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Perceived Social Norms and Vaccine Hesitancy

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Abstract

Vaccines are an important tool for preventing serious illness and avoiding deaths. Vaccine hesitancy, the delay or refusal of vaccines when available or offered, is one of the top 10 threats to global public health. The acceptance and uptake, delay, or refusal of vaccines has direct health implications for individuals, their close contacts, and indirectly for others in their environment and wider social networks. Vaccination uptake/hesitancy is the product of human decision-making and is influenced by various psychological and social factors, including perceived social norms. Individuals will often consider others' vaccine-related attitudes and/or behaviors to guide their own decision-making. One potential way of reducing vaccine hesitancy is by changing people's (mis)perceptions of these vaccine-related social norms through feedback interventions that highlight the actual vaccination norms (e.g., that most others would take a vaccine if offered). This article takes a social norms perspective toward understanding vaccine hesitancy, discusses how and why perceived social norms may be influential in hesitancy, and outlines ways psychological science can better understand the perceived social norms implicated in vaccine hesitancy.

Keywords

social norms, vaccines, vaccine hesitancy, descriptive norms, injunctive norms

Social norms are commonly defined as unwritten rules or expectations that guide or limit an individual's behavior (Cialdini & Trost, 1998). Various academic disciplines study social norms, each having their own unique definitions of what a "norm" is. Typically, social norms are viewed either as individual-level constructs (i.e., people's beliefs or perceptions of what others are doing/thinking) to broader group or collective constructs (e.g., social behaviors observed in a group; Legros & Cislighi, 2020). From a psychological perspective, social norms are framed as an individual's awareness (a *perception*) of what is expected or what the customary behaviors are in a social group (Chung & Rimal, 2016). *Perceived norms* (i.e., what you think others/most others think or do) can be different from the reported *actual norm* (i.e., what others are really doing/thinking). Given the unwritten nature of social norms, it is the perception of the social norm that is important for understanding the psychological mechanisms underlying how norms influence an individual's decision-making and behavior (Legros & Cislighi, 2020). Therefore, perceived norms are the focus of this article.

Perceived social norms have both external (social) and internal (psychological) properties. Social-norm

expectations or desired behaviors can be communicated through language and interactions with other people in our social groups, including how we witness others behaving (Chung & Rimal, 2016). An individual's perceptions of these social norms then work as internal psychological motivators for behavior as a quick guide or heuristic about what to do (Brewer et al., 2017; Forster et al., 2016). Individuals will often change their own behaviors/attitudes to conform to what they perceive others do and/or think either to understand what to do in a situation (*informational social influence*) or to "fit in" with a group (*normative influence*; McDonald & Crandall, 2015). This behavior change might also be motivated by a need to avoid a potential sanction or punishment from others for not conforming to a norm (Douglas et al., 2024).

Individuals' perceived norms may not always reflect the actual social norm of what others are doing or thinking (e.g., based on actual reported data from a larger

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Table 1. Existing Key Theoretical Frameworks of Vaccine Hesitancy/Confidence

Model/framework	Factors
Two-dimensional vaccine-hesitancy map (Peretti-Watel et al., 2015)	Two dimensions or axes: <i>trust in health authorities and mainstream medicine</i> and <i>risk culture/healthism</i> ^a ; leads to passive conformism (high trust, low healthism), enlightened conformism (high trust, high healthism), passive hesitancy (low trust, low healthism), and rationalized hesitancy (low trust, high healthism)
3C model (MacDonald & the SAGE Working Group on Vaccine Hesitancy, 2015)	<i>Confidence</i> (trust in vaccine effectiveness and health-care authorities), <i>complacency</i> (low perceived risks of vaccine-preventable disease and vaccinations are appraised as not being necessary for prevention), and <i>convenience</i> (the affordability, availability, and accessibility of vaccinations)
4C model (Betsch et al., 2015)	<i>Confidence</i> , <i>complacency</i> , and <i>convenience</i> (as described in the 3C model), and <i>calculation</i> (an extensive information search and weighing up of the pros and cons of vaccination usefulness)
5A taxonomy (Thomson et al., 2016)	<i>Access</i> (to vaccinations), <i>affordability</i> (costs associated with vaccinations in terms of finances and other factors such as time), <i>awareness</i> (knowledge of the need for and availability of vaccinations and their benefits and risks), <i>acceptance</i> (degree to which individuals accept, question, or refuse vaccines), and <i>activation</i> (degree to which individuals are nudged to get vaccinated)
5C scale (Betsch et al., 2018)	<i>Confidence</i> , <i>complacency</i> (as outlined in the 3C model), <i>constraints</i> (structural and psychological barriers limiting intentions to vaccination), <i>calculation</i> (as outlined in the 4C model), and <i>collective responsibility</i> (willingness to protect others through vaccination)

