Digital Is Different: Digitalization Undermines Stakeholder Relations Because It Impedes Firm Anthropomorphization

van Houwelingen, G.; Stoelhorst, J.W.

DOI
10.5465/amd.2021.0245

Publication date
2023

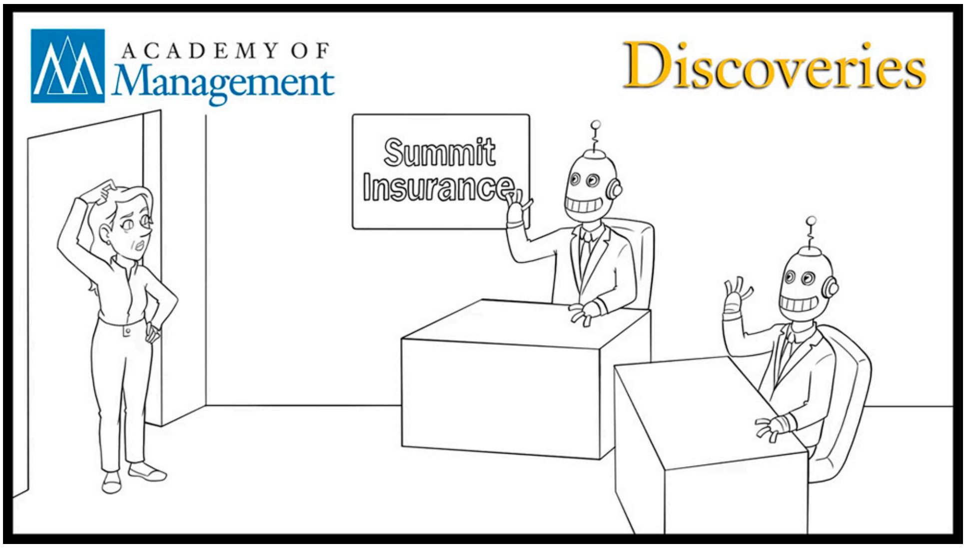
Document Version
Final published version

Published in
Academy of Management Discoveries

© *Academy of Management Discoveries*
2023, Vol. 9, No. 3, 297–319.
https://doi.org/10.5465/amd.2021.0245

DIGITAL IS DIFFERENT: DIGITALIZATION UNDERMINES STAKEHOLDER RELATIONS BECAUSE IT IMPEDES FIRM ANTHROPOMORPHIZATION

GIJS VAN HOUWELINGEN
J. W. STOELHORST
University of Amsterdam



Digitalization is typically seen as an operational or strategic issue. We go beyond such a view and present findings suggesting that digitalization may also affect how people relate to a firm. The guiding intuitions of our research are that digitalization may impede firm anthropomorphization—that is, the attribution of humanlike capacities of mind ("agency" and "experience") to firms—which may affect stakeholder relations. Specifically, we suspect that digitalization is likely to undermine a firm's ability to establish and maintain the sort of communal (trusting and cooperative) relations that stakeholder theory sees as crucial for value creation. We find support for these intuitions in four experimental studies (total *n* = 819): people attribute less experience (but not less agency) to more digitalized firms and this reduces their willingness to affiliate with, trust, or enact prosocial behavior toward such firms. We also find that these effects are stronger for communally oriented respondents, and that one reason that people are less inclined to enter into a relationship with a more digitalized firm is that they believe that this will make it more difficult to enact communal behaviors. Together, our findings suggest that firm digitalization may, *ceteris paribus*, undermine firms' ability to generate value.

Does digitalization—traditionally defined as "the transition from conducting business activities in a traditional manner to conducting them in a digital form" (BarNir, Gallaugher, & Auger, 2003: 790)—affect how people relate to firms? Received wisdom among both practitioners and academics seems to be that it does not, or that if it does the effect should be positive. Digitalization is typically described as a strategic opportunity or an operational challenge for firms (e.g., Bleicher & Stanley, 2016); the discourse around digitalization has mainly focused on the way it affects business models and efficiency (Brynjolfsson & Mcafee, 2017). In other words, digitalization is primarily seen as an operational improvement, allowing firms to deliver substantially the same products and services in a more efficient way; or a strategic opportunity, enabling new business models and allowing firms to reach new customers or enter new markets more easily. In this view, one would expect either no effect of digitalization on stakeholder relations or, in case of increased efficiency, perhaps an improvement.

In this paper we report findings from a set of empirical studies that challenge this view. Our motivation for designing these studies was to explore whether a firm's individual stakeholders may experience and make sense of their relationship with a firm in a different way when that firm is highly, rather than minimally, digitalized. Our intuition was that a more digitalized firm is more likely to be perceived in machine-like terms (e.g., as a cyborg; Rai & Diermeier, 2015), whereas a less digitalized firm is more likely to be perceived in humanlike terms. More formally, we suspected that stakeholders may be less likely to anthropomorphize a more (vs. less) digitalized firm (see also Ashforth, Schinoff, & Rogers, 2016), with anthropomorphization defined as the attribution of the humanlike qualities of "agency" (the ability to intend and act on intentions) and "experience" (the ability to feel and experience emotions) to nonhuman entities (Epley, Waytz, & Cacioppo, 2007; Rai, Valdesolo, & Graham, 2018). In addition, our intuition was that stakeholders' tendencies to anthropomorphize a particular firm more (or less) could have downstream consequences for their perception of their relationship with that firm. Specifically, we suspected that a tendency to anthropomorphize more digitalized firms less would also make it less likely that stakeholders would be inclined to form communal (i.e., trusting and cooperative) relationships with such firms.

Stakeholder theory has long argued that the central task of management is to manage stakeholder relations (Freeman, 1984; Freeman, Harrison, Wicks, Parmar, & De Colle, 2010), and that firms that are able to establish stakeholder relationships based on trust and cooperation will, *ceteris paribus*, outperform firms that are not able to do so (Berman, Wicks, Kotha, & Jones, 1999; Jones, 1995; Jones, Harrison, & Felps, 2018). More recently, the literature on the microfoundations of stakeholder relations (alternatively referred to as "behavioral stakeholder theory"; Bundy, 2019; Crilly, 2019) has started unraveling the psychological mechanisms supporting this claim, arguing that how a firm is managed is likely to trigger specific psychological mechanisms, like (un)fairness perceptions and self-regarding or prosocial motivations, that will lead to more- or less-trusting and cooperative relations with stakeholders (Bosse & Coughlan, 2016; Bosse, Phillips, & Harrison, 2009; Bridoux & Stoelhorst, 2014, 2016; Harrison, Bosse, & Phillips, 2010). A recent argument in this literature is that firms that are able to establish communal relations with their stakeholders will tend to have a competitive advantage and create more value than firms that are unable to do so (Bridoux & Stoelhorst, 2016, 2022; Jones et al., 2018). In light of this argument, our intuitions would imply that digitalization will, *ceteris paribus*, undermine a firm's ability to create value.

Below, we provide additional reasons for our intuitions about the relationships among our central concepts (digitalization, firm anthropomorphization, and stakeholder relations) and we present evidence in support of these intuitions. Given the unexplored nature of our key phenomena—that is, the relationship between firm digitalization and firm anthropomorphization, and the relationship between firm anthropomorphization and the nature of stakeholder relations—we used an experimental methodology to isolate the effects of firm digitalization in service of an abductive approach (Folger & Stein, 2017; Mueller, 2018). That is, we articulated our intuitions as "tentative hypotheses" suggested by patterns in data as opposed to extant theory (Bamberger, 2018: 7). In doing so, we ranged across a number of disparate literatures ranging from conceptual work in stakeholder theory (e.g., Bridoux & Stoelhorst, 2016; Jones, 1995; Jones et al., 2018) to empirical work on firm anthropomorphization (e.g., Rai & Diermeier, 2015; Strohminger & Jordan, 2022; Tang & Gray, 2018) and human (moral) psychology (e.g., Gray, Gray, & Wegner, 2007; Waytz, Gray, Epley, & Wegner, 2010; Young & Waytz, 2013), speculating about how findings from one domain (e.g., how people relate to other people) may translate to another (i.e., how people relate to firms).

Our approach resulted in a series of four studies.[1] In a first study, we found that firm digitalization does indeed undermine the tendency of individuals to anthropomorphize firms. However, we found this effect for only one aspect of firm anthropomorphization, the attribution of experience to the firm; but not for the other, the attribution of agency. In Study 2, we subsequently explored the downstream effects of digitalization via experience attributions and found that digitalization negatively affects willingness to be affiliated with a focal firm, as well as trust in that firm and the tendency to enact prosocial behaviors toward it. Finally, in Studies 3 and 4 we explored whether digitalization and its negative effect on experience attributions to the firm affects the extent to which stakeholders understand their relation with a firm in communal terms. We found that one reason why people relate differently to digitalized firms is that they expect digitalization to impede the enactment of communal behaviors, and that the negative effect of digitalization on stakeholder relations is stronger for individuals who score higher on

[1] The four studies were conducted consecutively, in the order presented in this paper. The studies were designed and led by the first author in close collaboration with the second author.

communal motivation. We conclude our paper with a reflection on the implications of these findings for stakeholder theory, research on firm anthropomorphization, and managerial practice.

STAKEHOLDER RELATIONS AND DIGITALIZATION

The defining characteristic of stakeholder theory is that its unit of analysis is "the relationship between a business and the groups and individuals who can affect or are affected by it" (Freeman et al., 2010: 5). In line with this focus, stakeholder theory sees the job of managers as primarily being about managing and shaping relations with their firm's stakeholders (Freeman, 1984; Freeman et al., 2010). One of the key propositions of the theory is that firms whose managers are able to establish and maintain stakeholder relations based on moral principles will, *ceteris paribus*, outperform firms that manage stakeholder relations purely on the basis of economic principles such as maximizing profit (Jones, 1995). More specifically, firms that behave ethically and establish relations with their stakeholders "on the basis of mutual trust and cooperation will have a competitive advantage over firms that do not" (Jones, 1995: 422).

Our intuition that managerial decisions in favor of digitalization may affect the nature of a firm's relations with its stakeholders, and, in particular, undermine trust and cooperation, is informed by the literature on the behavioral microfoundations of stakeholder relations (e.g., Bosse et al., 2009; Bosse & Coughlan, 2016; Bridoux & Stoelhorst, 2014, 2016; Bundy et al., 2018; Hahn, 2015; Harrison et al., 2010; Lange, Bundy, & Park, 2022). The purpose of this literature is to unravel the psychological mechanisms at work on the stakeholder side of the relationship between a firm and its stakeholders. The central questions in this stream of research are why and how individual stakeholders respond differently to different types of firms.

Building on insights from behavioral economics and social psychology, the microfoundations literature has argued that stakeholders will respond more positively to firms that are perceived as fair than to firms that are perceived as purely self-interested (Bosse et al., 2009; Bridoux & Stoelhorst, 2014). Stakeholders should be expected to be more willing to associate with firms that are seen as putting fairness above their self-interest (Bosse et al., 2009), to be more trusting of these firms (Bridoux & Stoelhorst, 2016; Harrison et al., 2010; Jones, 1995), and to be more willing to engage in cooperative and prosocial behavior toward these firms (Bosse et al., 2009; Bridoux & Stoelhorst, 2014; Hahn, 2015). In contrast, when stakeholders associate with firms that are perceived as self-interested, they will tend to form instrumental and arm's-length, as opposed to communal, relations with those firms (Bridoux & Stoelhorst, 2014, 2016; Jones et al., 2018). Whether stakeholders enter into an instrumental or communal relation with a firm will affect the level of value that a firm can create, because stakeholders in a communal (trusting and cooperative) relation are more likely to reveal crucial information about their preferences to the firm (Harrison et al., 2010), and are more likely to contribute to team production and to be willing to make firm-specific investments (Bridoux & Stoelhorst, 2016).

Note that these arguments depend at least in part on stakeholders' tendency to anthropomorphize firms (see Bridoux & Stoelhorst, 2016). In essence, what the microfoundations of stakeholder relations literature does is apply findings about the psychological mechanisms that regulate interpersonal relationships to the domain of stakeholder–firm relations. The (often implicit) assumption is that individual stakeholders form and maintain relationships with *firms* on the basis of the same psychological mechanisms that regulate their relationships with other *people*. One reason to suspect that this may be a reasonable assumption is that firms are readily anthropomorphized (Ashforth, Schinoff, & Brickson, 2018; Rai & Diermeier, 2015)—they tend to be seen as entities that have at least some of the human capacities of mind, including "agency" (the ability to intend and act on intention) and "experience" (the ability to feel and experience emotions) (Strohminger & Jordan, 2022; Tang & Gray, 2018).

