Personal, Social, Environmental: Future Orientation and Attitudes Mediate the Associations between Locus of Control and Pro-environmental Behavior

This study adds to the literature on personal characteristics and pro-environmental behavior by testing a model in which pro-environmental attitudes mediate the association between personality traits (locus of control and future orientation) and pro-environmental behavior. Two hundred thirty participants completed measures of the above concept and provided information about demographic variables known to be associated with pro-environmental behavior. Path analysis supported a double mediation model in which future orientation and pro-environmental attitudes (in this order) mediate the association between locus of control and behavior. Of the demographic variables, only age was directly associated with behavior. The results are discussed in light of the theory and previous findings.

Keywords: Pro-environmental behavior, attitudes, personality, locus of control, future orientation, mediation model.

Introduction

Fears for the future of our planet rise with accumulating evidence of environmental and ecological hazards (e.g., Masson-Delmotte, Intergovernmental Panel on Climate Change et al., 2018). Heated debates develop around the importance and validity of the environmental plea for action (Nunez, 2019). Against this backdrop, it becomes more and more important to examine factors that differentiate individuals in how they perceive, appraise, and act upon the issue of caring for our environment. In an era when facts and figures are more available than ever but more controversial and difficult to process, it is key that we understand underlying resources, predispositions, and individual-level variables that may account for how individuals (and groups) relate to these data and translate them (if at all) into action (or lack of it).

Existing research, stretching back to the 1970s, has addressed the question of which, and to what extent, personality traits and characteristics are associated with pro-environmental perceptions and actions (e.g., Arbuthnot, 1977). Attempts to identify personality profiles associated with pro-environmental attitudes have shown inconsistent results (briefly reviewed later in this paper). More interesting perhaps is the search for individual-level elements and concepts that may account for the extent to which individuals commit to pro-environmental behavior. Of special interest is identifying those personal-level concepts that are not just given but that are also at least somewhat amenable to change, thus pointing out potential paths for future interventions and education programs. This study, thus, proposes
and tests a multitiered model of personal factors and the routes by which they may
be associated with pro-environmental behavior (PEB).

Past and current research points to a few major insights regarding the choice
of potential personality factors that may be most relevant to such a model.
Drawing from both leading theories of personality and theories of planned, goal-
oriented behavior, we identify key elements for our model, which we later test.

Looking at how authors in this field have addressed the subject of personality
as a key factor in accounting for PEB, two trends emerge: one uses the popular
“big-five” personality model, showing some evidence of associations between
conscientiousness, openness to new experience, agreeableness, and outcome
measures related to PEBs or to pro-environmental attitudes (PEAs; Milfont &
Sibley, 2012). The other trend focuses on specific personality traits such as
extraversion, sincerity (Pettus & Giles, 1987), higher self-esteem, emotional
connection to nature, and prosocial predisposition (Markowitz, Goldberg, Ashton,
& Lee, 2012). Numerous models and individual traits have been studied, and most
have shown sporadic and often inconsistent evidence of links with PEB patterns.
What concept is most relevant in accounting for such behavior? Examining the
essence of PEB may present a potential answer: this behavior often involves
accepting certain levels of frustration or inconvenience for the sake of future
benefit (Kaiser & Byrka, 2011). This principle harks back to the principles of self-
regulation—or, more simply, that individuals who are better at postponing
gratification are more likely to show PEBs (Bamberg, 2013).

Consideration of future consequences of behavior emerges as key to understanding
such behaviors (e.g., Deci & Ryan, 2004; Strathman, Gleicher, Boninger, & Edwards,
1994). Studies have identified the concept of future orientation (FO) as the individual predisposition to bring future outcomes into
current considerations of one’s actions (Seginer, 2009). Although studies have
already established associations between FO and a broad range of behaviors (e.g.,
saving money, avoiding risky behaviors), only recently has evidence been
published linking FO with pro-environmental perceptions and attitudes; however,
the evidence was somewhat inconclusive for actual behavior (Carmi, 2013).

Another personality-related concept that holds promise in this direction is that
of locus of control (LOC; see Ajzen, 2002). This concept relates to the tendency of
individuals to attribute control to either themselves or external sources (luck, God,
fate, etc.) and the extent to which they feel they can control and navigate events in
their lives. The concept emerged about three decades ago as a pivotal factor in
accounting for behavior-change interventions, and in facilitating goal-oriented
behavior (e.g., Ajzen & Madden, 1986).

Both LOC and FO emerge as promising personality-related concepts in the
context of PEB patterns; yet, to better formulate the shift from internal, individual
predispositions to actual behavior, we need to address another missing link: PEAs.