^a“Healthism” broadly relates to an individual’s increased autonomy and focus on maximizing their own health (i.e., a strong focus on their own health), often characterized by high health awareness and information seeking.

social group). Perceived norms can be over- or underestimations of the actual social norms. This is especially true for health-related behaviors for which people often overestimate others’ negative or risky behaviors (e.g., others’ behaviors/attitudes toward smoking tobacco or drinking alcohol) and underestimate positive or protective behaviors (e.g., using sun protection, wearing a seatbelt; Dempsey et al., 2018). This article considers how perceived social norms are associated with vaccine hesitancy, identifies the issues in understanding this relationship, and outlines issues that need to be addressed in future social norms-focused research and intervention approaches to reduce vaccine hesitancy.

What Is Vaccine Hesitancy?

“Vaccine hesitancy” is commonly defined as, for example, a “delay in acceptance or refusal of vaccination despite availability of vaccination services” (MacDonald & the SAGE Working Group on Vaccine Hesitancy, p. 4163) and may be context-specific to the vaccine, place, and time. As a concept, it has unclear origins but was likely first used informally to catch the attention of policymakers to instances of decreasing vaccine uptake (Peretti-Watel et al., 2015); as a term it is now widely used but remains inconsistently defined.

Several theories have attempted to define vaccine hesitancy and explain how people become hesitant (see Table 1). These theories are, however, largely untested

descriptive frameworks of the predictors of vaccine uptake or hesitancy (Betsch et al., 2018) and describe ambiguous or overlapping causes of hesitancy (Thomson et al., 2016). These vaccine-hesitancy theories do not clearly focus on hesitancy as a behavior or an intention despite the World Health Organization’s definition (MacDonald & the SAGE Working Group on Vaccine Hesitancy, 2015). Instead, hesitancy in the theories often describes a mix of broader vaccine attitudes and confidence. The existing theories also do not clearly explain the causes or psychological mechanisms that lead someone to becoming vaccine hesitant (Thomson et al., 2016) or account for the potential role of perceived social norms in hesitancy. Only “complacency” in the 4C/5C approach briefly references vaccines being perceived as being not a common attitude/behavior norm as a cause of hesitancy (Betsch et al., 2015, 2018). A challenge with understanding the perceived relationship between social norms and vaccine hesitancy are these inconsistent and unclear definitions of vaccine hesitancy.

Why Are Perceived Social Norms Important for Vaccine Hesitancy?

Although there are broader structural influences on vaccination uptake (e.g., demographics, health inequalities, access to vaccines; Brewer et al., 2017), the World Health Organization (WHO, 2022) identified a need to understand the role of social norms as a key behavioral

Table 2. Types of Perceived Social Norms and Example Survey Items Measuring Vaccine-Hesitancy-Related Norms in the Research Literature