Against this background, the starting point of our research is the intuition that the *degree* to which stakeholders anthropomorphize firms may be important for how they perceive their relationship with a firm. One reason to suspect this to be the case is that in the realm of interpersonal relations the *opposite* of anthropomorphization, "dehumanization" (i.e., the denial of human qualities to interaction partners), has been shown to have substantial effects on the way that people relate to others (Zhang, Chan, Xia, Tian, & Zhu, 2017). Specifically, dehumanized others are often treated as unworthy of moral concern (Rai, Valdesolo, & Graham, 2017). We can think of dehumanization as the flipside of anthropomorphization, since both work through the ascription, or denial, of the capacities of mind (agency and experience) to a target (Waytz, Gray et al., 2010). Therefore, if findings from the domain of interpersonal relations generalize to the domain of stakeholder–firm relations, it may be the case that trusting and cooperative stakeholder–firm relations depend on stakeholders' tendency to anthropomorphize firms.

This first intuition leads to a second, which is that digitalization may impede the formation of such trusting and cooperative (i.e., communal) relations. In line with our definition of digitalization as "the transition from conducting business activities in a traditional manner to conducting them in a digital form" (BarNir et al., 2003: 790), we use the term digitalization in the broad sense of an increased use of digital processes in a firm's business processes, including the replacement of human workers by computers, the increase of computer-mediated interaction as opposed to human interaction with stakeholders, an increasing reliance on artificial intelligence (AI), and the migration to online business models. Our second intuition is that these developments reduce stakeholders' tendency to anthropomorphize firms and, given our first intuition, make it less likely that they will engage in the communal relations that stakeholder theory emphasizes as central to the success of firms. Our intuitions translate into the following three research questions: (a) Does digitalization reduce the tendency of people to anthropomorphize a firm? (b) Are people less trusting of and cooperative toward digitalized firms, and, if so, is this the result of their tendency to anthropomorphize digitalized firms less? (c) If people are less trusting of, and cooperative toward, digitalized firms, is this because they perceive digitalized firms in a less communal light?

THE EFFECT OF DIGITALIZATION ON FIRM ANTHROPOMORPHIZATION

To put our first research question into context, we need to consider the phenomenon of firm anthropomorphization in more detail. Firm anthropomorphization is a special case of a more general social-cognitive process that involves the ascription of humanlike qualities to nonhuman entities (Waytz, Epley, & Cacioppo, 2010). For example, people quite readily anthropomorphize their pets, but are also known to conceive of many other entities in humanlike terms, ranging from the mechanical (e.g., a car) to the spiritual (e.g., a god) (Epley et al., 2007; Waytz, Cacioppo, & Epley, 2010). Anthropomorphization proceeds through the perception or ascription of mind—that is, anthropomorphized entities are perceived as having two mental capacities: the capacity to intend and act on those intentions (*agency*), and the capacity to feel and experience emotions (*experience*) (Gray, Knobe, Sheskin, Bloom, & Barrett, 2011; Waytz, Gray, et al., 2010).

While individuals differ in their tendency to anthropomorphize the nonhuman world (Waytz, Cacioppo et al., 2010), many of us tend to anthropomorphize at least some nonhuman entities at least some of the time (Waytz, Morewedge, Epley, Monteleone, Gao, & Cacioppo, 2010), including firms (Strohminger & Jordan, 2022). We do so for several reasons: to help us make sense of an entity's behavior, to help us predict and control it, or simply because we are lonely (Epley, Akalis, Waytz, & Cacioppo, 2008). Note that anthropomorphization is a gradual process that does not necessarily imply a category mistake: most people will recognize that an entity they anthropomorphize is nonhuman, yet will nevertheless ascribe some level of humanity to it—for example, when they see a storm as merciless or their pet as caring (Epley et al., 2007).

In the case of firms, research has shown that firms are often not simply seen as groups of people (Jenkins, Dodell-Feder, Saxe, & Knobe, 2014; Knobe & Prinz, 2008). Rather, firms are often seen as entities that have a distinct identity (Ashforth et al., 2018), that can intend actions (Malle, Moses, & Baldwin, 2001; Steele & King, 2011), that can therefore be blamed for misbehavior (Koehn, 1998), and with whom one can maintain a reciprocal relationship (Levinson, 1965). In other words, while firms are typically *not* perceived to be quite as agentic and experiential as human beings, they *are* often anthropomorphized, at least to some extent (Nardella, Branicki, & Brammer, 2019; Strohminger & Jordan, 2022). For example, as Ashforth and colleagues (2018: 29) observed, employees of Amazon have been noted to describe the firm as "ruthless," whereas stakeholders of Southwest Airlines see the firm as "friendly." Importantly, qualities like ruthlessness and friendliness require an entity to have some level of agency and experience (Rai et al., 2018). As we already observed above, the fact that people tend to perceive firms in this way is in line with the (often unspoken) assumption in the literature on the microfoundations of stakeholder relations that people do so.

Against this background, our intuition is that the extent to which a firm's business model relies on digitalization is a factor that may (negatively) affect the extent to which that firm is anthropomorphized. There are two reasons to suspect this, both related to the likelihood that more digitalized firms will be perceived in more mechanistic, or machine-like, terms than less digitalized firms. First, individual stakeholders, even those closely associated with the company (such as employees) generally have a relatively nondetailed and gestalt-like understanding of the firm and what it does (Higgins, Rholes, & Jones, 1977; Highhouse, Brooks, & Gregarus, 2009). A shift toward the use of digital processes may therefore subtly shift a person's understanding of what the essence of the firm is. People may be less likely to see a highly digitalized firm as a community of people, and more likely to see it as a technical entity powered by digitalized processes—resulting in a categorization of more digitalized firms as more "machinelike" than less digitalized firms.

Specifically, digitalization increasingly implies a shift away from relying on human workers toward reliance on algorithmic agents (i.e., AI-based agents), even in processes that up to now have been immune to automatization (Bleicher & Stanley, 2016). Stronger associations between a firm and AI agents may thus make people associate the firm more strongly with the qualities they typically ascribe to AI agents: the first image that comes to mind for many people when considering a more digitalized firm may be something machine-related (e.g., a computer, a robot, or a room full of servers), whereas people may be more likely to think of human imagery (e.g., workers performing a task) when considering a less digitalized firm.

Second, digitalization often also means that individual stakeholders are less likely to encounter another human being while interacting with the firm. For example, when interacting with their banks, customers are less and less likely to encounter a human employee; even large transactions such as mortgage applications may be almost fully automated (Liao & Cheung, 2002). Similarly, in many larger companies large parts of the application process for jobs have been digitalized (Brandão, Morais, Dias, Silva, & Mário, 2017; Harrison & Budworth, 2015), and even employees already working for the company increasingly deal with it at least in part through digitalized means (e.g., through a digital reimbursement system; Silva, Tataronis, & Maas, 2003).

The mode through which a person interacts, or expects to interact, with the firm is likely to be important because mind perception has been shown to be influenced by relatively subtle cues (Waytz, Epley, et al., 2010). For instance, Khalid, Deska, and Hugenberg (2016) have shown that nonhuman entities (in their case, dolls) were perceived to have more mind (i.e., more agency and experience) when they were depicted with a direct (vs. an averted) gaze. Similarly, Jack, Dawson, and Norr (2013) provided evidence that when humans are associated with machines, either through verbal or through visual cues, attributions of mind (in particular attributions of experience) to these people decrease substantially. When interacting with a firm through digitalized means, the most immediate visual cues are likely to be mechanical rather than human in nature: the visual information to which people are exposed when interacting with digitalized firms is the interface on their computer screen or smartphone. In addition, even when people do not directly interact with the firm, they are likely to expect a more mechanical experience when interacting with a more digitalized (vs. less digitalized) firm. This (expected) mechanical experience of interacting with the firm may therefore undermine firm anthropomorphization. Study 1 was designed to put this intuition to the test.

Study 1

We asked participants to read a short vignette describing either a highly digitalized or a minimally digitalized firm, and then measured their attributions of agency and experience to that firm.

Sample. Since digitalization as an antecedent of firm anthropomorphization has, to the best of our knowledge, not been studied before, no established effect sizes are available in the literature. Power analysis (Champely et al., 2018) indicates we needed about 45 participants per cell to uncover a medium-sized, $f = .3$, effect with adequate power, $B = .80$ and $\alpha = .05$. Because of the uncertainty surrounding the size of the true effect, and heeding calls to increase statistical power in experimental studies (Giner-Sorolla et al., 2019), we aimed to recruit at least 60 participants per cell. In all, we recruited 124 participants, all undergraduate business students at a midsized university in Northwest Europe who participated in return for course credit ($M_{age} = 19.82$; $SD = 2.12$, 56 identified as female and the rest as male), and randomly assigned them to one of the two conditions (i.e., highly vs. minimally digitalized firm). This sample size gave us $B = .91$ power to detect a medium-sized (i.e., $f = .3$) effect with $\alpha = .05$ (Champely et al., 2018).

Procedure. After administering written consent, we asked participants to read a short vignette that described a clothing retail firm that either was heavily invested in a "brick-and-mortar" strategy in which its primary outlets were physical stores (*minimally digitalized condition*), or in an "online only" strategy in which the primary outlet was the firm's webstore (*highly digitalized condition*).[2] After participants had read the vignette, we asked them to imagine what interacting with the firm would be like.

[2] See supplemental materials for our prompts. In all of the four studies reported here, we used vignettes in which the focal firm was named "GLOBO." In an additional study, not reported here, we verified whether our results may have been confounded by our choice of this name for the focal firm. We thank an anonymous reviewer for the suggestion that this could have been the case. In essence, this additional study was a replication of Study 2 with an additional factor representing the name of the focal firm (i.e., "Alpha" vs. "GLOBO"). The results from this study did not provide any evidence that the name of the focal firm affected any of the effects that we report. Data are available upon request.

By way of *manipulation checks*, we asked two questions immediately after the manipulation. First, we asked participants to indicate on a sliding scale anchored from –50 (totally nondigital) to 50 (totally digital) the extent to which they thought the focal firm was a digital company (M = 1.75, SD = 38.82). Second, we asked them to indicate whether they would use (a) the company's website (64 participants chose this option, 51.6%), (b) a physical store (59 participants, 47.6%), or (c) another channel (1 participant, 0.8%) if they wanted to source clothing from the company.

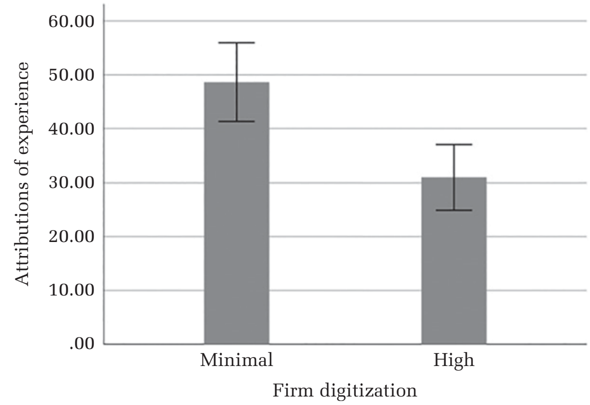
Thereafter, we administered Tang and Gray's (2018) firm anthropomorphization scale to measure our dependent variables. This scale consists of two subscales, mapping on attribution of agency and experience to the firm, respectively.[3] We constructed a reliable index reflecting experience attributions, Cronbach's α = .81, M = 39.74, SD = 27.66; and a reliable index measuring attributions of agency, Cronbach's α = .78, M = 57.17, SD = 25.20 (see the supplemental materials to this paper for more information on scale items, response categories and other relevant information about measurement).

Results

Manipulation checks. We effect-coded our experimental condition (–1 = minimally digital business; 1 = highly digital business). One-way analysis of variance (ANOVA) with the dummy representing our experimental manipulations and the question of whether participants considered the company to be a digital business revealed a strong effect, $F(1, 123) = 553.87$, $p < .001$, $f = 2.14$ in the expected direction, $M_{\text{minimally digital}} = 32.43$, $SD = 15.07$, $M_{\text{highly digital}} = 37.63$, $SD = 17.88$. We used multinomial regression to analyze effects on our second manipulation check. These models showed that people were more likely to indicate the company's website as the way to interact with the company in the highly (vs. minimally) digital condition, b = 4.171, SE = 1.17, Wald(1) = 49.98, $p < .001$, odds ratio = 64.8, and to indicate frequenting a physical store as the way to interact with the company in the minimally (vs. highly) digital condition, b = 17.53, SE = .001, Wald(1) = 15.62, $p < .001$, odds ratio = 33.3. Based on these results, we concluded that our manipulation was successful, and proceeded to our main analysis.

