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The Mechanisms of Social Norms' Influence on Consumer Decision Making

A Meta-Analysis

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Abstract: In the past decades, marketing practitioners have embraced social norms as a powerful instrument of influencing consumers' behavior. An important distinction has been made between descriptive norms (what most others do) and injunctive norms (what others approve of), and this meta-analysis across 297 studies examines the effects of these types of social norms on consumer decision-making processes. We argue that descriptive norms directly influence behavior, and consequently that their effect on behavior should be stronger than that of injunctive norms. Injunctive norms, by contrast, should be more strongly related to intentions than descriptive norms. Results of the meta-analysis support these predictions, and furthermore provide new insights into the moderating effects of aspects of the norm (specificity of the norm, norm source) and of the target person (gender, age).

Keywords: social norm, injunctive norm, descriptive norm, meta-analysis, decision making

Consumers often take the expectations and behavior of others into account when they decide what is appropriate to do (Cialdini, Reno, & Kallgren, 1990). These expectations and behavior of others establish social norms, and influence a wide array of decisions, including whether to engage in "grasscycling" and composting (White & Simpson, 2013), whether to buy a hybrid car (Ozaki & Sevastyanova, 2011), and how many cookies to eat (Pliner & Mann, 2004). Policy makers and marketers thus benefit from a good understanding of the effectiveness of social norms in influencing consumer behavior (White & Simpson, 2013).

Despite a large body of research on social norms, empirical findings about their effect on behavioral intentions and behavior are far from consistent. For example, Sheeran, Abraham, and Orbell (1999), in their meta-analysis of the willingness to use condoms (121 studies out of which 21 include social norms) find that subjective norms are weak predictors of intentions ($r = .26$), whereas Rivis and Sheeran (2003) in their meta-analysis of the theory of planned behavior (21 studies) find a more substantial correlation ($r = .44$). The current meta-analysis takes a broader perspective across consumer behavior and methodological approaches, to investigate the influence of social norms and identify moderators of social norm effects. Based on a vast dataset (297 studies), it provides insights into the quantified effects of social norms on behavioral intentions and behavior, as well as potential moderators of these effects, for both descriptive and injunctive norms.

Descriptive and injunctive social norms are distinct types of norms (Cialdini et al., 1990), with descriptive norms related to what other people do themselves and injunctive norms to what other people think one should do. Both types of norms can influence behavior, whereas the effects of descriptive norms are presumed to occur through a "rather nonconscious, peripheral route of information processing" (Göckeritz et al., 2010, p. 514), injunctive norms are assumed to have a more conscious effect. In the current meta-analysis, we will examine the effectiveness of both types of norms, and specifically whether descriptive norms, due to their heuristic processing, have a stronger influence on behavior than injunctive norms. Additionally, we will investigate moderating effects of aspects of the norm (how specific is the norm, who is the source of the norm) and the target person (gender, age).

In terms of contribution, the current meta-analysis extends prior research in several directions. First, it extends

beyond previous meta-analyses that only incorporated studies using a specific theoretical framework, such as the theory of planned behavior (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Sheppard, Hartwick, & Warshaw, 1988), by including studies using various theoretical approaches in the dataset. It also extends beyond previous meta-analyses focusing on a specific field of interest, such as sustainable behavior (Poškus, 2016). Second, we focus on moderators for the effect of social norms which, with a single exception for the study of Manning (2009), has not received substantive attention in previous research. Compared to Manning (2009) we extend the systematic investigation of conceptual moderators beyond those only relating to the type of behavior involved, to include aspects of the norms themselves and of the target of the norm. Finally, we make use of state-of-the-art meta-analysis techniques using meta-analytic structural equation modeling (MASEM) (Cheung, 2014a). Rather than pooling separate effect sizes representing bivariate relations, as most meta-analysis techniques do, MASEM facilitates the meta-analysis of complete models by combining techniques of meta-analysis and structural equation modeling. In doing so, MASEM takes the dependencies between the effect sizes into account, which results in more precise parameter estimates compared to performing several univariate meta-analyses (Cheung & Chan, 2005). Moreover, this enables the separate evaluation of direct, indirect, and total effects, showing how much of the effect of social norms on behavior is mediated by, in our case, behavioral intentions. Another advantage of MASEM over bivariate analyses is that MASEM allows the evaluation of the unique contributions of social norms in predicting behavior.

Social Norms

Social norms are "rules and standards that are understood by members of a group, and that guide and/or constrain social behavior without the force of laws" (Cialdini & Trost, 1998, p. 152). These rules and standards include the expectations of valued others and standards that develop from observations of others' behavior. Social norms are thus informal, socially shared, and relatively stable guides of behavior (Melnyk, van Herpen, Fischer, & van Trijp, 2011). Their informal, nonobligatory, character implies the presence of social reinforcements, such as approval or disapproval, and distinguishes social norms from laws. Additionally, social norms are shared within a group, which differentiates them from personal norms based on a consumer's own internalized values, and ensures that they are generally stable over time (Jones, 2006).

Several prominent theories, such as the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory

of planned behavior (Ajzen, 1991), include social norms (termed "subjective norms") next to attitudes and perceived behavioral control as predictors of behavioral intention. Initially, social norms often appeared as the weakest predictor in such models (Armitage & Connor, 2001). In recent decades, however, social norms have resurged as an important research topic, primarily due to an adjustment in the conceptualization of social norms themselves (Jacobson, Mortensen, & Cialdini, 2011; Staunton, Louis, Smith, Terry, & McDonald, 2014). Specifically, the focus theory of normative conduct (Cialdini et al., 1990) emphasized the need to differentiate between descriptive norms (what most other do) and injunctive norms (what others approve of). In the theory of planned behavior and related theories, the subjective norm concept only incorporates injunctive elements, and "reflects the expectations and wants of significant others about engaging in a specific behavior" (Staunton et al., 2014, p. 319). Subsequent studies have added descriptive norms to these models. Although there are exceptions, that is, studies in which descriptive norms do not show significant effects over and above other constructs (e.g., Poškus, 2018), insights from a meta-analysis show that, in general, descriptive norms increase the predictive power of the theory of planned behavior (Rivis & Sheeran, 2003). Descriptive norms have been shown to be an effective instrument for changing people's behavior (Goldstein, Cialdini, & Griskevicius, 2008).