Norm	Description	Example “vaccine-hesitancy” norm items ^a	Example norms/vaccine-hesitancy studies ^b
Descriptive	Perceptions of how most others behave (descriptive rates of behavior)	“How many of the people from Rome that are taking part in this survey do you think would have decided to get the vaccine if they were invited to do so this week?”	Vriens et al. (2023)
Injunctive	Perceptions of what most others think or approve (e.g., beliefs about vaccine uptake, vaccine conspiracy belief endorsement)	“How much do you think the majority of other UK parents think . . . that vaccine safety data is often fabricated?”	Cookson et al. (2021a)
Moral	Perceived moral standards (associated with shame if violated)	“Receiving X vaccine would not be consistent with the views of most others in [my culture/religion] . . .”	Forster et al. (2016)
Normative misperceptions	Self-other discrepancies or differences between what an individual perceives most others think/do versus the actual norm (used in social-norms-approach feedback interventions)	“You thought X% of parents would/not consent to the vaccine. . . . Actually most/X% of parents would consent to their child receiving vaccine Y.”	Cookson et al. (2021a)
Prescriptive	Perceived/actual expectations about what is desirable in society and how people ought to behave (an instruction or set expectation with potential sanctions for nonconformity)	“You should take the vaccine if offered to protect others in your community . . .”	Yousuf et al. (2021)
Subjective	Whether important others would approve of a behavior	“People I care about probably think I should get vaccinated against [disease name] . . .”	Winter et al. (2022)

^aThese are example survey-item wordings for each type of norm. This not an exhaustive list and may not necessarily be the exact wording used throughout the research literature.

^bThe norms listed in this table have been studied to different degrees in the research literature.

and social driver of vaccine hesitancy. Vaccine hesitancy is an interesting phenomenon from a social norms perspective. Most vaccinations have uptake rates of more than 50% of eligible recipients, with many vaccines approaching the WHO’s 95% coverage target (Edelstein et al., 2020). Therefore, the actual norm is usually for most individuals to accept the vaccine (Vriens et al., 2023). However, the size of these majorities/actual norms can vary. For example, some vaccinations have low uptake in specific countries and regions and among certain social groups (e.g., decreases in whooping cough vaccine uptake by pregnant mothers; UK Health Security Agency, 2024). Sizable groups of individuals may outright refuse vaccinations (Moehring et al., 2023) and/or incorrectly perceive or misperceive (underestimate) actual vaccination norms (Vriens et al., 2023). There are likely new and changing (perceived) vaccine social norms that may be increasing individuals’ personal hesitancy toward vaccinations.

Table 2 summarizes the commonly studied social norms in vaccine-hesitancy research and how perceived norms have been defined differently across studies. Many norms reflect a perceived attitude other people have, capturing what you think others think you are meant to do when deciding to receive vaccinations (e.g., injunctive, subjective, and prescriptive norms). In one instance, moral norms (a perceived standard others agree with) includes possible sanctions or a sense of shame if individuals do not follow or conform to that perceived norm. Other norms focus on perceived vaccination behaviors (e.g., descriptive norms, i.e., what you think others are doing). Perceived norms also differ by who the norm relates to (the referent group), such as important others (subjective norms) or the wider community (moral norms). These different and often unclear definitions make it difficult to identify which perceived norms are the most influential on vaccine uptake or hesitancy.

What Is the Relationship Between Perceived Social Norms and Vaccine Hesitancy?

Numerous studies have investigated the relationship between social norms with vaccine uptake and hesitancy (for a review of the older literature, see Brewer et al., 2017). More recent research has reported that individuals with more positive perceived descriptive vaccine-uptake norms have increased vaccine confidence (Betsch et al., 2018), greater vaccine acceptance (Moehring et al., 2023), stronger vaccination intentions (Bussolo et al., 2023; Graupensperger et al., 2021), and reduced hesitancy (Jaffe et al., 2022). Individuals who perceive that most others intend to, or do, receive a vaccine, tend to have stronger intentions or vaccine-uptake behaviors themselves.

Other studies have focused on perceived injunctive norms, that is, the perceived approval or importance others place on getting vaccinated. Unlike perceived descriptive norms, perceived injunctive norms appear to be less strongly associated with vaccination behaviors. More provaccine perceived injunctive norms have been associated with university students' own personal stronger beliefs in the importance of getting vaccinated against COVID-19 but not with intentions to actually get vaccinated (Graupensperger et al., 2021). In another study, perceived injunctive norms were associated with students' COVID-19 vaccine hesitancy but not when perceived descriptive norms were added to the same analysis (Jaffe et al., 2022). Perceived injunctive norms might indicate only how individuals are expected to behave, not actually how others do behave, which may explain these findings.