Dependent variables. One-way ANOVA with the effect-coded dummy representing our experimental manipulations as the independent variable and

FIGURE 1
Experience Attributions in Study 1



Note: Error bars represent 95% CI around the mean.

experience attributions to the firm as the dependent variable revealed that the level of experience attributed to the company differed significantly by firm digitalization, $F(1, 123) = 13.74$, $p < .001$, $f = .34$. Supporting our intuition, participants attributed significantly less experience to a highly digitalized firm, M = 30.98, SD = 23.48, than to a minimally digitalized firm, M = 48.65, SD = 28.80 (see also Figure 1). For attributions of agency, however, we did not find a significant effect of our manipulation, $F(1, 123) = .04$, $p = .834$, $f < .01$. Hence, the highly digital firm, M = 59.67, SD = 23.95, and the minimally digital firm, M = 58.72, SD = 26.73, were seen as about equally agentic.[4]

Discussion of Study 1. These results support the intuition that digitalization undermines the anthropomorphization of firms, albeit only through diminished levels of experience attribution, and not diminished levels of agency attribution. Our findings are in line with previous research on firm anthropomorphization (Tang & Gray, 2018), as well as with previous research on the anthropomorphization of agentic technology (i.e., AI) (de Visser et al., 2016, 2017). That research also found that, first, firms and AI are typically seen as relatively high in agency and relatively low in experience; and second, the levels of experience ascribed to these targets (firms and AI) is typically more heterogenous than the levels of agency. Why exactly this is the case is a question that will require more research (Pantelis et al., 2016). However, one possible reason is that harm caused by entities like firms and machines is typically seen as

[3] A complete list of all items administered across our four studies can be found in supplemental materials (https://osf.io/ymz9n/).

[4] Experience and agency attributions here are nested within participants. In the supplemental materials, we therefore also present the results of a repeated-measures ANOVA, which offer additional support for these conclusions.

morally relevant, but harm done to them is not. In Young and Waytz's (2013) terms, firms and machines *are* typically seen as moral "agents" but *not* as moral "patients."

This brings us to our second intuition, which is that digitalization may also have downstream consequences for stakeholder relations: we suspect that stakeholders will relate differently to firms that they perceive as more- or less-experiential. Rai and Diermeier (2015) noted that, in terms of the tendency to anthropomorphize, people generally perceive firms to be much like cyborgs—that is, agentic but not experiential (Glikson & Woolley, 2020). In fact, the archetypal entities that people perceive as high in agency but low in experience are sophisticated machines like robots (Shank, Graves, Gott, Gamez, & Rodriguez, 2019; Waytz, Heafner, & Epley, 2014). Given the results of our first study, our suspicion is that stakeholders are relatively more likely to relate to highly digitized firms as they would relate to robots, while they are relatively more likely to relate to minimally digitized firms as they would to other human beings.

THE CONSEQUENCES OF DIGITALIZATION FOR STAKEHOLDER RELATIONS

To put this second intuition in context, we turn to literature that has considered how human social and moral psychology works in relation to nonhuman entities, such as the literature on human–machine interaction (e.g., de Visser et al., 2017; Hancock, Billings, Schaefer, Chen, De Visser, & Parasuraman 2011). One insight from this literature is that people treat entities to which they attribute experience (e.g., a pet) in markedly different ways than entities they believe to lack experience (e.g., a car; Bastian, Jetten, & Haslam, 2014; Waytz, Epley, et al., 2010). In particular, entities that are attributed relatively little experience are typically not included within the moral sphere, or at least not as moral patients (Crimston, Hornsey, Bain, & Bastian, 2018). The reason for this is that people cognize in different terms about the inner processes of entities that are perceived to be low in experience, compared to entities that are seen as more experiential (Robbins, 2008; Robbins & Jack, 2006). Since entities that get attributed relatively little experience are, by definition, incapable of experiencing pain or pleasure, people tend not to take any benefits or damages to such entities into account when deciding how to treat them (Sundar, 2020). As a result, a relationship with entities perceived to be low in experience is more likely to be seen in instrumental terms: as a means to an end rather than as an end in itself (see Rai et al., 2017, 2018).

As we noted above, the paradigmatic example of an entity seen as highly experiential is a fellow human being, while the paradigmatic example of an entity that gets attributed little experience is a robot—an entity that can act on its own accord, but is unable to feel (Broadbent, 2017). The results of Study 1 suggest that digitalization may make a firm appear more robotlike and less humanlike. In Rai and Diermeier's (2015) terms, our result suggest that digitalization makes firms seem *more* like "cyborgs." Translating findings about how human moral psychology works in relation to other nonhuman entities, such as pets, cars, and robots, to the case of firms, we suspect that digitalization may therefore also have an effect on how individual stakeholders relate to firms. Specifically, we suspect that the lower levels of experience attributed to a highly digitalized firm may increase the likelihood that individuals see their relationship with that firm in instrumental terms and decrease the likelihood that they see it in moral terms.

There are some indications from previous studies that lower levels of experience attribution may have such an effect. Rai and Diermeier (2015) showed that people are unlikely to sympathize with companies that are attributed relatively little experience. Tang and Gray (2018) showed that people are more likely to be satisfied with punishment of firms judged to be more experiential following firm misbehavior, and that they are more prepared to accept an apology on behalf of such a firm. Punishment satisfaction and apology acceptance signal relations that are understood in moral terms, because punishment and repentance tend to be seen as practices that have an important social and communal function (Cushman, 2015; Ohtsubo & Yagi, 2015).

By analogy, firm digitalization may, because of its negative effect on experience attributions, affect the nature of stakeholder relations. The microfoundations literature in stakeholder theory has argued that stakeholders may have different motives for relating to a focal firm (Bridoux & Stoelhorst, 2014), ranging from primarily instrumental (i.e., self-interested) motives, to motives that are strongly rooted in socio-moral (i.e., communal) values (Bosse & Coughlan, 2016). Our suspicion is that highly digitalized firms are more likely to appeal to and trigger stakeholders' instrumental motives, while minimally digitalized firms are more likely to appeal to and trigger stakeholders' socio-moral and communal motives (we investigate this in Studies 3 and 4).

If our suspicion is correct, this would have a number of implications. One implication would be that, on average, stakeholders' willingness to become affiliated with a more digitalized firm (i.e., enter into a relationship with it as customer, as employee, or in another stakeholder role) is likely to be lower than their willingness to become affiliated with a less digitalized firm, because instrumentally motivated stakeholders will only want to enter into relations that are in their immediate self-interest, whereas socio-morally motivated stakeholders will also be prone to do so for communal reasons.

This leads to the first subquestion, for which we designed Study 2: Does the perceived lack of experientiality of digitalized firms lead to lower levels of willingness to be affiliated with these firms?

Second, as noted above, entities perceived to be low in experience are typically considered to be incapable of experiencing empathic concern for others and, therefore, incapable of acting on such a concern. The way people relate to such entities is likely to reflect how they believe that these entities will relate to them: entities that are attributed relatively little experience are seen as cold-hearted and instrumental creatures (Friedman, Jack, Rochford, & Boyatzis, 2015; Jack et al., 2013). As a result, such entities are also seen as not particularly trustworthy (de Visser et al., 2016; Hancock et al., 2011). Trust can be defined as the outcome of a decision under risk (Thielmann & Hilbig, 2015): to trust means to be vulnerable to an entity's decisions without the ability to monitor or control that entity (Rousseau, Sitkin, Burt, & Camerer, 1998). Given the amoral status and lack of empathic concern of entities low in perceived experience, people generally assume that such entities have few qualms about making use of others' vulnerabilities if that serves their own purpose, leading to relatively low levels of trust (Glikson & Woolley, 2020). Applying this logic to highly (vs. minimally) digitalized firms leads to the second subquestion for Study 2: Does the perceived lack of experientiality of digitalized firms lead to lower levels of trust in these firms?

Third, we suspect that because individual stakeholders are more likely to be instrumentally (rather than communally) motivated toward highly digitized firms, they may also be less likely to enact prosocial behaviors toward such firms. Prosocial behavior, as the name implies, is behavior that is socially motivated: it is self-sacrificial behavior that is enacted in response to another entity's, rather than one own's, needs (Batson, 2010). However, since entities that are attributed relatively little experience are seen as unable to experience pleasure or pain, they are typically presumed not to have needs in any meaningful sense. This leads to our third subquestion for Study 2: Does the perceived lack of experientiality of digitalized firms lead to lower levels of prosocial behavior toward these firms?

Study 2

In Study 2, we essentially set out to replicate Study 1, but this time we also measured willingness to buy from the firm (as a measure of willingness to affiliate), trust in the firm, and willingness to engage in prosocial behavior toward the firm. As Study 2 is a replication and extension of Study 1, these two studies can together be seen as representing the first two steps in Sætre and Van de Ven's (2021a, 2021b) four-step process of abductive theorizing (i.e., anomaly observation and confirmation). Reflecting this, although we failed to find an effect of firm digitalization on agency attributions to the firm in Study 1, we again measured both attributions of agency and experience to the focal firm in Study 2 in order to be able to confirm or disconfirm that observation.

Participants. We based the procedures of this study partly on the procedures we used in Study 1: the manipulations and the measures of agency and experience attributions were the same. However, this time we intended to test three bootstrapped linear mediation models, one for each dependent variable (i.e., willingness to buy, trust in the firm, and customer prosocial behavior toward the firm—see below).

As recommended by Giner-Sorolla and colleagues (2019), we used Schoemann, Boulton, and Short's (2017) method, which is based on Monte Carlo simulations of the ante-hoc estimated correlations between the variables of interest (i.e., independent, mediator, and dependent), as well as their respective (estimated) standard deviations, to determine the required sample size for this study. We used the correlation between experimental conditions and attributed experience in Study 1 (i.e., $r = -.41$) as our best estimate for the correlation between independent and mediator. We estimated the correlations between mediator and dependent variables to be around $r \sim |.25|$. In addition, we estimated the correlation between independent variable and dependent variable to be relatively small, $r = .05$. This analysis indicates that we needed a minimum of 93 participants to be able to detect a small effect with a power of $B = .80$ and $\alpha = .05$. Given that we wanted to estimate three different models, we set out to collect substantially more data points and ended up recruiting 242 participants to our study. This provided us with $B = .99$ to detect a small, mediated effect with $\alpha = .05$. All our participants were undergraduate business students enrolled at a large university in Northwestern Europe, who participated in exchange for course credit ($M_{\text{age}} = 20.30$, $SD = 2.09$, 119 male, 121 female, 2 other or do not want to disclose, 1 missing value).

Procedure. The front-end of this study was a replication of Study 1—we used the same materials to manipulate firm digitalization, the same manipulation checks, and the same measure to capture attributions of agency and experience (Tang & Gray, 2018). After this, we solicited willingness to buy from the firm, trust in the firm, and willingness to enact prosocial behavior toward the firm. The order of the scales measuring experience attributions, willingness to buy, trust, and prosocial behavior were counterbalanced between participants. No order effects were detected (all $p > .45$).

Manipulation checks. We asked participants to indicate on a sliding scale from –50 to 50 whether they considered the company a digital company ($M = 9.03$, $SD = 35.07$). We also asked them to indicate which channel they would use to make a purchase from the company, (a) the company website (114 participants, 46.9%), (b) a physical store (124 participants, 51%), or (c) another channel (4 participants, 1.6%).

Dependent variables. To measure *willingness to buy* we used the scale of White, MacDonnell, and Ellard (2012). We averaged the responses into a reliable scale. We followed Baer and colleagues' (2018) procedures to measure *trust in the firm*: we adapted the Mayer and Davis (1999) trust scale so that the target of the scale was the firm. We averaged responses into a reliable scale. Lastly, as a measure of *stakeholder prosocial behavior,* we asked participants how willing they would be to return an item of clothing to the company that they accidentally received without having paid for it (for a similar approach, see Yi, Gong, & Lee, 2013; see supplemental materials for scale items, response categories, and other relevant information on measurement).

Means, standard deviations, reliabilities, and correlations between the study variables are depicted in Table 1.

Results

Manipulation checks. We again effect-coded our experimental conditions (–1 = minimally digitalized; 1 = highly digitalized). A one-way ANOVA with our continuous manipulation check as the dependent variable showed that the minimally digitalized business was considered significantly less digital, $M = –20.84$, $SD = 23.47$, than the highly digitalized business, $M = 38.74$, $SD = 11.76$, $F(1, 238) = 614.30$, $p < .001$, $\eta^2 = .72$. Multinomial regression showed that people were more likely to indicate the company's website as the way to interact with the company in the highly digitalized condition when compared to the minimally digitalized condition ($b = 2.95$, $SE = .34$, Wald(1) = 77.95, $p < .001$ odds ratio = 19.17), while people were more likely to indicate frequenting a physical store in the minimally digitalized (vs. highly digitalized) condition ($b = 2.526$, $SE = 1.177$, Wald(1) = 4.606, $p = .032$, odds ratio = 12.50). These results indicate that our manipulation of firm digitalization was successful.