Several prior studies have indicated that another improvement can be made by including direct effects of social norms on behavior (e.g., Christian & Armitage, 2002; Okun, Karoly, & Lutz, 2002), and this is confirmed in the meta-analysis of Manning (2009). Our examination will thus include both indirect effects of injunctive and descriptive norms on behavior, via behavioral intentions, and direct effects. Attitudes and perceived behavioral control will be taken up as well, to control for their effects.

Injunctive and Descriptive Norms

Previous research has emphasized the importance of distinguishing between injunctive and descriptive norms as a key feature to understanding the influence of social norms (Jacobson et al., 2011; Lapinski & Rimal, 2005). Injunctive norms prescribe behavior, and refer to what people should do in a given situation. A request to follow a dress code is an example of an injunctive social norm. Descriptive norms describe the typical behavior of others, which provides "social proof" of what is likely to be effective behavior and sets behavioral standards from which people may not want to deviate (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). For example, information about the number of others who refrain from smoking constitutes a descriptive norm.

Injunctive and descriptive norms are inherently different, and evidence is mounting that these two types of norms operate through different intervening psychological processes (Göckeritz et al., 2010; Jacobson et al., 2011; Melnyk et al., 2011; Melnyk, van Herpen, Fischer, & van Trijp, 2013; White & Simpson, 2013). This is especially relevant because descriptive and injunctive norms affect behavioral intentions and behavior through two distinct processes that operate "independent of each other," as evidenced from Rimal and Real's (2005, p. 410) study. Specifically, descriptive norms as a source of social proof can influence behavior directly without (much) conscious processing (Göckeritz et al., 2010). Several scholars explain this tendency of people to follow others by an evolutionary approach. In particular, for a social animal being closer to its herd increases survival (Alcock 2005; Griskevicius et al., 2009). This tendency of people to instinctively copy and mimic the behavior of others has evolutionary benefits and is an adaptive strategy for learning (Griskevicius, Cantú, & van Vugt, 2012). Thus, often, consumers follow the behavior of others automatically and unwittingly (Aarts & Dijksterhuis, 2003; Cialdini & Goldstein, 2004; Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008). This is in line with the suggestion that descriptive norms have a significant direct effect on behavior and that the relation between descriptive norms and behavior is stronger than the relation between injunctive norms and behavior (Manning, 2009). The heuristic processing of descriptive norms is corroborated by recent evidence that the effect of descriptive norms increases under conditions of depletion (Jacobson et al., 2011; Kredentser, Fabrigar, Smith, & Fulton, 2012). This implies that we expect a strong direct influence of descriptive norms on behavior, whereas the indirect effect of descriptive norms through behavioral intentions should be weak.

Injunctive norms, on the other hand, have been suggested to influence behavior more indirectly, through motivation to comply with social sanctions, triggering higher levels of cognitive elaboration compared to descriptive norms (Manning, 2009). Injunctive norms generally lead to more conflict over decisions to conform or nonconform, with depletion decreasing conformity to these norms (Jacobson et al., 2011). In their paper, Jacobson and colleagues (2011) find that injunctive norms evoke feelings of social obligation, as well as thoughts and experiences of competing goals and decision-making conflict. This implies that injunctive norms refer to more elaborate decision processes, making a direct effect on behavior less likely.

We thus expect to see a stronger indirect effect of injunctive norms on behavior through behavioral intentions, and only a weak direct effect on behavior. In comparison with descriptive norms, we expect – in line with prior results, which found the relation between descriptive norms and behavior stronger than the relation between injunctive
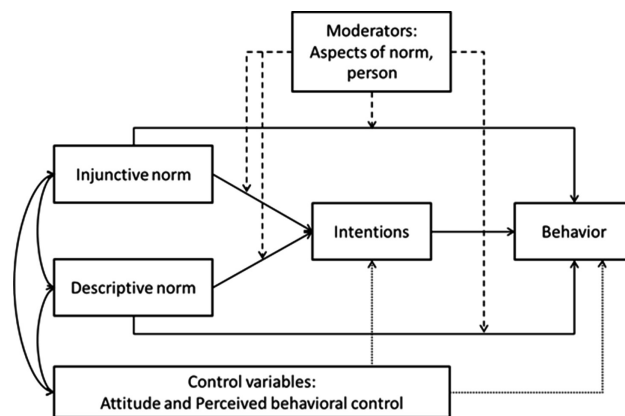

Figure 1. Conceptual model. Solid lines indicate the theory of planned behavior (TPB) effects. Dashed lines indicate the moderating effects. Dotted lines indicate control variables.

norms and behavior (Manning, 2009; Thøgersen, 2008) – that direct effects of injunctive norms on behavior are weaker than those of descriptive norms.

In addition to these effects of injunctive and descriptive norms on behavior, we expect that their association with attitudes is not of equal strength. Prior research has indeed shown that descriptive norms can be forgotten over time or with situational changes (Reno, Cialdini, & Kallgren, 1993), implying that descriptive norms may not be readily internalized. Thus, the association between descriptive norms and attitudes may be relatively less strong. In contrast, injunctive norms, because these tend to focus consumers on what others approve or disapprove of in their social group (Reno et al., 1993), may activate attitudes and feelings associated with being a group member (Terry, Hogg, & McKimmie, 2000). We thus expect that injunctive norms will have a stronger association with attitudes than descriptive norms.