Other types of perceived norms have been studied. We have found that perceptions that the majority of British parents believe in antivaccine conspiracy theories was associated with British parents' own personal stronger beliefs in antivaccine conspiracies (Cookson et al., 2021b). Across five studies, more positive subjective norms (perceiving that important others think you should get vaccinated) were associated with stronger uptake intentions for a range of vaccinations, including COVID-19 and seasonal influenza (Winter et al., 2022).

Individuals can also misperceive or inaccurately estimate reported vaccination norms. Reported misperceptions include underestimating others' vaccine intentions (Cookson et al., 2021a; Graupensperger et al., 2021; Terry et al., 2022; Vriens et al., 2023) and attitudes (Graupensperger et al., 2021; Terry et al., 2022) and overestimating others' antivaccine conspiracy theory beliefs (Cookson et al., 2021b). These misperceived norms can, in turn, predict vaccination intentions (Terry et al., 2022). Underestimating actual norms may increase

an individuals' own hesitancy by (incorrectly) making vaccinations appear to be a nonmajority behavior and/or associated with low social approval.

There are various limitations with these studies. Most research has focused on countries in the "Global North," where there might be substantially different social norms, vaccine availability, and health-care provision compared with the "Global South." Studies have also combined different norms into one norms construct (e.g., Abad et al., 2024). For example, one study combined items measuring perceived descriptive, subjective, moral, and injunctive COVID-19 vaccine norms into a single score (Beleites et al., 2024). Higher scores (reflecting more provaccine norms) were then associated with a greater likelihood of vaccination (Beleites et al., 2024). Combining norms measures can be problematic because different social norms capture subtly different attitudes and behaviors, and this may mask the unique role different norms have on vaccine behaviors and intentions (Graupensperger et al., 2021). The studies discussed here are also mostly cross-sectional in nature, measuring relationships at one time rather than over time. Such designs make it difficult to understand the direction of these relationships, whether perceived norms cause hesitancy, or whether hesitancy influences individuals' perceived norms.

Mediators/Moderators of the Relationship Between Perceived Norms and Vaccine Hesitancy

The relationship between perceived norms and vaccine-hesitancy-related beliefs and intentions can also be influenced by other factors. For example, greater social identification with other British parents strengthened the relationship between British parents' perceived norms (of other parents' antivaccine conspiracy beliefs) with their own antivaccine beliefs (Cookson et al., 2021b). That is, parents were more influenced by what they thought other British parents believe in terms of vaccine conspiracies the more they identified with other British parents.

Across several studies, Winter et al. (2022) found that higher conspiracy mentality was associated with lower vaccine intentions only when perceived subjective norms were low. This suggests that the perceived norms of important others could protect against the influence of conspiracy beliefs on intentions to get vaccinated. That is, people are less persuaded by vaccine conspiracy theories if they think that other people important to them approve of vaccinations.

In a multicountry study by Bussolo et al. (2023), perceived community descriptive norms appeared to moderate the relationship between the stringency of

government COVID-19 restrictions and vaccination willingness. The authors showed that the effect of government regulations was stronger in countries with weaker vaccination norms. These studies suggest that there may be a range of individual (internal) and societal (external) factors that influence the relationship between norms and vaccine hesitancy (e.g., strong pro-vaccine perceived norms avoiding the need for strong government intervention). Few studies, however, have tested the role of such factors (mediators/moderators) and how they influence this relationship. There may be other factors that strengthen or weaken the effect of a perceived norm on an individual's vaccine hesitancy, which could be important targets in social norms interventions that aim to reduce hesitancy.

Can Changing Perceived Social Norms Through Norms Feedback Interventions Change Vaccine Hesitancy?