Mediation models. We ran three mediation models, one for each of our dependent variables, using Hayes's (2017) PROCESS macro for SPSS (Model 4).[5] Results can be found in Table 2.[6] All continuous variables were standardized before being added to the model. Most importantly, we found significant negative indirect effects of firm digitalization, through diminished experience attribution, on willingness to buy, trust in the firm, and prosocial behavior toward the firm.

Discussion of Study 2

The results of Study 2 support our intuition that the negative effect of digitalization on experience attributions does indeed have relational consequences: individual stakeholders are less likely to be willing to become affiliated with a highly (vs. minimally) digitalized firm, they trust such a firm less, and are less likely to enact prosocial behavior toward it. These results suggest that the opening question of this paper, whether digitalization may have relational consequences, can be answered in the affirmative. In addition, they point to diminished experience attributions

[5] Scholars have recently criticized the use of OLS regression to estimate mediation models in cases where both mediator and dependent variable are measured at the same time and derived from the same source (as in our case), even if based on bootstrapping (Antonakis, Bendahan, Jacquart, & Lalive, 2010). The reason for this is potential endogeneity in the mediator because of the possibility of common method variance, which may affect the consistency of parameter estimates of the model as a whole. Antonakis, Bendahan, Jacquart, and Lalive, (2014) have suggested that these limitations may be overcome by first using two-stage least squares (2SLS) regression to estimate an unbiased effect of the mediator (i.e., Experience Attribution, in our case) on the dependent variables (i.e., Trust, Willingness to Buy, and Stakeholder Prosocial Behavior). Second, they suggested using structural equation modeling to estimate consistent parameter estimates. We present the results of these analyses in the supplemental materials of this paper. These analyses confirm our analyses as presented in the main text based on causally unambiguous parameter estimates.

[6] Since, following the results of Study 1, our interest was in mediation by experience attribution, we did not include agency attributions in the models whose results are reported in Table 2. We did, however, rerun the models with agency included. Results can be found in the supplemental materials to this paper. These alternative analyses confirm that experience attributions do, and agency attributions do not, mediate the effect of firm digitalization on willingness to buy and prosocial behavior. When including agency attributions, the indirect effect for trust turned marginal (the confidence interval includes 0 at the edge).

TABLE 1
Means, Standard Deviations, Reliabilities, and Correlations of and between Key Variables in Study 2

	M (SD)	1	2	3	4	5
1) Manipulation (minimally vs. highly digital firm)	—	—				
2) Experience attributions	49.27 (25.22)	–.41**	.84			
3) Willingness to buy	4.36 (0.95)	–.32**	.45**	.86		
4) Trust in the firm	4.65 (0.78)	–.32**	.36**	.49**	.73	
5) Prosocial behavior	4.41 (2.12)	–.14*	.20**	.15*	.19**	—

Note: Reliabilities (Cronbach's α) are denoted on the diagonal.
*$p < .05$
**$p < .01$

to the firm as a mechanism underlying these consequences. In the next section of our manuscript, we further investigate why diminished experience attributions have relational consequences. In doing so, we follow Sætre and Van de Ven's (2021a, 2021b) suggestions for abductive theory-generation and move from anomaly observation and confirmation (in Studies 1 and 2) to hunch-generation and evaluation.

FIRM DIGITALIZATION AND COMMUNAL STAKEHOLDER RELATIONS

The specific hunch that we explore below has until now played the role of an important background assumption in formulating our intuitions. This background assumption is that people are less likely to understand their relation with a highly digitalized firm in communal (i.e., trusting and cooperative) terms. If so, they should be less likely to consider the maintenance of a relation with the firm as an end in itself. This is true for entities perceived to be low in experience more generally (Broadbent, 2017): for example, people are typically unlikely to consider their car or vacuum cleaner (entities that typically get attributed little experience) to be part of their family, but often consider their pets (entities that are more likely to get attributed experience) to be so.

In this section of the paper, we report the results of two more studies designed to explore the validity of this background assumption. In the first of these, Study 3, we measured the extent to which people expect that they can display communal behaviors (e.g., be helpful to others and show emotional warmth) in the context of their relation with a highly digitalized (vs. minimally digitalized) firm. This measure is a proxy for the extent to which stakeholders experience their relation with a firm as communal in nature.

Study 3

This study is a variation of Study 2. In Study 3, we measured respondents' expectations that they would be able to enact communal behaviors as the mediator, as opposed to experience attributions to the firm. We additionally made two more changes compared to Study 2. First, we changed our manipulation somewhat: rather than asking participants to imagine interacting with a clothing retail company, we asked

TABLE 2
Mediation Analyses in Study 2

A-Path	β *(SE)*	*t*	95% CI
Outcome variable: Experience attributions			
Manipulation (minimally vs. highly digital firm)	–.40 (.06)	−6.82**	[–.52; –.29]

B-path	β *(SE)*	*t*	95% CI	β *(SE)*	*t*	95% CI	β *(SE)*	*t*	95% CI
	Outcome variable: Willingness to buy			***Outcome variable: Trust***			***Outcome variable: Prosocial behavior***		
Manipulation	–.17 (.06)	−2.75**	[–.29; –.05]	–.21 (.07)	−3.21**	[–.34; –.08]	–.07 (.07)	–.95	[–.20; .07]
Experience attributions	.37 (.06)	5.91**	[.25; .49]	.27 (.07)	.07**	[14; .40]	.18 (.07)	2.63**	[.05; .32]
Total effect	–.32 (.06)	−5.26**	[–.44; –.20]	–.32 (.06)	−5.18**	[–.43; –.19]	–.14 (.06)	−2.18*	[–.27; –.01]
Indirect effect	–.15 (.04)		[–.23; –.09]	–.11 (.03)		[–.18; –.05]	–.07 (.03)		[–.14; –.01]

Note: Estimates for the indirect effect are based on bootstrapped samples.
*$p < .05$
**$p < .01$

TABLE 3
Means, Standard Deviations, Reliabilities, and Correlations of and between Key Variables in Study 3

	M (SD)	1	2	3	4
1) Manipulation (minimally vs. highly digitalized firm)	—	—			
2) Communal goals	3.74 (0.73)	−.53**	.88		
3) Willingness to apply	4.41 (1.44)	.13†	.08	.92	
4) Interest in insurance industry	4.04 (0.71)	.11	−.04	.56**	—

Note: Reliabilities (Cronbach's α) are denoted on the diagonal.
†$p < .10$
**$p < .01$

them to imagine interacting with an insurance broker. We did this to test whether our results generalize across industries. Second, rather than measuring willingness to buy as a measure of willingness to affiliate with the company, we measured willingness to apply for a job in the company. This allowed us to investigate the extent to which our results replicate across different stakeholder roles. In addition to testing a different mediator, Study 3 can therefore also be seen as a robustness check for Study 2.

Participants. Due to the similarities in the design of the two studies, similar considerations apply in terms of the number of participants needed to receive adequate power for this study as for Study 2 (Schoemann et al., 2017). This time, we used the correlations found in Study 2 as estimates of the correlations. We used the correlations of firm digitalization and experience attribution with willingness to buy in Study 2 as our best estimates for the correlations of firm digitalization and expectations about communal behavior in Study 3. These analyses showed that we needed a minimal sample size of 69 to achieve adequate power, $B = .80$ to detect a similarly sized effect as in Study 2 with $\alpha = .05$. Given that we used a different mediator variable in this study, we set out to recruit substantially more data points, eventually recruiting 206 participants, all of whom were undergraduate business students enrolled at a large Northwestern European university who participated in exchange for course credit ($M_{age} = 19.3$, $SD = 2.04$, 109 males (53.2%), 94 females (45.9%), the rest did not want to disclose their gender identity or identified as a different gender (0.5%). We restricted participation in Study 3 to participants who had not participated in Study 2 (Study 1 ran at a different university). This sample size provided us with $B = .99$ to detect an effect of similar magnitude as the one we found in Study 2 with $\alpha = .05$.

Procedure. This study is a close conceptual replication (Cook, Campbell, & Shadish, 2002) of Study 2. For reasons of time efficiency, we decided not to include the manipulation checks in this study. Given the clear and strong effects of our manipulation on the checks and other variables in our previous studies, we were confident that our manipulation would once more work in the way intended.

Measures. We measured *willingness to apply* with the scale from Greening and Turban (2000), in a slightly adapted form (see supplemental materials). We averaged responses into a reliable scale. Following Greening and Turban's (2000) instructions, we also included an item that measured the general interest of participants in pursuing a career in the insurance industry. We measured the extent to which participants associated the company with expectations that they would be able to enact *communal behaviors* with the items from Uchronski (2008), which we adapted for the purposes of our study (see supplemental materials). The items were averaged into a reliable scale (see supplemental materials for scale items, response categories, and other relevant information on measurement).

Means, standard deviations, and reliabilities of and correlations between this study's variables are reported in Table 3.

Results

We ran a mediation analysis with willingness to work as the dependent variable, and our communal behaviors scale as the mediator (see Table 4 for the results).[7] Results indicate a significant indirect negative effect of firm digitalization on willingness to apply, through communal behaviors.[8]

These results suggest that people are less likely to believe that they can enact communal behaviors in

[7] As in Study 2, we applied the method proposed by Antonakis et al. (2014) to test for endogeneity in the mediator using 2SLS regression and to provide consistent parameter estimates of the indirect effect using structural equation modeling. See supplemental materials for the results of these analyses. These analyses were supportive of the results we report above.

[8] We also ran this model without the control variable measuring interest in a career in the insurance industry. See supplemental materials for the results (Table 4a).

TABLE 4
Mediation Analysis in Study 3

***A*-path**	**β *(SE)***	***t***	**95% CI**
Outcome variable: Communal goals			
Interested in insurance industry (covariate)	.02 (.06)	.36	[–.10; .14]
Manipulation (minimally vs. highly digital firm)	–.53 (.06)	–8.68**	[–.65; –.41]

***B*-path**	**β *(SE)***	***t***	**95% CI**
Outcome variable: Willingness to apply			
Interest in insurance industry	.56 (.07)	9.40**	[.43; .66]
Manipulation	.17 (.07)	2.43*	[.03; .30]
Communal goals	.18 (.07)	2.69**	[.05; .32]
Total effect	.07 (.06)	1.18	[–.05; .19]
Indirect effect	–.10 (.05)		[–.20; –.01]

Note: Estimates for the indirect effect are based on bootstrapped samples.
*$p < .05$
**$p < .01$

the context of highly (vs. minimally) digitalized firms, reflecting that the relation with such firms is less likely to be seen as communal in nature. They also corroborate the findings of Study 2: using a slightly different manipulation we again find that digitalization undermines willingness to associate with the firm because it reduces attributions of experience to the firm.

Discussion of Study 3 and Introduction to Study 4

Study 3 supports the idea that stakeholders are less likely to believe that they will be able to enact communal behaviors while interacting with a highly (vs. minimally) digitalized firm. This provides additional support for the idea that stakeholders will tend to perceive a relationship with a highly digitalized firm as being of a different nature than a relationship with a minimally digitalized firm. Specifically, our participants expected that becoming part of a highly digitalized firm would mean that they would have to tone down their social behaviors, such as being helpful or understanding to others, or to tone down showing their emotions (all items in the scale we administered).

The literature on the microfoundations of stakeholder relations has acknowledged that stakeholders may have different types of motives to affiliate with a focal firm, ranging from instrumental and self-serving to communal and prosocial (Bridoux & Stoelhorst, 2014; Bridoux, Stofberg, & Den Hartog, 2016; Bundy et al., 2018; McGahan, 2019). Study 3 supports our hunch that people are less likely to trust or to be willing to become affiliated with highly (vs. minimally) digitalized firms because they are less likely to perceive their relationship with such firms in communal terms. If this is indeed the case, then we can also expect that the negative relational consequences of firm digitalization will be stronger among individual stakeholders who have a stronger communal orientation in social relationships (Mills & Clark, 1988). Communal orientation is a stable individual difference between people (a trait), that reflects the extent to which people prefer communal social relationships—that is, relations based on mutual trust and helping—over other types of relationships (e.g., instrumental relationships based on the exchange of benefits;, Clark, Ouellette, Powell, & Milberg, 1987).