Figure 1 presents the model for social norm influence that will be tested. In addition to investigating this model, the current study aims to examine two potential moderators that can influence the effects of social norms: moderators involving aspects of the norm and the target person who is influenced by the norm.

Norm Aspects: Specificity and Source

Specificity

Social norms, by their very nature as rules and standards that guide and constrain social behavior, need to be clearly defined in order to be effective. Concretely specified norms define what is appropriate and inappropriate for specific individuals in specific situations, whereas abstract norms allow for a wider range of behavioral options, and may allow consumers to violate a norm without fear of punishment (Shaffer, 1983). Thus, consumers are generally more

strongly persuaded by detailed and specific descriptions of expected behavior than by more abstract descriptions, possibly because they can more easily process the information and imagine themselves performing the behavior (Gollwitzer & Brandstatter, 1997; O'Keefe, 1997). We would thus expect that more concretely specified social norms have a stronger influence on behavioral intentions and behavior than less concretely specified norms. This should hold for specifications of the expected behavior and the situation in which this behavior is appropriate (Feldman, 1984), as well as for potential sanctions when failing to comply, or of potential rewards when complying with the social norm. The specification of such concrete consequences provides consumers with arguments to follow the norm (Jones, 2006). Thus, concrete specifications of (a) expected behavior, (b) sanctions, and (c) rewards are expected to increase the influence of social norms.

Source of the Norm

Norms are, first and foremost, social phenomena. Who communicates a norm (the source) can determine the extent of its influence: the norms of more relevant groups should be more influential (Terry, Hogg, & White, 2000). More relevant groups can be psychologically close to others who usually share similar values, opinions, and attitudes (Stangor, 2004). Consumers should be more likely to follow social norms that come from people that they are close to, such as their mother or father, partner, or intimate friends, than social norms that come from more distant or abstract sources (e.g., "most people"). The thought of specific persons that consumers are close to may activate information about the relationship with them and about expected relational outcomes (e.g., disappointment, praise), and this can make it more difficult to disobey a norm. Moreover, building the evolutionary perspective, instinctively copying and mimicking of behavior is more likely when consumers are exposed to the behavior directly and often (Griskevicius et al., 2012). Hence, influencing attempts are generally more successful when these originate from a source that consumers perceive as similar to themselves (O'Keefe, 2002). In contrast, more distant or abstract groups of other people may have less control and influence. We thus predict that norms from persons that are psychologically close to the consumer (e.g., partner, friends) will have a stronger influence on intentions and behavior, than norms from sources that are more distant (e.g., authority figures) and norms from abstract sources (e.g., people in general).

The Target: Gender and Age

Most studies in the dataset allow for the coding of age and gender, and thus enable the exploration of their potential effects. For both, it is a-priori not obvious what their effect would be. Only few studies have examined gender differences related to the influence of social norms. In the context of sexual behavior, Fisher (2009) concludes that "it appears premature to draw definite conclusions" with respect to the responsiveness to social norms for males versus females (p. 571). With respect to age, older people may generally be less susceptible to social influence as they have gained more independence with age, but they also may be more sensitive to social influence when they experience uncertainty (Pasupathi, 1999).

Method

Identification of the Sample

To identify relevant publications about social norms in the time period up to November 2013, references were retrieved from the electronic databases Web of Science, Psych Info, Online Contents National, and Google Scholar, and by checking other meta-analyses that included a (general) effect of social norms. We also checked the websites of the *National Social Norms Resource Center*, the *Social Science Research Network*, and *The Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention* for relevant studies, and posted a request for working papers and unpublished manuscripts on the electronic list server ELMAR. Finally, all cross-references from relevant papers were examined for inclusion. Figure 2 describes the PRISMA flow diagram of the literature retrieval and inclusion process (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