Attitude is a concept representing the individual’s tendency to react
emotionally and cognitively and to develop a certain behavioral default toward a
given object or idea (Ajzen & Fishbein, 2005). In many contexts, attitudes are
considered a potential for behavior toward a certain target object, person, or
concept. In other words, many believe that understanding attitudes is pivotal to understanding behavior and modifying attitudes, and may often result in behavior modification (Fazio, 1986).

Based on the above ideas, we propose a chain of associations leading from personality characteristics to actual behavior in the field of environmental conservation (Figure 1): characteristics representing a sense of control over oneself and one’s environment, alongside the tendency to postpone immediate gratification for the benefit of future outcomes, shape positive attitudes toward environmental issues, and thus lead to PEB. We therefore present and test a model in which LOC and FO are associated with PEBs via the mediation of PEAs. We do so while controlling for demographic and background factors associated in the literature with PEAs: gender, age, religion and religiosity, and education level (Markowitz et al., 2012).

**Figure 1. The study model**

![Study Model Diagram]

LOC = locus of control; FO = future orientation; PEAs = pro-environmental attitudes; PEB = pro-environmental behavior.

**Literature Review**

**Pro-environmental Behavior**

PEB was defined as behavior that seeks to minimize the negative impact of one’s actions on the natural world (e.g., minimizing resource and energy consumption, using nontoxic substances, reducing waste production; Kollmuss & Agyeman, 2002). Significant environmental behaviors were defined as those undertaken to change the environment (Stern, 2000). PEA can be viewed in the context of change: a change in one’s own lifestyle, in one’s school, in one’s local community, or in global society in a manner that allows better conservation of resources and a smaller environmental footprint (Jensen, 2002). Three factors in self-reported behaviors and behavioral intentions were revealed: consumer behavior (e.g., buying organic products, avoiding purchases from companies that
harm the environment), environmental citizenship (e.g., voting, writing to
government officials), and policy support, expressed as a willingness to sacrifice
economically to protect the environment (e.g., by paying higher taxes or prices;
Stern, 2000). Courtenay-Hall and Rogers (2002) distinguished between direct
environmental actions, such as recycling, driving less, and buying organic food,
and indirect environmental actions, such as donating money, political activism,
educational outreach, and environmental writing. This suggests that PEB varies
not only in its nature but also in its magnitude: Finger (1994) noted three levels of
PEA: standard environmental behavior (doing at least one of the following:
recycling, using public transportation, etc., and trying to learn more about the
environment), limited activism (doing the above plus at least one of the following:
voting for candidates who are committed to the environment, trying to inform
others, signing petitions in favor of environmental protection, and engaging locally
to protect the environment), and protest behavior (doing the above plus at least one
of the following: sometimes engaging at a local level, opposing projects that
destroy the environment, and participating in public demonstrations for the
environment).

Kollmuss and Agyeman (2002) sorted the factors that influence behavior into
external (e.g., institutional, economic, social, and cultural) and internal factors
(e.g., motivation, environmental knowledge, awareness, values, attitudes, emotion,
LOC, responsibilities, and priorities), and Krajhanzl (2010) added another factor:
the personal relationship of an individual to nature. Several models were suggested
to explain the motives of PEB, such as psychological, sociological, and economic
(Hungerford & Volk, 1990; Kaiser, Wölfling, & Fuhrer, 1999; Kollmuss &
Agyeman, 2002; Turaga, Howarth, & Borsuk, 2010). Most involve the concept of
PEAs as a precursor to behavior.

Pro-environmental Attitudes

Attitude is a concept representing the individual’s tendency to react
emotionally and cognitively and to develop a certain behavioral default toward a
given object or idea (Ajzen & Fishbein, 2005). Environmental attitude (EA) is
defined as a psychological tendency that is expressed by evaluating the natural
environment with some degree of favor or disfavor (Milfont, 2007). The
traditional model of EA structure has three components: cognitive, affective, and
behavioral (Cottrell, 2003). The relationship between these components is
complex and not necessarily linear. Newer approaches conceptualize attitudes as
evaluative tendencies that can both be inferred from and have an influence on
beliefs, affect, and behavior. These theories claim that cognition, affect, and
behavior are the bases from which the general evaluative summary of a
psychological object is derived, instead of being constituents of attitudes
(Albarracin, Johnson, & Zanna, 2005; Fabrigar, MacDonald, & Wegener, 2005;
Milfont & Duckitt, 2010).

Many researchers believe that understanding attitudes is pivotal to
understanding behavior, and that modifying attitudes may often result in behavior
modification (Fazio, 1986). EA is a crucial construct in environmental psychology, a focus of most of that discipline’s publications, and considered by most researchers to be a pivotal multidimensional construct in understanding environmental behavior and associated processes (Milfont & Duckitt, 2010): it is widely believed that EA is an important predictor of PEB intention, which then accounts for actual PEB (Qian, Yu, & Gao, 2019).