An additional reason to expect such a moderation effect is that a person's communal orientation underlies sensitivity to anthropomorphic features in non-human entities (Waytz, Epley et al., 2010): people high in communal orientation are more likely to anthropomorphize an entity when it displays human features (e.g., eyes on a machine, or a brand logo depicted with hands and feet; Mourey, Olson, & Yoon, 2017), because these people have a higher need for sociality (Epley, Waytz, Akalis, & Cacioppo, 2008). Our findings in Studies 1 and 2 suggest that firm digitalization makes the firm appear less humanlike—it reduces the anthropomorphic features of the firm (specifically perceived experience). We suspect that individual stakeholders high in communal orientation may be more sensitive to the presence or absence of firm digitalization compared to individual stakeholders that are low in communal orientation. If so, this should translate into stronger effects of the types we found in Studies 2 and 3 (e.g., on stakeholder willingness to affiliate with the firm and on stakeholder trust) for stakeholders higher in communal orientation.

We designed our fourth and last study to answer the question of whether the negative downstream effects of firm digitalization on stakeholder relations are indeed stronger for people that are higher (vs., lower) in communal orientation. We reused the same overall research design as in Studies 1–3, but this time we measured participants' dispositional communal orientation first, before they were confronted with the manipulation. Another important difference between Study 4 and the previous studies is that we collected data online, using Prolific Academic. Prolific is a Web service that allows access to approximately 130,000 screened participants (Palan & Schitter, 2018). Data collected through Prolific has been shown to be of comparable quality as data collected in behavioral laboratories (Porter, Outlaw, Gale, & Cho, 2019). Using Prolific as a data collection tool allowed us to investigate to what extent our results hold in a different, older, and predominantly U.S.-based sample.

Study 4

Sample. For the purpose of determining appropriate sample size, this study can be compared to Study 2, with the caveat that we are interested in detecting conditional indirect effects as opposed to nonconditional effects. As pointed out by Giner-Sorolla and colleagues (2019), there is currently no consensus on the procedures to calculate required sample size for conditional indirect effects. Therefore, we base our approach on that of Aberson and colleagues (2020: 20), who suggested that "researchers should consider the recommended sample size based on a simple mediation effect they are interested in and scale the sample size based on the expected pattern of moderation (i.e., 1 N for full reversal of effect, 2 N for complete attenuation)." Using the correlations between key variables we found in Study 2 (see Table 1), based on the method devised by Schoemann and colleagues (2017), we estimated that we needed at least 117 observations per cell to reach adequate power, $B = .80$ with $\alpha = .05$. Since we considered complete attenuation as the most likely form of the interaction we predicted, we aimed to recruit at least 234 participants. To be on the safe side, we invited 250 Prolific users to participate in our study. Of these, 247 fully completed our study, $M_{\text{age}} = 31.60$, $SD = 10.37$, 125 males (51%), 122 females (49%). 203 people in our sample (82.7%) indicated that they had at least completed high school, and 154 (62.34%) had obtained at least an associate or bachelor's degree. A total of 186 people (74.1%) indicated that they were self-employed, and the rest indicated that they were currently out of work or retired. The most common types of employment in the sample were management (23.1%), employment in the service industry (26.7%), or employment in sales (15.1%). Calculating the true power of our test, based on this sample size, to detect a moderated mediation effect (as opposed to a simple mediation effect) is not straightforward (Aberson et al., 2022). However, true power is very likely to be substantially larger than $B = .8$.

Procedure. Our procedure was similar to the procedure used for Study 2, with the following differences. First, before people started on the study proper, we asked them to complete a questionnaire measuring their communal orientation (see below, under "Measures"). Second, we used the vignette we also used in Study 3 to manipulate firm digitalization (i.e., the firm was described as an insurance broker as opposed to a clothing retailer). Third, mindful of the fact that participant retention in online studies is highly dependent upon study length (Paolacci & Chandler, 2014; Springer, Martini, Lindsey, & Vezich, 2016), we decided not to administer manipulation checks in this study. Lastly, we only measured trust and willingness to buy as dependent variables in this study. This was because the operationalization of our third dependent variable in Study 2, prosocial behavior, was quite context-specific and did not fit the vignette we used in this study.

Measures. We measured *communal orientation* with the instrument of Clark and colleagues (1987), and averaged the items into a reliable scale. We measured our dependent variables, *trust in the firm* and *willingness to buy*, in the same way as we did in Study 2. See Table 5 for means, standard deviations, correlations between and reliability of key variables in this study (see supplemental materials for scale items, response categories, and other relevant information on measurement).

Results

Visual inspection of the data revealed that one participant scored extremely low ($>$ 3 SD below the mean) on the communal orientation scale. The value for this participant turned out to be lower than the lower limit of Tukey's (1977) hinges, based on 1.5 interquartile ranges (IQRs). More importantly, the Mahalanobis distance for this observation was 24.57 with a χ^2 probability of $p < .0005$ (Penny, 1996). Because of the centrality of communal orientation in our models, we decided to report the results of the models without this participant and report the results including the outlier in the supplemental materials to this paper (see Table 4 for the moderated mediation models in this study). In both cases, we estimated a model in which communal orientation moderates the

TABLE 5
Means, Standard Deviations, Reliabilities, and Correlations of and between Key Variables in Study 4

	M (SD)	1	2	3	4	5
1) Communal orientation	3.62 (0.55)	.82				
2) Manipulation (minimally vs. highly digital firm)	—	.004	—			
3) Experience attributions	36.55 (29.22)	–.09	–.53**	.89		
4) Willingness to buy	3.91 (.90)	.03	–.05	.28**	.91	
5) Trust in the firm	4.59 (.90)	.12†	–.21**	.291**	.53**	.77

Note: Reliabilities (Cronbach's α) are denoted on the diagonal.
†$p < .10$
**$p < .01$

A-path from independent variable (firm digitalization) to mediator (experience attributions).[9]

We find significant moderation by communal orientation on the indirect effect of firm digitalization on both our dependent variables (willingness to buy and trust).[10]

To probe the interaction of firm digitalization and communal orientation on experience attributions to the firm, we use the regions-of-significance technique proposed by Johnson and Neyman (1936). Rather than only relying on arguably arbitrary values (e.g., +/− 1 *SD*) on the moderator to determine point-estimates of the effect of the independent variable on, in our case, the mediator (see Table 6 for these point estimates), this technique involves computing regions along the slope of the mediator where this effect is (in)significant. Figure 2 shows the magnitude of the slope of the effect of firm digitalization across the measured range of communal orientation in our sample. As can be seen, the indirect effect of digitalization on experience attributions turned out to be insignificant below –2.30 *SD* from the mean. At this threshold, the effect was relatively weak and marginally significant, $\beta = -.27$, $SE = .14$, $t(241) = -1.97$, $p = .050$, 95% CI [–.54; .00], $f = .13$. Above that threshold, the effect turned out to be significant across the measured range but was substantially stronger at the upper end of the distribution, at the right-hand side of Figure 2, at 2.64 *SD* from the mean, $\beta = -.81$, $SE = .14$, $t(241) = -5.63$, $p < .001$, 95% CI [–1.09; –.52], $f = .36$. Hence, as illustrated in Figure 2, across the measured range the negative effect of firm digitalization on experience attributions increased with the strength of a participant's communal orientation.

Discussion of Study 4

The results of Study 4 corroborate our findings from Study 3. These two studies map on to what Sætre and Van de Ven (2021a) called hunch-generation and hunch-evaluation, the last two steps in their four-step process to abductive theory-generation. Taken together, these studies support our intuition that stakeholders are less likely to see their relationship with a highly (vs. minimally) digitalized firm in communal terms. As we have noted, stakeholder theorists have argued that the ability of a firm to have productive value-creating relations with its stakeholders is contingent upon stakeholders developing communal motives toward the firm (Berman et al., 1999; Bridoux & Stoelhorst, 2016; Bundy et al., 2018; Jones et al., 2018). Our results imply that firm digitalization may make it harder for firms to maintain such productive relations.

GENERAL DISCUSSION AND CONCLUSION

Across four studies, we found evidence that digitalization undermines firm anthropomorphization through diminished experience attributions to a focal firm (specifically Studies 1, 2, and 4); and that because of diminished experience attributions, individual stakeholders are less willing to become affiliated with a highly (vs. minimally) digitalized firm (Studies 2, 3, and 4), are less likely to trust a highly digitalized firm (Studies 2 and 4), and are less likely to enact prosocial behaviors toward such a firm (Study 2). We also found evidence that one reason why these effects occur is that people believe that associating with a highly digitalized firm impedes their ability to enact communal behaviors (Study 3), and that the negative downstream effects of firm digitalization are more likely to occur for stakeholders with a relatively strong communal orientation

[9] As in Studies 2 and 3, we checked our analyses using 2SLS regression and structural equation modeling, in order to provide consistent parameter estimates. Results of these analyses can be found in the supplemental materials. Overall, these analyses were supportive of our conclusions presented here.

[10] When including the excluded outlier, the indices for moderated mediation turn marginal in both cases (see Table 6a in the supplemental materials).

TABLE 6
Moderated Mediation Analyses in Study 4

A-path	β *(SE)*	*t*	95% CI
Outcome variable: Experience attributions			
Manipulation (minimally vs. highly digital firm)	−.53 (.05)	−9.93**	[−.63; −.42]
Communal orientation	−.07 (.05)	−1.26	[−.18; .04]
Manipulation × communal orientation	−.11 (.05)	2.08*	[−.22; −.01]
Exchange orientation	−.08 (.05)	−1.50	[−.19; .03]

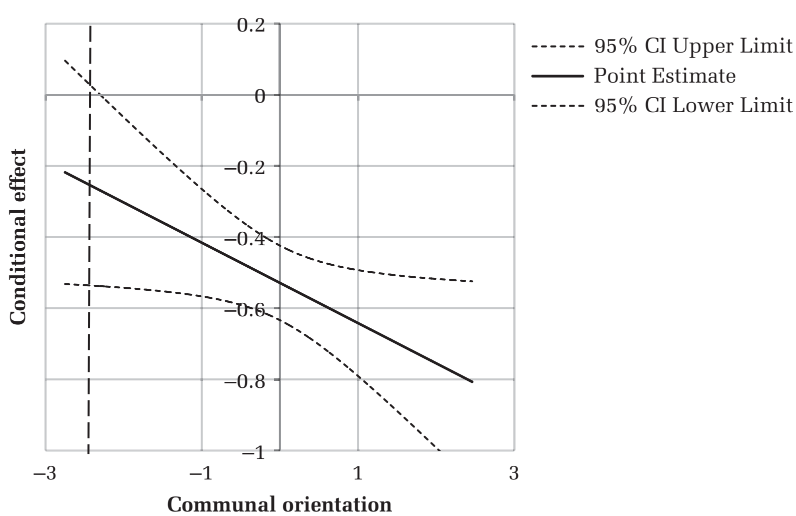
B-path		β *(SE)*	*t*	95% CI	β *(SE)*	*t*	95% CI
Outcome variable: Willingness to buy					***Outcome variable: Trust***		
Experience attributions		.35 (.07)	4.80**	[.21; .50]	.26 (.07)	3.60**	[.12; .41]
Manipulation		.13 (.07)	1.81†	[−.01; .28]	−.07 (.07)	−.89	[−.21; .08]
Exchange orientation		.02 (.06)	.30	[−10; .14]	.05 (.06)	.77	[−.07; .17]
		Point estimate	***BootSE***	**95% CI**	***Point estimate***	***BootSE***	**95% CI**
Conditional indirect effects	−1 *SD*	−.15	.04	[−.24; −.07]	−.11	.04	[−.20; −.04]
	+1 *SD*	−.23	.05	[−.24; −.13]	−.17	.05	[−.30; −.07]
Index of moderated mediation		−.04	.02	[−.08; −.003]	−.03	.02	[−.07; −.001]

Note. Estimates for the index of moderated mediation are based on bootstrapped samples.
†$p < .10$
*$p < .05$
**$p < .01$

(Study 4)—supporting our assumption that relations with highly (vs. minimally) digitalized firms are seen in a less communal light. We achieved these findings by manipulating firm digitalization in different industries (clothing retailing in Studies 1 and 2, and insurance brokering in Studies 3 and 4), in different types of samples (students at two different European universities in Studies 1–3, and the working-age population in the United States in Study 4), for different stakeholder roles (customers in Studies 1, 2, and 4, and prospective employees in Study 3), and by using different operationalizations of some of our key variables (we measured willingness to affiliate through willingness to buy and willingness to apply), finding consistent effects throughout.