The current meta-analysis focuses on behaviors that are in the domain of consumer behavior in the context of material objects, services, or consumption, while excluding interpersonal relations and judgments (e.g., norms on how to behave toward other people), because these activate different neurological processes than judgments about material objects or services (Langner, Schmidt, & Fischer, 2015; Yoon, Gutchess, Feinberg, & Polk, 2006). The database included studies that (1) contain the necessary information to obtain the bivariate statistical relationship between social norm (either injunctive, descriptive, or both) and attitude, behavioral intention, and/or behavior, (2) do not lump descriptive and injunctive norms together as one construct, and (3) measure effects at the individual level. All behaviors that involve the purchase, consumption, use, or disposal of products and services, including for instance the decision to join a gym club, decision to start smoking, donations, dieting, class enrolment, use of contraceptives, and littering, are included. Excluded studies are those where the autonomy of decision making is impaired, in particular,
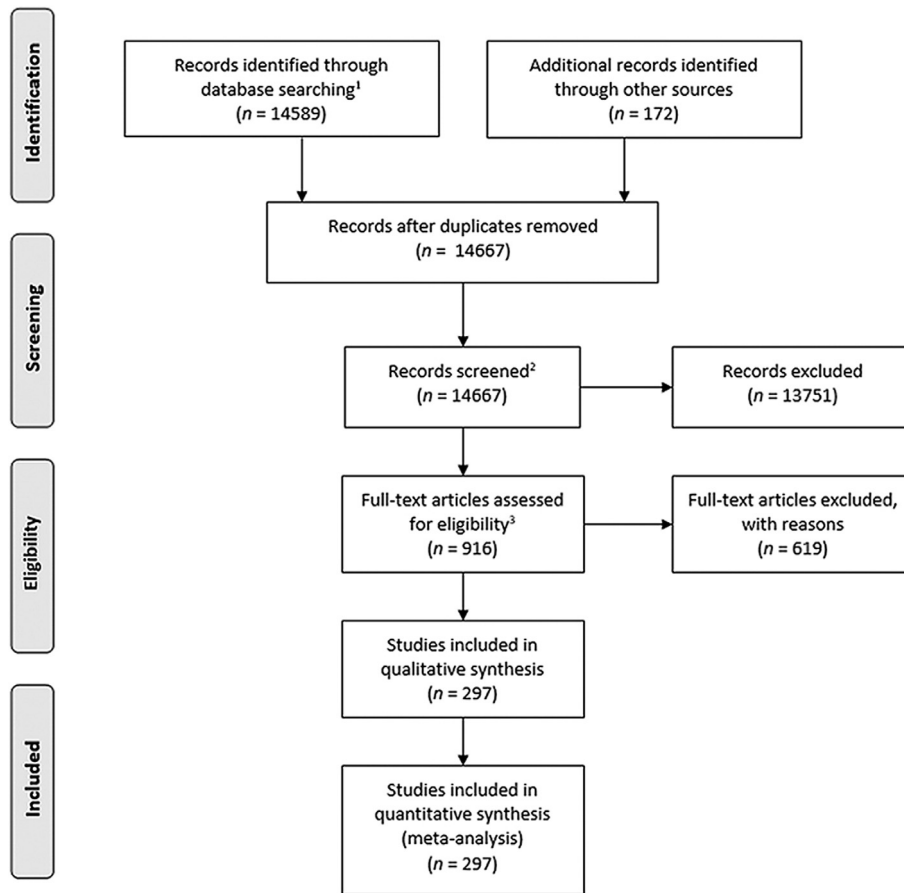
Figure 2. PRISMA flow diagram of the literature retrieval and inclusion process. *Note.* [1]Keyword string: (((subjective OR injunctive OR descriptive) AND (norm OR norms OR pressure)) OR ("social influence" OR "social norm$" OR "group pressure" OR "peer pressure" OR "group influence" OR "behavioral belief$" OR "normative belief$" OR ("social support" AND ("physical activity" OR exercise$)))) NOT (depression OR suicide OR death OR violence OR aggression OR schizophren* OR "surgical" OR "surgery" OR injury OR prejud* OR stigma* OR nursing OR nurse $ OR crimin* OR religion OR pain OR game$ OR lie OR cheat$ OR patient$).
[2]Included are behaviors that involve the purchase, consumption, use, or disposal of products and serviced. Excluded are studies regarding interpersonal relations, studies in which autonomy of decision making is impaired and studies of illegal behaviors.
[3]Studies should contain empirical data that allows for obtaining the bivariate statistical relationship between descriptive and/or injunctive norms on the one hand and attitude, behavioral intention and/or behavior on the other hand.

where participants are sick and may depend on others in their decisions regarding, for example, medical treatment (Meyers, 2004), where participants make decisions as part of their job and may be influenced by company policies, and where participants are addicted because this makes their decision-making ability questionable (Leshner, 1997). Finally, studies of illegal behaviors were excluded, because legal sanctions may overshadow or change the influence of social norms.

The final sample consisted of 220 papers, comprising 297 studies. The total sum of all samples equaled 110,303 individual respondents with study sample size ranging from 25 to 3,859 (M = 371). The database and research materials are available as supplemental appendices (Melnyk, van Herpen, Jak, & Trijp, 2018).

Computation of Effect Sizes

The required effect sizes for meta-analytic structural equation modeling are correlation coefficients. Most papers reported the Pearson correlation coefficients. For studies that did not report correlations, we converted t-ratios, F-ratios, and χ^2-statistics to correlation coefficients following the formulas provided by Lipsey and Wilson (2000).

We excluded studies that only reported regression results, because it is not appropriate to mix zero-order and regression coefficients, or partial correlations (which could be calculated from the regression coefficients) in one meta-analysis (Aloe, 2014). In papers with multiple studies, each study was included separately.

Coding of the Studies

Interrater Agreement
The majority of the sample (82% of the data entries) was coded by two independent judges. Interrater agreement was extremely good (the percentage of agreement for each of the constructs varied between 95% and 100%), and disagreements were resolved through discussion. Given this high interrater agreement, the remaining 18% of the data entries were coded by the main initial coder only.

Type of Norm
Type of norm was coded as injunctive when the norm contained a suggestion or expectation of what ought to be done (e.g., "you should…" or "my friends want me to…", often referred to as normative beliefs) and as descriptive when the norm reflected what others do, or what they would

do (e.g., "I think my friends drink more than 5 bottles of beer per week", often referred to as behavioral beliefs).

Norm Aspects: Specificity

The behavior was coded as specified when the act, situation, and/or time of its performance was specified (e.g., "eat 2 pieces of fruit per day", "exercise at least 3 times a week"), and otherwise as unspecified (e.g., "eat healthy food", "take regular physical activity"). Sanctions were coded as specified when negative consequences of not following the norm were provided (e.g., "my friends think I should use a condom during sexual intercourse, because it prevents disease acquisition"), and otherwise coded as unspecified. Similarly, rewards were coded as specified when positive consequences of following the norm (e.g., "my mother thinks I should eat fruit every day, because it is healthy for me") were provided, and otherwise coded as unspecified.

Norm Aspects: Source

The source of social norms was coded as (a) close when only close sources were mentioned (e.g., family members, partner, close friends), (b) authority figure when more distant sources with authority were mentioned (e.g., doctor, priest, official representatives), or (c) abstract when sources were general others or not mentioned (e.g., others, people from my environment, people important to me).

Target: Gender and Age

Gender was coded as the percentage of males in the sample and categorized into three groups (0–20% males, labeled as "mostly female"; 20%–80% male, labeled as "mixed", and 80%–100% males, labeled as "mostly male"). Age was coded as the mean age of the participants and also categorized into three groups (up to 21 years, 21–50 years, and over 50 years).

Table 1 provides further details on the independent variables. It shows that by far most of the studies included injunctive norms (95% of our sample), whereas fewer studies included descriptive norms (26% of our sample) due to its later introduction in the literature. Still, the sample of studies including descriptive norms (78 studies) is large compared to other meta-analyses; as a comparison, the meta-analysis of Manning (2009) included 21 studies with descriptive norms.