An individual's perception of social norms can be changed and challenged in interventions that give feedback on the actual/reported norms. Such feedback can be delivered in one of two ways: at a group level (e.g., print-based media campaigns) or via more personalized, tailored, norms feedback to the individual (e.g., one-to-one counseling or via computerized feedback; for a review of this approach for health behaviors more broadly, see Dempsey et al., 2018). In both approaches, individuals are presented with information about what most people perceive others do/think and what the actual reported norms are. The difference is that only individual-level feedback allows for an explicit comparison of the individual's personal behaviors/attitudes and perceived norms with the actual reported norms of a wider social group. For both approaches, the aim is to challenge commonly held misperceived norms, or reinforce existing positive norms (e.g., "most would get vaccinated"), to promote positive behaviors/attitudes.

Few social-norms-focused interventions for vaccine hesitancy, however, have been conducted (Brewer et al., 2017). We have found that reducing parents' perceptions of other parents' beliefs in vaccination-related conspiracies through a personalized social-norms feedback intervention increased parents' vaccination intentions for their children (Cookson et al., 2021a). These changes were time-limited and found only immediately postintervention, not at a later 6-week follow-up (Cookson et al., 2021a).

Other experimental studies have tested how normative feedback messages can reduce hesitancy. Across 23 countries, participants exposed to descriptive norms feedback (COVID-19 vaccine-uptake norms from the same country) had increased vaccine intentions,

particularly those who were unsure about accepting vaccines and who underestimated vaccine acceptance (Moehring et al., 2023). Other studies have reported more mixed findings (Schmidtke et al., 2020; Xiao & Borah, 2021). One experiment found no difference in seasonal influenza vaccine uptake among frontline health-care staff at a large hospital in England across norms feedback conditions (Schmidtke et al., 2020). The study gave participants a standard non-norms letter, plus descriptive or injunctive norms feedback (or both norms feedback). The norms conditions presented influenza vaccine-uptake rates for health-care staff at U.K. and U.S. hospitals (not limited to the same English hospital) and/or injunctive norms feedback where the hospital's medical director instructed staff to get vaccinated (i.e., an order to obey). All participants were provided with messages detailing the hospital's expectation that all staff receive the influenza vaccine (another order to obey). In this study, we do not know whether individuals were more influenced by an explicit order from an authority figure or perceptions of what other staff were doing in terms of getting vaccinated. Similarly, Xiao and Borah (2021) found no difference between their norms conditions on students' vaccine intentions, but their feedback emphasized the "lifesaving HPV vaccine for cancer prevention" (a fear appeal). The norms feedback in these studies was likely contaminated by orders to obey and fear appeals rather than providing a clear majority norm for participants to conform to.

How Psychological Science Can Better Understand the Relationship Between Perceived Social Norms and Vaccine Hesitancy

Although there is growing interest in the role of perceived social norms in vaccine hesitancy, the research literature has a number of limitations. There are three key issues for psychological science research to address.

Perceived norms: specify the types of social norms implicated in hesitancy and when and how norms influence hesitancy outcomes

It is not entirely clear which perceived norms are the most influential on hesitancy. Few studies have compared different types of norms or considered other key influencers or bystanders who could further reinforce norms (e.g., healthcare workers). It is also unclear how, when, and/or where in the decision-making process norms influence vaccine decisions and behaviors. The power of more prosocial norms on vaccine behaviors

is also unclear (e.g., collective responsibility norms), these may be important for encouraging others to accept vaccinations. Social norms can also change over time, with new norms appearing and others dissipating (Legros & Cislighi, 2020), which has yet to be studied in this literature.

There may be other intermediate factors that influence the norms-hesitancy relationship (e.g., how strongly one identifies with the social group that a perceived norm is associated with). There might also be some situations in which perceived norms are less influential on hesitancy, such as when vaccinations are mandatory (e.g., when accessing public facilities during the COVID-19 pandemic; Vriens et al., 2023). Perceived norms need more precise definition in studies and the testing of how different norms (types of norms, referent groups) influence hesitancy-related outcomes.

