on how to correct judgments of product efficacy based on product usership by consumers. Research on product usership or ownership might shed light. Given our studies, it might appear as though when a consumer is rendering judgment on a product they use, there is an enduring self-other difference in perceived product efficacy—because (1) we did not find a significant interaction in study 5B (indicating similar self-other effects rendered by participants who are users and nonusers), and (2) we found a significant effect for a widely used product in study 7, water (something that everyone consumes). However, we caution that it could be premature to conclude that consumers' own product usership has no effect on moderating the self-other difference documented here.

Most studies in consumer psychology do not account for whether study participants are users of the products being tested. However, akin to the research on self-control that often finds divergent effects between dieters and nondieters (Fishbach, Zhang, and Trope 2010), we might expect a similar divergence between consumers who are product users versus nonusers in studies of consumer behavior. It is difficult to manipulate usership, which, by definition, is self-selected—such that using a self-selected product that one has used for months is reasonably different from using a product for a short time in a laboratory study. Fortunately, usership is easy to measure. For example, we conducted a study (study WA5) in which we assessed how much participants believe products work better for others while accounting for their personal usership of the products. We found evidence of the main effect in study WA5, though our research shows that at the product-level, users revealed mixed findings: we found a significant self-other difference (in the predicted direction) for some products but not others. We are thus cautious about making conclusions based on self-usership. To determine the effect among users, we recommend a meta-analysis of product-level tests, which, by our account, using the data from study 1 (which provides the most conservative effect size given its treatment of products and participants), the meta-analysis would need to contain at least 33 effects (33 unique products) for an effect size, $d = 0.13$, at an average number of participants per cell (target-judgment), $n = 112$, with .80 power and .05 alpha, for low, moderate, and high heterogeneity of product-effects (Valentine, Pigott, and Rothstein 2010). Needless to say, this could be fruitful future research (requiring at least 7,392 data-points; $33 \times 112 \times 2$). Other tests may also be possible, but given

that the self-other effect among users varies according to which product is tested, researchers should examine its effect among multiple products.

Indeed, besides product efficacy judgments, many documented effects in the consumer literature might be different if usership were taken into account. In relation to usership, a rich area of work on ownership has been conducted—the majority of it on products that study participants own for mere minutes. Thus, despite some similarities between ownership and usership, what happens among self-selecting users of a product is far from self-evident. A study of users might bring to the literature new moderators and mechanisms not just for product efficacy, but for many other behaviors and judgments of interest to consumer researchers. As an example, Polman and Maglio (2017) found that gift-recipients like gifts more when gift-givers indicated they are users of the gifted products.

CONCLUSION

It cannot be the case that, writ large, products work better for others. Yet, our studies indicate that consumers reach this conclusion. We find this effect occurs because of two related social biases: consumers think others are less unique and more malleable than themselves. In all, our article shows that an analysis of perceived product efficacy promises to be a worthwhile and interesting direction for future research. While products are thought to be part of consumers' self-concept (Belk 1988), consumers appear to believe this is more true of others' self-concept than of their own.

DATA COLLECTION INFORMATION

The first author managed, analyzed, and interpreted the data to studies 3A–3B, 6, and WA3–5. The second and fourth authors managed, analyzed, and interpreted the data to studies 2, 4B, 7, and WA1–2. The third author managed, analyzed, and interpreted the data to studies 1, 4A, and 5A–5B. Data were collected using Amazon MTurk in Spring 2019 (studies 2, 4B, and WA1), Spring 2020 (studies 4A, 5A–5B, WA3, and WA5), Fall 2020 (studies 3A–3B), and Spring 2021 (studies WA2 and WA4). For studies 1 and 6, the data were collected with an online survey (Qualtrics) with participants from an introductory marketing class at the University of Wisconsin–Madison, in Spring 2020 and Fall 2020, respectively. For study 7, the data were collected in a laboratory at Grenoble Ecole de Management with participants from Grenoble Ecole de Management, in Fall 2019. The data are currently stored in a project directory on the Open Science Framework.

APPENDIX A: MEASUREMENT-ITEMS PER PRODUCT (STUDY 1)

Product	Measures[a]
Moisturizer	Using a moisturizer will help to hydrate my skin. My skin will be hydrated quickly after using a moisturizer.
Productivity/work-management app	Using a productivity/work-management app will help to improve my overall productivity. My overall productivity will be improved quickly after using a productivity/work-management app.
Relaxation lamp	Using a relaxation lamp will help to de-stress. I will be de-stressed quickly after using a relaxation lamp.
White noise sound machine	Using a white noise sound machine will help me to concentrate. I will concentrate quickly after using a white noise sound machine.
Coloring book	Using a coloring book will help to improve my creativity. My creativity will be quickly improved after using a coloring book.
Percussion massage gun	Using a percussion massage gun will help to reduce my muscle tension. My muscle tension will be quickly reduced after using a percussion massage gun.
Energy lamp	Using an energy lamp will boost my energy levels while inside. While inside, my energy levels will be quickly boosted after using an energy lamp.
Deep sleep pillow spray	Using a deep sleep pillow spray will help to improve my sleep quality. My sleep quality will be quickly improved after using a deep sleep pillow spray.
Energy drink	Drinking an energy drink will help me to stay awake. I will be awake quickly after drinking an energy drink.
Sunscreen	Using sunscreen will help to protect my skin against sunburn. My skin will be quickly protected against sunburn after using sunscreen.
Plant-based oil extract	Using a plant-based oil extract will help me to relax. I will be quickly relaxed after using a plant-based oil extract.
Bronzing cream	Using a bronzing cream will help me to get a suntan. I will quickly get a suntan after using a bronzing cream.
Granola bar	Eating a granola bar will help to satisfy my hunger. My hunger will be quickly satisfied after eating a granola bar.
E-cigarette	Having an e-cigarette will damage my health. My health will be quickly damaged after having an e-cigarette.
Aromatherapy diffuser	Using an aromatherapy diffuser will help to enhance my mood. My mood will be quickly enhanced after using an aromatherapy diffuser.
Elderberry	Consuming elderberry will help to improve my immune system. My immune system will be quickly improved after consuming elderberry.
Sports drink	Drinking a sports drink will help to boost my energy. My energy will be boosted quickly after drinking a sports drink.
Online open courses (e.g., MOOC)	Taking online open courses (e.g., MOOC) will help me to learn something new. I will quickly learn something new after taking online open courses (e.g., MOOC).
Language-learning app (e.g., Duolingo)	Using a language-learning app (e.g., Duolingo) will help my language acquisition. My language acquisition will be quickly helped after using a language-learning app (e.g., Duolingo).
Vocabulary-learning app	Using a vocabulary-learning app will help my vocabulary acquisition. My vocabulary acquisition will be quickly helped after using a vocabulary-learning app.
Self-help book	Reading a self-help book will help my general improvement. My general improvement will be quickly helped after reading a self-help book.
Tempurpedic mattress	Using a tempurpedic mattress will help to reduce my back pain. My back pain will be quickly reduced after using a tempurpedic mattress.
Steroids	Using steroids will help to improve my athletic performance. My athletic performance will be quickly improved after using steroids.
Cooking lessons	Taking cooking lessons will help to enhance my cooking skills. My cooking skills will be quickly enhanced after taking cooking lessons.

[a]Measures reported here are the items in the "self" condition. The judgment-target is "other people" in the "other" condition. Participants responded to each item from 1 (strongly disagree) to 7 (strongly agree).

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