Statistical Analysis

To preserve as much information as possible, we included separate effect sizes for subsamples (e.g., different age or gender groups) when this information was available. A small number of studies reported separate correlations for different items of the same construct (e.g., multiple items for injunctive norm measures) from the same sample,

Table 1. Description of the database

Variable	Number of studies	% of studies
Norm type[1]		
Descriptive	78	26.3
Injunctive	282	94.9
Norm aspects		
Specificity[1]		
Behavior specified	135	45.5
Sanctions specified	29	9.8
Rewards specified	46	15.5
Norm source		
Abstract	81	27.3
Authority figure	22	7.4
Close	194	65.3
Target		
Gender[2]		
Mostly female	42	14.1
Mixed	189	63.6
Mostly male	22	7.4
Age[2]		
Up to 21 years	106	35.7
21–50 years	98	33.0
Over 50 years	13	4.4

Note. [1]Percentages do not add up to 100% because the categories are not mutually exclusive (i.e., studies could contain both descriptive and injunctive norms, or specify behavior in multiple ways). [2]Percentages do not add up to 100% due to missing information.

which are not independent measurements. As three-level MASEM is not available yet, these were averaged across (i.e., we averaged across z-transformed correlation coefficients and included the back-transformed correlation coefficients in the analysis, cf. Silver & Dunlap, 1987).

We used the Two-stage approach (Cheung & Chan, 2005) to fit the hypothesized model to the data. In the first stage, correlation matrices are combined to form a pooled correlation matrix. In the second stage, a structural model is fitted to this pooled correlation matrix. In Stage 1, the random effects approach as implemented in the R-package metaSEM (version 1.1.1, Cheung, 2014b in R-version 3.4.4, R Core Team, 2018) was used to pool the correlation coefficients. Random effects models account for heterogeneity across studies. The degree of heterogeneity is evaluated using the I^2 of the correlation coefficients (Higgins & Thompson, 2002). The I^2 can be interpreted as the percentage of total variance that is due to between-study variability as opposed to sampling variability. In Stage 2, the hypothesized structural model (see Figure 1) is fitted on the pooled correlation matrix from Stage 1.

Initially, we evaluated the model for the total sample of studies. Next, subgroup analysis on different groups of studies based on the study-level moderators examined the effects of these moderators. Whether the direct effects in

the model differed significantly across subgroups of studies was tested by constraining all effects to be equal across subgroups, and using likelihood ratio tests with the unconstrained model. Subsequently, for those cases where the constrained and unconstrained overall models differed significantly, we tested the equality of the effects of injunctive norms and descriptive norms separately. Throughout, the significance of parameter estimates was evaluated with 95% likelihood-based confidence intervals (Neale & Miller, 1997). If the 95% confidence interval around a parameter estimate did not include zero, the parameter estimate was considered significant at a 5% level.

Publication bias is a serious concern in all meta-analyses, and refers to the problem that studies that find large and significant effects may be overrepresented in the academic literature (Rothstein, Sutton, & Borenstein, 2006). Publication bias may be detected by observing a dependency between effect size and sample size across studies. When publication bias is present, only the small sample studies that found favorable (large) effects will be published (Egger, Smith, Schneider, & Minder, 1997). This dependency can be tested by regressing the effect on the standard error. Publication bias will result in a significant positive relation between the standard error and effect size. In our meta-analysis, the relation between effect size and standard error was *negative* for all correlation coefficients, as can be seen in the supplemental Appendix B ("Plots of effect size and standard error"), which is not expected in the presence of serious publication bias (Melnyk et al., 2018).

Results

Stage 1 Analyses (Pooling Correlation Matrices)

Table 2 presents the pooled correlation matrix from Stage 1 analysis. All correlations were positive, as expected. The correlations between norms and attitudes were substantial ($r = .37$ for injunctive norms and $r = .31$ for descriptive norms). Importantly, and in line with our expectations, 95% confidence intervals indicated that the correlation between injunctive norms and attitudes (CI between .34 and .39) was higher than the correlation between descriptive norms and attitudes (CI between .27 and .35), and constraining these two correlations to be equal led to a significantly worse model fit ($\chi^2(1) = 6.21$, $p < .05$). Thus, as anticipated, injunctive norms generally were related more strongly to attitudes than descriptive norms.

Furthermore, results showed positive correlations between social norms and behavior ($r = .22$ for injunctive norms and $r = .35$ for descriptive norms). All correlation

coefficients had significant study-level variance, with I^2 ranging between .85 and .97 (see Table 2). This implies that a substantial percentage of the total variance was due to between-study variability, and that it is thus appropriate to consider moderators.

Stage 2 Analyses (Fitting the Full Model)

Table 3 presents results for the full model, which was able to explain 42% of the variance in behavioral intention, and 30% of the variance in behavior. As expected, descriptive norms had a substantial and positive total effect on behavior ($\beta = .25$). The total effect of descriptive norms was even larger than that of attitudes ($\beta = .19$). Moreover, whereas the effect of attitudes was completely mediated by behavioral intentions, the effect of descriptive norms was mostly direct ($\beta = .17$) and only partly mediated by behavioral intentions ($\beta = .08$). Constraining this indirect effect to be equal to the direct effect led to a significantly worse model fit ($\chi^2(1) = 4.74$, $p < .05$). This supports recent insights that descriptive norms mainly act as heuristics, directly affecting behavior without much deliberation (Göckeritz et al., 2010; Jacobson et al., 2011).

MASEM results showed that the indirect effect of injunctive norms on behavior was statistically significant, but very small ($\beta = .05$), while the direct effect was not significantly different from zero. This finding illustrates that although injunctive norms were positively correlated with behavior ($r = .22$), this does not necessarily imply that the effect of injunctive norms on behavior is substantial once the effects of other variables have been taken into account (cf. Nigbur, Lyons, & Uzzell, 2010; Thøgersen, 2008).