Together, our results suggest that digitalization diminishes the extent to which individual stakeholders tend to anthropomorphize a firm, and that

FIGURE 2
Simple Slope of Firm Digitalization on Experience Attributions (Standardized) as a Function of Communal Orientation (Standardized) in Study 4



Note: Curved lines represent 95% CIs around the slope. Simple slope is significant to the right of the dotted line.

diminished firm anthropomorphization has relational consequences because it causes stakeholders to perceive their relation with the firm in a less communal light. We discuss the implications of our findings for stakeholder theory, for research on firm anthropomorphization, and for managerial practice.

Implications for Stakeholder Theory

Our first contribution is to the literature on the microfoundations of stakeholder relations that provided the starting point for our research. The central question in this literature is why and how individual stakeholders respond differently to different types of firms, and a central argument is that how a firm is managed determines whether individual stakeholders establish trusting and cooperative (i.e., communal) relations based on moral norms with a firm, or instrumental and arm's-length relations based on self-interest (Bosse et al., 2009; Bridoux & Stoelhorst, 2014, 2016; Harrison et al., 2010). Our contribution to this literature is to provide empirical evidence for these arguments, which have so far been based on purely theoretically reasoning. Our findings regarding how digitalization affects the response of stakeholders to a firm offer some initial empirical corroboration for the theorizing in this literature, and suggest that managerial choices may indeed affect stakeholders' tendencies to form more- or less-communal, as opposed to instrumental, relations with firms.

Moreover, by highlighting firm anthropomorphization as a mechanism underlying this effect, our research empirically validates, but at the same time nuances, an important but largely implicit assumption in the microfoundations of stakeholder relations literature. This is the assumption that because people tend to anthropomorphize organizations (Felin, Foss, & Ployhart, 2015), we can generalize research into the psychological mechanisms that regulate relations among people to the relationships that people establish with firms (see Bridoux & Stoelhorst, 2016). As our research shows, people do indeed tend to anthropomorphize firms, but the important nuance is that they do so more for some firms than for others. The difference lies in the attribution of different levels of experience (as opposed to agency) to different types of firms (for similar findings, see Quintelier, 2022; Quintelier, van Hugten, Parmar, & Brokerhof, 2021). In addition, our studies show that these different levels of experience attribution are also likely to have downstream relational consequences.

We believe that these findings are likely to generalize beyond digitalization: how stakeholders perceive the firm—that is, in more- or less-human terms—may well underlie many of their attitudes toward and responses to the firm. If so, then how various managerial choices about how to engage with stakeholders affect the level of firm anthropomorphization by these stakeholders suggests itself as an important research topic for stakeholder theorists.

Implications for Research on Firm Anthropomorphization

Our second contribution is to research on firm anthropomorphization. This recent stream of research has so far established that people can and do anthropomorphize firms (Knobe & Prinz, 2008), and has focused on downstream effects of firm anthropomorphization when firms are perceived to engage in misbehavior (e.g., anger or punishment satisfaction; Rai & Diermeier, 2015; Tang & Gray, 2018, see above). We make three contributions to this literature. First, we show that not all firms are equal. The research on firm anthropomorphization to date has largely treated firms as a homogeneous category, but our research suggests that how firms are managed (*in casu*, their levels of digitalization) may affect the extent to which stakeholders are likely to anthropomorphize them. Second, we show that the downstream effects of firm anthropomorphization may include fundamental changes to the nature of a firm's relations with its stakeholders. Third, in finding support for our intuition that firms that are attributed relatively little experience are also seen as noncommunal, we provide an empirically grounded reason why anthropomorphization is likely to have these relational effects.

In addition, our findings suggest that the literature on firm anthropomorphization should probably play a larger role in organizational behavior research more generally. Many of the individual-level outcomes that organizational researchers are interested in, such as organizational commitment (Bergman, 2006) or extra-role behaviors (Van Dyne & LePine, 1998), are likely to be related to the extent to which people experience their relation with the focal firm in a communal light. For example, organizational commitment has been shown to be rooted to a significant extent in a sense of loyalty and belongingness to the firm (Redman & Snape, 2005). Similarly, extra-role behaviors are typically understood to be organizationally relevant prosocial behaviors (Moorman & Blakely, 1995), and are therefore often driven by communal motives (Organ, 1988). The overall hypothesis that emerges from our work is that the degree to which stakeholders anthropomorphize a firm, in particular the degree to which they attribute experience to that firm, is predictive of their tendency to form communal relations with it. If, in turn, many of the behaviors that organizational behavior research is interested in depend on the degree to which individual stakeholders perceive their relationships with a firm in a communal light, then this suggests that firm anthropomorphization should play a role in our theorizing about the sociocognitive foundations of *many* organizational behaviors.

Managerial Implications

Our main overall contribution is the discovery of a negative downstream effect of digitalization that has yet to receive sufficient attention in the management literature. Our research is one of the first attempts to understand the social effects of digitalization (but, for a compatible perspective, see Jackson, Castelo, & Gray, 2020), and our results suggest that managers should realize that digitalization is not merely an operational or strategic issue with implications for a firm's efficiency or competitive position. Digitalization is also a *relational* issue that may fundamentally change how stakeholders experience and make sense of their interactions with a firm. The widespread digitalization of business has been hailed as a new "industrial revolution" (World Economic Forum, 2016), but an exclusive focus on the possible efficiency gains of this "revolution" risks overlooking potential negative side effects on stakeholder relations. Managers should, at a minimum, be aware of the possible relational pitfalls of increasing their firms' reliance on digital technologies.

Limitations and Future Research

An obvious limitation of our work is that, as a "proof of concept," it has merely taken a first stab at the phenomenon under investigation. Due to our experimental methodology, we have taken a relatively coarse-grained approach to manipulating digitalization, by comparing reactions to an essentially purely digital firm with reactions to an essentially nondigital firm. Note that in experimental research terms this approach is "a feature, not a bug"—clean manipulation of independent variables is a *sine qua non* for experimental control (Aguinis & Bradley, 2014). We chose to use an experimental methodology exactly because it allows for isolating effects with a high degree of specificity (Mueller, 2018). Nevertheless, future research could and should take a finer-grained approach to better understand the effects of different forms of digitalization and to establish how the effects of digitalization that we discovered in the controlled environment of a lab play out for real-life firms. We encourage further research, particularly based on non- and quasi-experimental approaches (Campbell & Stanley, 2015), to build on the effects we found and to probe the external and ecological validity of our findings.

In addition to such work, an interesting avenue for research on firm anthropomorphization would be to look into other antecedents of variations in firm anthropomorphization, and whether those antecedents work in the same way as firm digitalization. The empirical studies on firm anthropomorphization that we are aware of have all found, like we do, that firms are seen as relatively high in agency and relatively low in experience (Quintelier, 2022; Rai & Diermeier, 2015; Strohminger & Jordan, 2022; Tang & Gray, 2018). Similarly, the only other studies that we are aware of that have looked into an antecedent of firm anthropomorphization (Quintelier, 2022; Tang & Gray, 2018) have found, like we do, that this antecedent (respectively, a firm that is explicitly associated with a human representative or not, and a firm that is stakeholder-oriented as opposed to profit-oriented) only affects the attribution of experience, and not the attribution of agency. It is an open question as to whether these results generalize to all antecedents of variations in firm anthropomorphization, or whether the antecedents that may affect the attribution of agency have simply not yet been discovered. If such antecedents do exist, they are also likely to affect stakeholder relations. For example, a firm seen to be low in both agency and experience may be considered a mere object, and therefore engender even more instrumental attitudes (Pantelis et al., 2016)

An important question for future research into both digitalization and stakeholder relations is whether the negative relational effects of digitalization that we found are lasting—a question to which our studies do not speak. It could conceivably be the case that longer-term interactions with a highly digitalized firm can overcome at least some of the effects that we found. If so, then our findings reduce to the discovery that "swift" (or "initial") trust is lower for highly (vs., minimally) digitalized firms. This would still be an important finding, because swift trust can affect the development of trust over the entire duration of an interaction or relation (Schilke & Huang, 2018). At the very minimum, our findings suggest that, *ceteris paribus*, highly digitalized firms are more likely to start new stakeholder relations from a position of relatively low trust, whereas minimally digitalized firms are more likely to start from a position of relatively high trust. This is important because it implies that, in the words of Gamez-Djokic, Kouchaki, and Waytz (2021), being minimally digitalized may provide some "credentialling power" that highly digitalized firms lack. That is, individual stakeholders may be more likely to attribute benign intentions to minimally (vs., highly) digitalized firms, and trust in such firms may therefore be more robust.

In light of this, another point that future research could consider is whether there are other mechanisms than anthropomorphization that may counteract the effects of digitalization that we found.

Our results do not necessarily mean that highly digitalized firms cannot build communal stakeholder relations at all: there may well be other channels through which management can increase stakeholders' willingness to affiliate with, trust in, and enact prosocial behavior toward their firms. Similarly, further research could investigate potential moderators of the effects that we discovered. A few (though not yet many), moderators have already been identified. For example, Tang and Gray (2018) indicated that emphasizing human representatives of the firm when communicating with stakeholders may increase firm anthropomorphization. Synthesizing this with our own findings suggests that stakeholder communication may be a channel through which firms, and in particular highly digitalized firms, can increase firm anthropomorphization and build more trusting and cooperative relations. In a similar vein, highly digitalized firms could plausibly avoid some of the negative relational consequences of digitalization by focusing digitalization efforts on business processes that are, relatively speaking, less relevant for stakeholder engagement (e.g., inbound logistics) and choosing to use human employees for more stakeholder-focused tasks (e.g., "the last mile").

Our own results also suggest an interesting (but substantially different) way in which the negative relational consequences of digitalization may be counteracted. The outcome variable model in Study 3 (Table 6) shows a significant positive *direct* effect of firm digitalization on willingness to apply. In other words, controlling for the extent to which participants believed that they would be able to enact communal behavior while interacting with the focal firm, our participants were *more* willing to apply to the highly digitalized firm than to the minimally digitalized firm. A potential explanation for this finding may be that participants saw digitalized firms as providing more exciting career options (an instrumental motive). However, this higher interest in the digitalized firm was cancelled out by the negative indirect effect on willingness to affiliate through diminished expectations of being able to enact communal behaviors, resulting in an insignificant total effect. In other words, our findings suggest that despite seeing digitalized firms as attractive in instrumental terms, people may nevertheless be disinclined to affiliate with such firms for communal reasons. One possible response to this finding by managers of highly digitalized firms could be to explicitly present affiliation with their firms as instrumentally attractive and choose to build stakeholder relations based on stakeholders' instrumental motives. As Bridoux and Stoelhorst (2014) have argued, while most stakeholders seem to prefer entering into trusting and cooperative relations based on fairness and strong reciprocity, there are also examples of successful firms that seem to be oriented on attracting stakeholders that are not at all concerned about communal values.

Another topic for future research is to further investigate how personality differences among stakeholders may interact with our results. For instance, in Study 4 we found that the negative relational effects of digitalization were stronger for stakeholders who are high in communal orientation. This would suggest that the opposite effect may occur for stakeholders who are more instrumentally oriented in social relationships—a personality trait commonly called exchange orientation (Buunk & Prins, 1998). A person who is high (vs. low) in exchange orientation is more likely to believe that social relations should be governed by norms of direct reciprocity and mutual benefit (Mills & Clark, 1988).[11] It is possible, therefore, that people higher in exchange orientation are less likely to be sensitive to the attributed experience to a focal firm, since entities do not necessarily need to be highly experiential to engage in direct reciprocal behaviors (Yoshikawa, Wu, & Lee, 2020). More generally, studying individual differences between stakeholders that may facilitate or impede the effects of firm digitalization that we have documented is a potentially fruitful avenue for further research.

A final suggestion for future research is to look into possible negative effects of firm anthropomorphization on stakeholder relations. While our results suggest that the fact that nondigitalized firms are more likely to be anthropomorphized also makes it more likely that stakeholders will enter into the type of communal relations that stakeholder theory has identified as crucial for value creation, it is not necessarily the case that higher levels of firm anthropomorphization will always and only have positive consequences for firms. For instance, one thing that stakeholder theorists should consider is that higher levels of firm anthropomorphization are also likely to raise the bar for the firm's own behavior: previous research has suggested that stakeholders may be more willing to punish anthropomorphized firms when they engage in (perceived) misbehavior (Rai & Diermeier, 2015; Tang & Gray, 2018). Moreover, we may expect that how, exactly, firms are anthropomorphized will matter for the type of relations that

[11] There is a fundamental difference between "direct reciprocity," which directly benefits both parties to an exchange and which can therefore also operate in instrumental exchanges among purely self-interested individuals, and "strong reciprocity," which (by definition) involves a personal cost for the reciprocating individual, and which operates in social relations among morally motivated individuals (see also Fehr, Fischbacher, & Gächter, 2002).

stakeholders are willing to enter into, in the sense that the specific human characteristics that people attribute to a firm should help predict whether they are more likely to enter into a communal or instrumental relationship with the firm. For example, stakeholders that describe Amazon as "ruthless" (Ashforth et al., 2018: 29) are anthropomorphizing the firm, but do so in terms that suggest that they liken the firm to the type of person (someone high in agency but low in experience) that they would probably *not* want to form a trusting and cooperative relation with.