Vaccine-hesitancy construct validity: specify precursors or behavioral outcomes

Vaccine hesitancy is imprecisely defined, lacks testable theories, and refers to a range of attitudes, beliefs, intentions, and behaviors (Betsch et al., 2018; Peretti-Watel et al., 2015). The drivers of and precursors to hesitancy (e.g., perceived norms, confidence in vaccines) are often confused with uptake/hesitancy outcomes. Psychometric self-report measures of vaccine hesitancy have construct validity issues, often measuring vaccine confidence and various attitudes and conspiratorial beliefs rather than vaccination behaviors (Betsch et al., 2018). The literature also does not consider legitimate forms of hesitancy (e.g., people who refuse or delay vaccines because of genuine safety concerns and/or the experience of existing medical conditions; Terry et al., 2022). Vaccine hesitancy as a construct requires clearer definition. Social-norms-based studies need to specify whether vaccine hesitancy (behaviors or intentions) or the precursors to hesitancy (e.g., confidence) are being studied and more rigorously evaluate the psychometric validity and reliability of vaccine-hesitancy measures.

Interventions: focus on specific social norms in feedback and specific vaccine-hesitancy behaviors

How effective social-norms interventions are for reducing vaccine hesitancy is unclear. It is difficult to directly compare interventions because they use different perceived norms, have issues with how norms feedback is worded, and measure different hesitancy outcomes.

Social norms feedback is typically very brief in nature, and so multiple “doses” of feedback may be needed to encourage longer term behavior/attitude change (Cookson et al., 2021a; Xiao & Borah, 2021). There is also a danger in multicomponent interventions in which other messaging contaminates more positive social norms feedback (e.g., mixing feedback on actual positive norms with fear appeals or commands to obey).

Social norms feedback may also work differently depending on individuals' hesitancy. Norms feedback may be useful as a nudge for the undecided or ambivalent (Moehring et al., 2023) or to reinforce existing norms. Good practice for social norms interventions includes delivering actual, credible, normative feedback from the same population, highlighting positive actual norms, and avoiding feedback appearing to come from an authority figure (Dempsey et al., 2018). There needs to be more robust testing of vaccine-hesitancy-related social norms feedback messages in interventional and experimental studies that consider the wider context (the time, place, vaccine, and target social group). Studies need to focus on specific social norm types and specific hesitancy outcomes or precursors and carefully frame normative feedback (highlighting majority behaviors or attitudes).

Conclusion

Perceived social norms are potentially an important influence on vaccine hesitancy. Perceived norms provide individuals with a guide for decision-making, especially when vaccination-related outcomes may be uncertain or difficult to predict (e.g., the long-term risk of disease). Social-norms-based feedback interventions appear to be promising for promoting vaccine uptake, challenging misperceived norms, and highlighting the actual reported norms to change behavior through social conformity. Perceived social norms and vaccine hesitancy are challenging constructs to study; both have multiple definitions and have been inconsistently studied. Future research needs to (a) specify the types of perceived social norms implicated in hesitancy (considering the norm wording and the groups these norms refer to), (b) better define and measure vaccine-hesitancy outcomes, and (c) better frame social norms feedback messages to promote vaccine uptake and reduce hesitancy using social (conformity) influence.

Recommended Reading

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- Dempsey, R. C., McAlaney, J., & Bewick, B. M. (2018). (See References). Discusses the role of perceived social norms in health behaviors and provides an overview of the social-norms approach (SNA) and how to conduct SNA studies/interventions.
- Legros, S., & Cislighi, B. (2023). (See References). Overview of reviews on how social norms have been defined, how different norms influence behavior, and the various approaches that have been used across academic disciplines for studying social norms.
- Vriens, E., Tummolini, L., & Andrighetto, G. (2023). (See References). Investigates the emergence of vaccination norms over the course of the COVID-19 pandemic in Italy, including an investigation of normative misperceptions and the testing of normative feedback messaging to promote vaccine uptake and correct misperceived norms.

Transparency

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