Moderators

For each of the moderator variables, the data were split into subgroups based on the values of the moderator. Studies with a missing value on the moderator were not included in the respective analysis of this moderator. Table 4 shows the results of testing the equality of direct effects across subgroups of studies. First, we set all direct effects equal across subgroups, leading to a significant increase in chi-square if not all effects are in fact equal (see column with "Constrained model"). Next, the equality constraints were released on the direct effects from injunctive norms (see column "Model Free IN") and on the direct effects of descriptive norms (see column "Model Free DN"). If releasing the constraints led to a significant decrease in chi-square compared with the constrained model, the direct effects are considered to be different across subgroups. For the significant moderator variables, Table 5 provides the direct, indirect, and total effects with their confidence

Table 2. Pooled correlations (r), 95% confidence intervals (CI), proportion of study-level variance (I^2), and number of studies that included the respective correlation coefficient (k)

	IN	DN	A	PBC	I
Injunctive norm (IN)	–				
Descriptive norm (DN)					
r	.38	–			
[CI]	[.33; .43]				
I^2	.93				
k	(55)				
Attitude (A)					
r	.37	.31	–		
[CI]	[.34; .39]	[.27; .35]			
I^2	.91	.85			
k	(166)	(40)			
Perceived behavioral control (PBC)					
r	.25	.23	.35	–	
[CI]	[.22; .28]	[.16; .30]	[.32; .38]		
I^2	.92	.94	.95		
k	(146)	(35)	(143)		
Intention (I)					
r	.39	.42	.54	.43	–
[CI]	[.37; .42]	[.37; .46]	[.52; .56]	[.39; .46]	
I^2	.92	.89	.94	.97	
k	(179)	(45)	(165)	(165)	
Behavior (B)					
r	.22	.35	.34	.31	.51
[CI]	[.20; .25]	[.32; .39]	[.31; .37]	[.27; .36]	[.47; .55]
I^2	.86	.90	.88	.95	.95
k	(128)	(46)	(92)	(89)	(100)

Table 3. Indirect, direct, and total effects on behavioral intention and behavior

	Direct effect on intention	Indirect effect on behavior	Direct effect on behavior	Total effect on behavior
Injunctive norms	.13 [.09; .17]	.05 [.03; .07]	−.04 [− .08; .00]	.01 [− .03; .05]
Descriptive norms	.21 [.15; .26]	.08 [.06; .11]	.17 [.10; .23]	.25 [.19; .30]
Attitude	.35 [.31; .39]	.13 [.11; .16]	.06 [.00; .11]	.19 [.14; .24]
Perceived behavioral control	.22 [.18; .27]	.08 [.06; .11]	.10 [.04; .16]	.18 [.13; .25]
Intention			.38 [.31; .45]	.38 [.31; .45]

Note. 95% confidence intervals provided in square brackets.

intervals in the different subgroups. We will now discuss each of these in turn.

Norm Aspects: Specificity

With respect to specificity, there is a significant moderating effect of the specification of sanctions, but no significant moderating effect of the specification of rewards or behavior. In other words, whether rewards are specified in social norms did not affect their influence, whereas sanctions mattered. As expected, specifying sanctions increased the

direct effects of social norms on behavior, both for injunctive and descriptive norms (see Table 5 for details).

Norm Aspects: Source

We expected that norms from close sources would have a stronger influence than norms from authority figures and from abstract sources. This is indeed what results showed for the direct and total effects of social norms on behavior, but not for the indirect effects through behavioral intentions. Norms from close others had a less negative (in the

Table 4. χ^2, degrees of freedom (*df*), and *p*-values of models with all effects equal versus models with the effects of norms free across groups

Moderator	Constrained model			Model Free IN			Model Free DN		
	χ^2	*df*	*p*	$\Delta\chi^2$	Δdf	*p*	$\Delta\chi^2$	Δdf	*p*
Norm aspects									
Behavior specified	14.14	9	.12						
Sanctions specified	47.77	9	< .01	26.79	2	< .01	32.30	2	< .01
Rewards specified	10.30	9	.33						
Source	46.55	18	< .01	21.50	4	< .01	31.06	4	< .01
Target									
Gender (1 vs. 2 + 3)	2.37	9	.98						
Age	161.20	18	< .01	72.73	4	< .01	118.18	4	< .01

Note. DN = descriptive norm; IN = injunctive norm. We also tested the effects of the moderators by comparing the fit of the unconstrained model with the fit of models where the effects of, respectively, injunctive or descriptive norms were constrained to be equal across subgroups. With this step-up procedure we found significant moderation only for age. The cause of the difference between the top-down and step-up procedures is probably the difference in statistical power and Type 1 error of these tests. To guard against Type 1 errors we employed conservative alpha levels of .01, and only tested differences on IN and DN if the chi-square of the overall constrained model was significant.

Table 5. Indirect, direct, and total effects of injunctive and descriptive norms on behavior in the separate groups for significant moderators

Group	Injunctive norm			Descriptive norm		
	Indirect effect	Direct effect	Total effect	Indirect effect	Direct effect	Total effect
Norm aspects						
Sanctions						
Specified	.09[a]	.14[a]	.23[a]	.12[a]	.51[a]	.63[a]
Not specified	.05[a]	−.06[b]	−.01[b]	.08[a]	.17[b]	.24[b]
Source						
Abstract	.04[a]	−.13[a]	−.09[a]	.07[a]	.00[a]	.07[a]
Authority	.04[a]	−.01[ab]	.03[ab]	.04[a]	.12[ab]	.16[ab]
Close	.06[a]	.00[b]	.06[b]	.09[a]	.18[b]	.26[b]
Age						
Up to 21	.05[a]	.03[a]	.08[a]	.11[a]	.17[a]	.28[a]
21–50	.06[a]	.00[ab]	.06[a]	.12[a]	.06[ab]	.18[a]
Over 50	.01[b]	−.08[b]	−.07[b]	.05[b]	−.10[b]	−.04[b]

Note. Coefficients with different subscripts across groups within a moderator and within a norm are significantly different from each other based on non-overlapping confidence intervals. Coefficients in italics are not significantly different from zero.

case of injunctive norms) or a more positive (in the case of descriptive norms) effect on behavior than norms from abstract sources. The effect of norms from authority figures was in-between and was not significantly different from either.