CONCLUSION

We started this paper by asking whether digitalization may change the ways in which stakeholders relate to firms. Our four studies suggest (a) that the answer to this question is "yes," (b) that this effect is at least in part driven by the fact that digitalization impedes firm anthropomorphization (in particular the attribution of experience), and (c) that the specific consequence of lower levels of firm anthropomorphization is that stakeholders are less likely to enter into a communal (trusting and cooperative) relationship with a firm. The further digitalization of firms, which has been touted and feared in equal measure (Frey, 2019; Schwab, 2017), may therefore make it harder for managers to establish the types of relationships that stakeholder theorists have pointed out as the key to building firms that maximize value creation.

REFERENCES

Aberson, C. L., Bostyn, D. H., Carpenter, T., Conrique, B. G., Giner-Sorolla, R., Lewis, N. A., Jr., Montoya, A. M., Ng, B. W., Reifman, A., Schoemann, A. M., & Soderberg, C. 2020. Techniques and solutions for sample size determination in psychology: Supplementary material for "power to detect what? Considerations for planning and evaluating sample size". ***OSF Home***. [Unpublished Manuscript.] Retrieved from https://osf.io/9bt5s/.

Aberson, C. L., Bostyn, D. H., Carpenter, T., Conrique, B. G., Giner-Sorolla, R., Lewis, N. A., Montoya, A. K., Ng, B. W., Reifman, A., Schoemann, A. M., & Soderberg, C. 2022. Techniques and solutions for sample size determination in psychology: A critical review. [Unpublished Manuscript.] Retrieved from https://osf.io/psyjn/download.

Aguinis, H., & Bradley, K. J. 2014. Best practice recommendations for designing and implementing experimental vignette methodology studies. ***Organizational Research Methods***, 17: 351–371.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. 2010. On making causal claims: A review and recommendations. ***Leadership Quarterly***, 21: 1086–1120.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. 2014. Causality and endogeneity: Problems and solutions. In D. V. Day (Ed.), ***Oxford handbook of leadership and organizations***, vol. 1: 93–117. New York, NY: Oxford University Press.

Ashforth, B. E., Schinoff, B. S., & Brickson, S. 2018. "My company is friendly," "mine's a rebel": Anthropomorphism and shifting organizational identity from "what" to "who." ***Academy of Management Review***, 45: 29–57.

Ashforth, B. E., Schinoff, B. S., & Rogers, K. M. 2016. "I identify with her," "I identify with him": Unpacking the dynamics of personal identification in organizations. ***Academy of Management Review***, 41: 28–60.

Baer, M. D., Van Der Werff, L., Colquitt, J. A., Rodell, J. B., Zipay, K. P., & Buckley, F. 2018. Trusting the "look and feel": Situational normality, situational aesthetics, and the perceived trustworthiness of organizations. ***Academy of Management Journal***, 61: 1718–1740.

Bamberger, P. A. 2018. AMD—Clarifying what we are about and where we are going. ***Academy of Management Discoveries***, 4: 1–10.

BarNir, A., Gallaugher, J. M., & Auger, P. 2003. Business process digitization, strategy, and the impact of firm age and size: The case of the magazine publishing industry. ***Journal of Business Venturing***, 18: 789–814.

Bastian, B., Jetten, J., & Haslam, N. 2014. An interpersonal perspective on dehumanization. In P. G. Bain, J. Vaes, & J. P. Leyens (Eds.), ***Humanness and dehumanization***: 205–224. New York, NY: Psychological Press New York.

Batson, C. D. 2010. Empathy-induced altruistic motivation. In M. Mikulincer & R. P. Shaver (Eds.), ***Prosocial motives, emotions, and behavior: The better angels of our nature***: 15–34. Washington, DC: American Psychological Association.

Bergman, M. E. 2006. The relationship between affective and normative commitment: Review and research agenda. ***Journal of Organizational Behavior***, 27: 645–663.

Berman, S. L., Wicks, A. C., Kotha, S., & Jones, T. M. 1999. Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. ***Academy of Management Journal***, 42: 488–506.

Bleicher, J., & Stanley, H. 2016. Digitization as a catalyst for business model innovation a three-step approach to facilitating economic success. ***Journal of Business and Management***, 4: 62–71.

Bosse, D. A., & Coughlan, R. 2016. Stakeholder relationship bonds. ***Journal of Management Studies***, 53: 1197–1222.

Bosse, D. A., Phillips, R. A., & Harrison, J. S. 2009. Stakeholders, reciprocity, and firm performance. ***Strategic Management Journal***, 30: 447–456.

Brandão, C., Morais, C., Dias, S., Silva, A. R., & Mário, R. 2017. Using online recruitment: Implicit theories and candidates' profile. In Á. Rocha, A. Correia, H. Adeli, L. Reis, & S. Costanzo (Eds.), ***Recent advances in information systems and technologies***: 293–301. New York, NY: Springer.

Bridoux, F., & Stoelhorst, J. W. 2014. Microfoundations for stakeholder theory: Managing stakeholders with heterogeneous motives. ***Strategic Management Journal***, 35: 107–125.

Bridoux, F., & Stoelhorst, J. W. 2016. Stakeholder relationships and social welfare: A behavioral theory of contributions to joint value creation. ***Academy of Management Review***, 41: 229–251.

Bridoux, F., & Stoelhorst, J. W. 2022. Stakeholder governance: Solving the collective action problems in joint value creation. ***Academy of Management Review***, 47: 214–236.

Bridoux, F., Stofberg, N., & Den Hartog, D. 2016. Stakeholders' responses to CSR tradeoffs: When other-orientation and trust trump material self-interest. ***Frontiers in Psychology***, 6: 1–18.

Broadbent, E. 2017. Interactions with robots: The truths we reveal about ourselves. ***Annual Review of Psychology***, 68: 627–652.

Brynjolfsson, E., & Mcafee, A. 2017. The business of artificial intelligence. ***Harvard Business Review***: 1–20.

Bundy, J. 2019. Considering a behavioral view of stakeholders. In ***The Cambridge handbook of stakeholder theory***: 245–249. Cambridge, U.K.: Cambridge University Press.

Bundy, J., Vogel, R. M., & Zachary, M. A. 2018. Organization–stakeholder fit: A dynamic theory of cooperation, compromise, and conflict between an organization and its stakeholders. ***Strategic Management Journal***, 39: 476–501.

Buunk, B. P., & Prins, K. S. 1998. Loneliness, exchange orientation, and reciprocity in friendships. ***Personal Relationships***, 5: 1–14.

Campbell, D. T., & Stanley, J. C. 2015. ***Experimental and quasi-experimental designs for research***. Boston, MA: Houghton Mifflin.

Champely, S., Ekstrom, C., Dalgaard, P., Gill, J., Weibelzahl, S., Anandkumar, A., Ford, C., Volcic, R., & De Rosario, H. 2018. Package "pwr." ***R Package Version***. Retrieved from https://cran.r-project.org/web/packages/pwr/index.html.

Clark, M. S., Ouellette, R., Powell, M. C., & Milberg, S. 1987. Recipient's mood, relationship type, and helping. ***Journal of Personality and Social Psychology***, 53: 94–103.

Cook, T. D., Campbell, D. T., & Shadish, W. 2002. ***Experimental and quasi-experimental designs for generalized causal inference***. Boston, MA: Houghton Mifflin.

Crilly, D. 2019. Behavioral stakeholder theory. In J. S. Harrison, J. B. Barney, R. E. Freeman, & R. A. Phillips (Eds.), ***The Cambridge handbook of stakeholder theory***: 250–255. Cambridge, U.K.: Cambridge University Press.

Crimston, D., Hornsey, M. J., Bain, P. G., & Bastian, B. 2018. Toward a psychology of moral expansiveness. ***Current Directions in Psychological Science***, 27: 14–19.

Cushman, F. 2015. Punishment in humans: From intuitions to institutions. ***Philosophy Compass***, 10: 117–133.

de Visser, E. J., Monfort, S. S., Goodyear, K., Lu, L., O'Hara, M., Lee, M. R., Parasuraman, R., & Krueger, F. 2017. A little anthropomorphism goes a long way. ***Human Factors***, 59: 116–133.

de Visser, E. J., Monfort, S. S., McKendrick, R., Smith, M. A., McKnight, P. E., Krueger, F., & Parasuraman, R. 2016. Almost human: Anthropomorphism increases trust resilience in cognitive agents. ***Journal of Experimental Psychology. Applied***, 22: 331–349.

Epley, N., Akalis, S., Waytz, A., & Cacioppo, J. T. 2008. Creating social connection through inferential reproduction: Loneliness and perceived agency in gadgets, gods, and greyhounds. ***Psychological Science***, 19: 114–120.

Epley, N., Waytz, A., Akalis, S., & Cacioppo, J. T. 2008. When we need a human: Motivational determinants of anthropomorphism. ***Social Cognition***, 26: 143–155.

Epley, N., Waytz, A., & Cacioppo, J. T. 2007. On seeing human: A three-factor theory of anthropomorphism. ***Psychological Review***, 114: 864.

Fehr, E., Fischbacher, U., & Gächter, S. 2002. Strong reciprocity, human cooperation, and the enforcement of social norms. ***Human Nature (Hawthorne, N.Y.)***, 13: 1–25.

Felin, T., Foss, N. J., & Ployhart, R. E. 2015. The microfoundations movement in strategy and organization theory. ***Academy of Management Annals***, 9: 575–632.

Folger, R., & Stein, C. 2017. Abduction 101: Reasoning processes to aid discovery. ***Human Resource Management Review***, 27: 306–315.

Freeman, R. E. 1984. Strategic management: A stakeholder theory. ***Journal of Management Studies***, 39: 1–21.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. 2010. ***Stakeholder theory: The state of the art***. Cambridge, U.K.: Cambridge University Press.

Frey, C. B. 2019. ***The technology trap: Capital, labor, and power in the age of automation***. Princeton, NJ: Princeton University Press.

Friedman, J., Jack, A. I., Rochford, K., & Boyatzis, R. 2015. Antagonistic neural networks underlying organizational behavior in organizational neuroscience. In D. A. Waldman & P. A. Balthazard (Eds.), ***Monographs in leadership and management***, vol. 7: 115–141. Bingley, U.K.: Emerald Publishing.

Gamez-Djokic, M., Kouchaki, M., & Waytz, A. 2021. Virtuous startups: The credentialing power of the startup label. ***Academy of Management Discoveries***, 8: 441–458.

Giner-Sorolla, R., Montoya, A., Aberson, C., Carpenter, T., Lewis, N., Jr, Bostyn, D. H., Conrique, B., Ng, B. W., Reifman, A., Schoemann, A. M., & Soderberg, C. K. 2019. Power to detect what? Considerations for planning and evaluating sample size. [Unpublished manuscript.]. Retrieved from https://psyarxiv.com/rv3kw/download/?format=pdf.

Glikson, E., & Woolley, A. W. 2020. Human trust in artificial intelligence: Review of empirical research. ***Academy of Management Annals***, 14: 627–660.

Gray, H. M., Gray, K., & Wegner, D. M. 2007. Dimensions of mind perception. ***Science***, 315: 619.

Gray, K., Knobe, J., Sheskin, M., Bloom, P., & Barrett, L. F. 2011. More than a body: Mind perception and the nature of objectification. ***Journal of Personality and Social Psychology***, 101: 1207–1220.

Greening, D. W., & Turban, D. B. 2000. Corporate social performance as a competitive advantage in attracting a quality workforce. ***Business & Society***, 39: 254–280.

Hahn, T. 2015. Reciprocal stakeholder behavior: A motive-based approach to the implementation of normative stakeholder demands. ***Business & Society***, 54: 9–51.

Hancock, P. A., Billings, D. R., Schaefer, K. E., Chen, J. Y., De Visser, E. J., & Parasuraman, R. 2011. A meta-analysis of factors affecting trust in human-robot interaction. ***Human Factors***, 53: 517–527.

Harrison, J. A., & Budworth, M.-H. 2015. Unintended consequences of a digital presence: Employment-related implications for job seekers. ***Career Development International***, 20: 294–314.