Target: Gender and Age

There was no a-priori expectation for the moderating effect of gender, and although the overall results indicate significant differences between gender groups (see Table 4), the more detailed investigation in Table 5 revealed overlapping confidence intervals in most situations and no systematic effects of gender.

With respect to age, both indirect and direct effects of social norms were less positive (or even negative) for people in the higher age group (over 50), especially when com-

pared to people in the youngest age group (up to 21). The direct effects of both injunctive and descriptive norms on behavior were negative for the older age group, whereas this was not the case for the other two age groups. It thus appeared that people in the older age group were less likely to follow a social norm, whereas especially people in the youngest age group were more prone to conform to a norm.

Given that many of the studies in our sample (46%) contained students/pupils of younger age categories, we did a follow-up test to compare studies with student samples to studies with non-student samples directly. Here, we found no significant differences for the effects of injunctive norms, but the total effect of descriptive norms on behavior was significantly different. This total effect was higher for student samples (β = .29, CI [.23; .35]) than for non-student samples (β = .14, CI [.08; .21]).

Discussion

Overall Effectiveness of Descriptive and Injunctive Norms

This meta-analysis examined the effectiveness of descriptive and injunctive norms, as well as the moderating effects related to aspects of the norm and the target person. In line with our expectations, we have found that descriptive norms have a larger (total) effect on behavior than injunctive norms. Actually, when controlling for the effects of descriptive norms, attitudes, and perceived behavioral control, the indirect effect of injunctive norms on behavior is very small ($\beta = .05$) and the direct effect is insignificant, despite a significant positive bivariate correlation between injunctive norms and behavior ($r = .22$). Using MASEM allows us to estimate effects while controlling for other variables, and the insight that there is no unique contribution of injunctive norms in explaining behavior would not have been revealed with other, more traditional, meta-analysis methods. Our results moreover show that descriptive norms affect behavior primarily directly, whereas the effect of injunctive norms relies on the indirect effect through intentions. Furthermore, injunctive norms have a stronger relation with attitudes than descriptive norms. Overall, the results provide substantial support for the proposition that, controlled for attitudes and perceived behavioral control, descriptive norms have a stronger total effect on behavior than injunctive norms.

This generalizes prior work showing that descriptive norms are more effective in changing behavior (Nolan et al., 2008) and implies that descriptive norms generally activate a requested behavior much more strongly than injunctive norms do. The small effect of injunctive norms on behavior is somewhat surprising, given that injunctive norms (under the name of subjective norms) are an essential part of influential theoretical models, such as the theory of planned behavior. Yet, this is not completely unexpected, as previous studies have shown that descriptive norms are an important addition to these models, especially due to their direct relation with behavior (Rivis & Sheeran, 2003). The finding is also in line with results of the meta-analysis of Manning (2009), where the total effect of injunctive norms is non-significant for various subsamples (e.g., when behavior is socially approved, as is the case is most of our underlying studies).

Moderators

The effects of social norms are qualified by several moderators, which we classify into aspects of the norm and target person. With respect to norm aspects, the effectiveness of norms depends on the specification of sanctions, but not

of rewards and behavior. This suggests that perhaps the behavior itself and rewards from performing the advocated behavior become automatically salient with social norms, and explicitly specifying these rewards and behaviors then has little incremental effect. This is in line with the evolutionary perspective that following social norms is inherently rewarding (Griskevicius et al., 2009, 2012). Explicitly specifying sanctions, in contrast, increases the direct effect of both injunctive and descriptive norms. This finding is in line with the negativity effect that has been shown across a broad range of psychological phenomena (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001): negatively valenced events have a greater impact on people than positively valenced events. People respond to sanctions by changing their behavior, presumably in an effort to avoid the sanction. There is no significant change in the indirect effect of the social norms, implying that the specification of sanctions does not significantly affect people's intentions. Another important finding for norm aspects is that the source of the norm matters. Previous research suggests that the identity with reference group should increase the influence of social norms on people (Lapinski & Rimal, 2005). Consistent with this suggestion and with social identity theory (Tajfel & Turner, 1986), consumers are more likely to perform an advocated behavior when the source of the social norm is close to them rather than when the source is more distant or abstract.

An important individual difference variable that affects the influence of social norms is age. Older people (over 50) are less susceptible to social norms than younger people (up to 21). Direct effects of social norms on behavior are negative for the older age group, implying that these older people are less likely to follow a social norm. Younger people, in contrast, are more likely to conform to social norms. When it comes to gender, no consistent pattern of differences in the effectiveness of social norms between males and females is present. This could also be due to differential mechanisms of those effects. For example, it is possible that whereas male motivation to comply with a social norm is driven primarily by their desire to be part of the group, female motivation is driven by their desire to maintain individual relationships (Melnyk, Van Osselaer, & Bijmolt, 2009).

Implications

The results of this research have important implications for both researches investigating social norms and their effectiveness as well as the practitioners using social norms. With respect to the academic contribution, first, our key finding is that consumers respond differently to injunctive versus descriptive norms. Thus, although recently the distinction between injunctive and descriptive norms has been criticized, because consumers do not make the distinction

themselves, and mix up these two types of norms (Eriksson, Strimling, & Coultas, 2015), the current meta-analysis shows that their effect is distinctly different. Injunctive and descriptive norms are correlated ($r = .38$ across the papers in our meta-analysis), but have different effects on behavioral intentions and behavior. Specifically, injunctive norms lead to effects on behavioral intentions but not always on behavior, whereas descriptive norms generally influence both intentions and behavior. Understanding these differences provides important insights for research on social norms, by highlighting that an investigation of the influence of social norms which examines only intentions or only behavior does not provide a complete picture of the effect of social norms. To truly understand the influence of social norms, both intentions and behavior need to be examined. Moreover, although descriptive norms may be more effective in changing behavior, injunctive norms have a stronger correlation with behavioral intentions. Thus, injunctive norms may be more appropriate for activating and perhaps also changing people's intentions, and for focusing them on the social group they are part of and on the norms that apply therein.

Second, we have uncovered important moderators of the effectiveness of social norms. Specifically, the results of the meta-analyses reveal an intriguing asymmetry in the response to specifications: i.e., the effectiveness of norms depends on the specification of sanctions, but not rewards. This important finding contributes to diverse streams of academic literature, in particular those dealing with instrumental conditioning (Schacter, Gilbert, & Wegner, 2011) from marketing and management to clinical psychology.

Finally, our findings with regard to target person-related moderators, the results of the meta-analyses shed light on both (1) insignificant and (2) significant moderators of effectiveness of social norms. With respect to the first group, our results suggest that older people are less susceptible to social norms than younger people, which can influence the decision on whether to employ social norms in marketing campaigns, depending on target group. With respect to the second group, the findings of our meta-analyses contribute to the stream of research on gender differences (e.g., Barone & Roy, 2010) by revealing that gender does not have a consistent pattern of differences in the context of responses to social norms.

With respect to the managerial implications, the results of this meta-analysis show that descriptive norms are generally more effective than injunctive norms in affecting behavior. Hence, the first implication is that we would advise marketing managers who want to promote a product or service to focus on descriptive norms. This makes descriptive norms an especially convenient and effective instrument in situations when consumers make immediate decisions. For example, the effect of Amazon's "people who bought this book, bought these other books" recommendations can be enhanced by incorporating descriptive norms (e.g., "most people who bought this book, bought these other books"). Similarly, product packaging suggesting descriptive norms (e.g., with the labels "best seller" or using product ratings) is likely to enhance the likelihood that a product is chosen. However, it is important to realize that descriptive norms may also backfire for instance when most people do not (yet) perform the desired behavior (e.g., most people do not consume enough fruit and vegetables according to dietary guidelines) or when the target group consists of older consumers (as the direct effects of social norms on behavior for this target group is negative). In those situations, descriptive social norms should be avoided. Furthermore, the fact that descriptive norms depend on the behavior of others and are internalized to a lower extent implies that the requested behavior may just as easily vanish when some people do not comply. Therefore, marketers should communicate descriptive norms frequently. For example, Glider, Midyett, Mills-Novoa, Johannessen, and Collins (2001) report changes in perceptions and behavior when messages are communicated at least once a week. Moreover, marketers should make sure to implement the campaign over a sufficient duration to affect change. For example, Clapp, Lange, Russell, Shillington, and Voas (2003) report a failure of a six-week campaign to reduce alcohol use, whereas Glider et al. (2001) report successful results of a similar campaign, which was run for 3 years.

Policy makers and marketers who want to employ injunctive norms should keep in mind that the specification of sanctions or referring to or directly targeting people that are close to the consumers whom these campaigns want to influence can strengthen the effects of injunctive norms. Finally, our finding that young people, compared to older people, are especially influenced by social norms opens the avenue of combining social norms and social media marketing (e.g., Facebook) as a very effective and cost-efficient marketing tool.

Limitations and Future Research

A meta-analysis can only examine the influence of variables that have been frequently reported in prior studies. There are social norm aspects that would be intriguing to examine, but that could not be included in the present meta-analysis, because these were either rarely reported in enough detail or hardly varied in the prior studies that we identified. These constitute possible directions for future research. Group size, that is, the number of others who provide the social norm, is one of these. Do social norms have

a weaker or stronger influence on consumer behavior when these norms are shared between more individuals? The effect of group size is not obvious, because larger groups may entail an increase in pressure from multiple persons (perhaps enhancing the influence of especially descriptive norms), whereas smaller groups may be more cohesive and have a more stringent social control of (especially injunctive) norms. Another potentially interesting aspect to consider is the dominant motive that consumers have when they encounter a social norm. For instance, research has shown that descriptive norms are more effective when consumers are motivated by fear and less effective when consumers are motivated by romantic desire (Griskevicius et al., 2009). These and other aspects remain promising directions for future research.

The current meta-analysis drew upon a large dataset of prior studies and included studies across all stages of consumption behavior including initial purchase decisions (e.g., decisions to start smoking), regular consumption (e.g., amount of fruit in a diet), and post-consumption (e.g., decisions to recycle), focusing on the context of material objects, services, and consumption behaviors. Interpersonal relations and judgments were excluded from the current meta-analysis. Future research may want to examine whether results of the current meta-analysis differ from those obtained in studies concerning interpersonal relations (e.g., negotiations with sales personnel, decisions to join Fvirtual communities; Dholakia, Bagozzi, & Klein Pearo, 2004), and can do so by adding studies to the available database.

With regard to statistical analysis, it is important to stress that although we analyze one-directional effects in the structural model, this does not imply that the effects could not be reversed. Similar to standard regression models, our hypothesized model is saturated, and will fit the data perfectly by definition. Justification of the model can therefore only be based on theory, which is quite strong for the applied model (Ajzen, 1991).

Conclusion

Descriptive norms generally are more effective in influencing behavior than injunctive norms. Descriptive norms affect behavior primarily directly, whereas injunctive norms rely on an indirect effect through intentions and are more closely linked to people's attitudes and intentions. These general effects are moderated by aspects of the norm, and the target person. Specifically, norms coming from close others, with specified sanctions are especially influential, and relatively young people are more likely to conform to social norms than older people.

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