Harrison, J. S., Bosse, D. A., & Phillips, R. A. 2010. Managing for stakeholders, stakeholder utility functions, and competitive advantage. ***Strategic Management Journal***, 31: 58–74.

Hayes, A. F. 2017. ***Introduction to mediation, moderation, and conditional process analysis: A regression-based approach***. New York, NY: Guilford Publications.

Higgins, E. T., Rholes, W. S., & Jones, C. R. 1977. Category accessibility and impression formation. ***Journal of Experimental Social Psychology***, 13: 141–154.

Highhouse, S., Brooks, M. E., & Gregarus, G. 2009. An organizational impression management perspective on the formation of corporate reputations. ***Journal of Management***, 35: 1481–1493.

Jack, A. I., Dawson, A. J., & Norr, M. E. 2013. Seeing human: Distinct and overlapping neural signatures associated with two forms of dehumanization. ***NeuroImage***, 79: 313–328.

Jackson, J., Castelo, N., & Gray, K. 2020. Could a rising robot workforce make humans less prejudiced? ***American Psychologist***, 75: 969–982.

Jenkins, A. C., Dodell-Feder, D., Saxe, R., & Knobe, J. 2014. The neural bases of directed and spontaneous mental state attributions to group agents. ***PLoS One***, 9: e105341.

Johnson, P., & Neyman, J. 1936. Tests of certain linear hypotheses and their application to some educational problems. ***Statistical Research Memoirs***, 1: 57–93.

Jones, T. M. 1995. Instrumental stakeholder theory: A synthesis of ethics and economics. ***Academy of Management Review***, 20: 404–437.

Jones, T. M., Harrison, J. S., & Felps, W. 2018. How applying instrumental stakeholder theory can provide sustainable competitive advantage. ***Academy of Management Review***, 43: 371–391.

Khalid, S., Deska, J. C., & Hugenberg, K. 2016. The eyes are the windows to the mind: Direct eye gaze triggers the ascription of others' minds. ***Personality and Social Psychology Bulletin***, 42: 1666–1677.

Knobe, J., & Prinz, J. 2008. Intuitions about consciousness: Experimental studies. ***Phenomenology and the Cognitive Sciences***, 7: 67–83.

Koehn, D. 1998. Virtue ethics, the firm, and moral psychology. ***Business Ethics Quarterly***, 8: 497–513.

Lange, D., Bundy, J., & Park, E. 2022. The social nature of stakeholder utility. ***Academy of Management Review***, 47: 9–30.

Levinson, H. 1965. Reciprocation: The relationship between man and organization. ***Administrative Science Quarterly***, 9: 370–390.

Liao, Z., & Cheung, M. T. 2002. Internet-based e-banking and consumer attitudes: An empirical study. ***Information & Management***, 39: 283–295.

Malle, B. F., Moses, L. J., & Baldwin, D. A. 2001. ***Intentions and intentionality: Foundations of social cognition***. Cambridge, MA: MIT Press.

Mayer, R. C., & Davis, J. H. 1999. The effect of the performance appraisal system on trust for management: A field quasi-experiment. ***Journal of Applied Psychology***, 84: 123.

McGahan, A. 2019. Where does an organization's responsibility end? Identifying the boundaries on stakeholder claims. ***Academy of Management Discoveries***, 6.

Mills, J., & Clark, M. S. 1988. ***Communal and exchange relationships: New research and old controversies***. Invited address at the biannual meeting of the International Society for the Study of Personal Relationships, Vancouver, BC.

Moorman, R. H., & Blakely, G. L. 1995. Individualism-collectivism as an individual difference predictor of organizational citizenship behavior. ***Journal of Organizational Behavior***, 16: 127–142.

Mourey, J. A., Olson, J. G., & Yoon, C. 2017. Products as pals: Engaging with anthropomorphic products mitigates the effects of social exclusion. ***Journal of Consumer Research***, 44: 414–431.

Mueller, J. 2018. Finding new kinds of needles in haystacks: Experimentation in the course of abduction. ***Academy of Management Discoveries***, 4: 103–108.

Nardella, G., Branicki, L. J., & Brammer, S. 2019. Anthropomorphization and the dynamics of corporate reputation. ***Academy of Management Proceedings***, 2019: 12608.

Ohtsubo, Y., & Yagi, A. 2015. Relationship value promotes costly apology-making: Testing the valuable relationships hypothesis from the perpetrator's perspective. ***Evolution and Human Behavior***, 36: 232–239.

Organ, D. W. 1988. ***Organizational citizenship behavior: The good soldier syndrome.*** Lexington, MA: Lexington Books/DC Heath and Com.

Palan, S., & Schitter, C. 2018. Prolific.ac—A subject pool for online experiments. ***Journal of Behavioral and Experimental Finance***, 17: 22–27.

Pantelis, P. C., Gerstner, T., Sanik, K., Weinstein, A., Cholewiak, S. A., Kharkwal, G., Wu, C. C., & Feldman, J. 2016. Agency and rationality: Adopting the intentional stance toward evolved virtual agents. ***Decision (Washington, D.C.)***, 3: 40–53.

Paolacci, G., & Chandler, J. 2014. Inside the Turk: Understanding Mechanical Turk as a participant pool. ***Current Directions in Psychological Science***, 23: 184–188.

Penny, K. I. 1996. Appropriate critical values when testing for a single multivariate outlier by using the Mahalanobis distance. ***Journal of the Royal Statistical Society. Series C, Applied Statistics***, 45: 73–81.

Porter, C. O. L. H., Outlaw, R., Gale, J. P., & Cho, T. S. 2019. The use of online panel data in management research: A review and recommendations. ***Journal of Management***, 45: 319–344.

Quintelier, K. J. P. 2022. Stakeholder-oriented firms have feelings and moral standing too. ***Frontiers in Psychology***, 13: 814624.

Quintelier, K. J. P., van Hugten, J., Parmar, B. L., & Brokerhof, I. M. 2021. Humanizing stakeholders by rethinking business. ***Frontiers in Psychology***, 12: 3801.

Rai, T. S., & Diermeier, D. 2015. Corporations are cyborgs: Organizations elicit anger but not sympathy when they can think but cannot feel. ***Organizational Behavior and Human Decision Processes***, 126: 18–26.

Rai, T. S., Valdesolo, P., & Graham, J. 2017. Dehumanization increases instrumental violence, but not moral violence. ***Proceedings of the National Academy of Sciences of the United States of America***, 114: 8511–8516.

Rai, T. S., Valdesolo, P., & Graham, J. 2018. Reply to Fincher et al.: Conceptual specificity in dehumanization research is a feature, not a bug. ***Proceedings of the National Academy of Sciences of the United States of America***, 115: 3331–3332.

Redman, T., & Snape, E. 2005. Unpacking commitment: Multiple loyalties and employee behaviour. ***Journal of Management Studies***, 42: 301–328.

Robbins, P. 2008. Consciousness and the social mind. ***Cognitive Systems Research***, 9: 15–23.

Robbins, P., & Jack, A. I. 2006. The phenomenal stance. ***Philosophical Studies***, 127: 59–85.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. 1998. Not so different after all: A cross-discipline view of trust. ***Academy of Management Review***, 23: 393–404.

Sætre, A. S., & Van de Ven, A. H. 2021a. Generating theory by abduction. ***Academy of Management Review***, 46: 684–701.

Sætre, A. S., & Van de Ven, A. H. 2021b. Abductive theorizing is more than idea generation: Disciplined imagination and a prepared mind. ***Academy of Management Review***. Forthcoming.

Schilke, O., & Huang, L. 2018. Worthy of swift trust? How brief interpersonal contact affects trust accuracy. ***Journal of Applied Psychology***, 103: 1181–1197.

Schoemann, A. M., Boulton, A. J., & Short, S. D. 2017. Determining power and sample size for simple and complex mediation models. ***Social Psychological & Personality Science***, 8: 379–386.

Schwab, K. 2017. ***The fourth industrial revolution***. Sydney, Australia: Currency.

Shank, D. B., Graves, C., Gott, A., Gamez, P., & Rodriguez, S. 2019. Feeling our way to machine minds: People's emotions when perceiving mind in artificial intelligence. ***Computers in Human Behavior***, 98: 256–266.

Silva, M. A., Tataronis, G. R., & Maas, B. 2003. Using personal digital assistants to document pharmacist cognitive services and estimate potential reimbursement. ***American Journal of Health-System Pharmacy***, 60: 911–915.

Springer, V. A., Martini, P. J., Lindsey, S. C., & Vezich, I. S. 2016. Practice-based considerations for using multi-stage survey design to reach special populations on Amazon's Mechanical Turk. ***Survey Practice***, 9.

Steele, C. W. J., & King, B. G. 2011. Collective intentionality in organizations: A meta-ethnography of identity and strategizing. ***Advances in Group Processes***, 28: 59–95.

Strohminger, N., & Jordan, M. R. 2022. Corporate insecthood. ***Cognition***, 224: 105068.

Sundar, S. S. 2020. Rise of machine agency: A framework for studying the psychology of human–AI interaction (HAII). ***Journal of Computer-Mediated Communication***, 25: 74–88.

Tang, S., & Gray, K. 2018. CEOs imbue organizations with feelings, increasing punishment satisfaction and apology effectiveness. ***Journal of Experimental Social Psychology***, 79: 115–125.

Thielmann, I., & Hilbig, B. E. 2015. Trust: An integrative review from a person–situation perspective. ***Review of General Psychology***, 19: 249–277.

Tukey, J. 1977. ***Exploratory data analysis***. Reading, MA: Addison-Wesley.

Uchronski, M. 2008. Agency and communion in spontaneous self-descriptions: Occurrence and situational malleability. ***European Journal of Social Psychology***, 38: 1093–1102.

Van Dyne, L., & LePine, J. A. 1998. Helping and voice extra-role behaviors: Evidence of construct and predictive validity. ***Academy of Management Journal***, 41: 108–119.

Waytz, A., Cacioppo, J., & Epley, N. 2010. Who sees human?: The stability and importance of individual differences in anthropomorphism. ***Perspectives on Psychological Science***, 5: 219–232.

Waytz, A., Epley, N., & Cacioppo, J. T. 2010. Social cognition unbound: Insights into anthropomorphism and dehumanization. ***Current Directions in Psychological Science***, 19: 58–62.

Waytz, A., Gray, K., Epley, N., & Wegner, D. M. 2010. Causes and consequences of mind perception. ***Trends in Cognitive Sciences***, 14: 383–388.

Waytz, A., Heafner, J., & Epley, N. 2014. The mind in the machine: Anthropomorphism increases trust in an autonomous vehicle. ***Journal of Experimental Social Psychology***, 52: 113–117.

Waytz, A., Morewedge, C. K., Epley, N., Monteleone, G., Gao, J.-H., & Cacioppo, J. T. 2010. Making sense by making sentient: Effectance motivation increases anthropomorphism. ***Journal of Personality and Social Psychology***, 99: 410–435.

White, K., MacDonnell, R., & Ellard, J. H. 2012. Belief in a just world: Consumer intentions and behaviors toward ethical products. ***Journal of Marketing***, 76: 103–118.

World Economic Forum. 2016. The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution. ***Global Challenge Insight Report***. Geneva, Switzerland: World Economic Forum.

Yi, Y., Gong, T., & Lee, H. 2013. The impact of other customers on customer citizenship behavior. ***Psychology and Marketing***, 30: 341–356.

Yoshikawa, K., Wu, C.-H., & Lee, H.-J. 2020. Generalized exchange orientation: Conceptualization and scale development. ***Journal of Applied Psychology***, 105: 294.

Young, L., & Waytz, A. 2013. Mind attribution is for morality. In S. Baron-Cohen, H. Tager-Flusberg, & M. Lombardo, (Eds.), ***Understanding other minds: Perspectives from developmental social neuroscience***: 93–103. Oxford, U.K.: Oxford University Press.

Zhang, H., Chan, D. K.-S., Xia, S., Tian, Y., & Zhu, J. 2017. Cognitive, emotional, and motivational consequences of dehumanization. ***Social Cognition***, 35: 18–39.

Gijs van Houwelingen (g.g.vanhouwelingen@uva.nl) is assistant professor at the Amsterdam Business School, University of Amsterdam. His research interests relate to stakeholder perceptions of firms and business models, as well as impediments to moral and sustainable behaviors in organizations.

J. W. Stoelhorst (j.w.stoelhorst@uva.nl) is professor of strategy and organization at the Amsterdam Business School, University of Amsterdam. His research interests are the application of evolutionary and economic theory to management and organization, with special interests in the behavioral foundations of theories of the firm.