Stern and Dietz (1994) argued that EA is based on a person’s general set of values: that is, the relative importance that a person attaches to him- or herself, to other people, or to the biosphere. They identified three values related to EAs: egoistic, altruistic, and biospheric. McElwee and Brittain (2009) found that EAs are associated more strongly with world optimism than with personal optimism. Another factor that affects EA is environmental knowledge via environmental study (Pe’er, Goldman, & Yavetz, 2007). Increased knowledge of environmental issues leads to favorable attitudes, which in turn lead to responsible environmental behavior (Hungerford & Volk, 1990).

The main importance attributed to attitudes in general and to EAs in particular is their assumed associations with actual behavior. However, many individuals fail to translate their PEA into PEB. This inconsistency is widely called the “environmental attitude–behavior gap” (Redondo & Puelles 2017). Rajeccki (1982) suggested that one of the reasons for this gap may be the method of measurement. He claimed that in order to find a high correlation between attitude and behavior, researchers must measure the attitude toward a particular behavior. More-narrowly targeted attitude measurements lead to higher correlations (Lehmann, 1999). Ajzen and Fishbein (2005) claimed that attitudes do not determine behavior directly; rather, they influence behavioral intentions, which in turn shape behavior.

Future Orientation

FO is the individual predisposition to bring future outcomes into current considerations of one’s actions (Seginer, 2009). It can be defined in a social-cultural context as the degree to which individuals (or societies) engage in future-oriented behavior such as planning, investing in the future, and delaying gratification (Kluckhohn & Strodtbeck, 1961). In the personal psychological contexts, FO reflects the tendency of people to plan for and achieve future goals and to consider the long-term consequences of their behavior (Strathman et al., 1994; Zimbardo & Boyd, 1999). It is a human trait that enables individuals to anticipate, make plans, organize future options, and choose an action that promises a significant but future reward, even if it involves paying a price now (Gjesme, 1983).

A few studies showed that future-oriented individuals tend to care about the environment and are more likely to act pro-environmentally. For example, future-oriented individuals engage more in water-conservation practices (Corral-Verdugo et al., 2006), prefer commuting by public transportation (Joireman, Van Lange, & Van Vugt, 2004), and decrease their greenhouse gas emissions through mitigation behaviors (Corral-Verdugo et al., 2017). However, the current evidence is far from
conclusive: other findings showed that highly future-oriented students did not express stronger PEAs, and that their willingness to sacrifice for the sake of the environment was significantly lower. They adopted PEBs only if doing so was to their personal benefit (Carmi, 2013).

A meta-analysis study showed that the associations between time perspective (a concept often used for FO) and PEBs were higher than those for PEAs (Milfont, Wilson, & Diniz, 2012). The findings indicate that FO or time perspective seems to play an important role in influencing individuals’ attitudes and behaviors toward the environment. Thus, consideration of future consequences can be a significant predictor of PEBs and PEAs (Bruderer Enzler, 2015).

**Locus of Control**

LOC relates to individuals’ tendency to attribute control to either themselves or external sources (luck, God, fate, etc.) and the extent to which they feel they can control and navigate events in their lives. The concept emerged about three decades ago as a pivotal factor in accounting for behavior-change interventions, and in facilitating goal-oriented behavior (e.g., Ajzen & Madden, 1986). In the environmental behavior context, internal LOC represents the belief of individuals that they can bring about environmental changes through their personal behavior and that their actions with respect to the environment are therefore worthwhile. They typically perceive themselves as having control over their future and believe that outcomes are related to their actions (Cleveland, Kalamas, & Laroche, 2005). On the other hand, individuals who attribute change to external factors (e.g., not to personal behavior—external LOC) feel that their actions are insignificant, and that change can only be brought about by others (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002; McCarty & Shrum, 2001).

People with an internal LOC are more likely to exhibit PEAs and PEBs (Bamberg & Möser, 2007; Hines, Hungerford, & Tomera, 1987). For example, internal LOC is related positively to values related to the natural environment (Pe’er et al., 2007), to the importance that individuals attach to recycling (McCarty & Shrum 2001), and to consumers’ willingness to pay for environmentally friendly products (Trivedi, Patel, & Savalia, 2015).

The relationship between LOC and PEB is not yet clear, even though it seems that internal LOC is a predictor of PEB (Allen & Ferrand, 1999; Bamberg & Möser, 2007; Cleveland, Kalamas, & Laroche, 2005). The relationship is probably not direct, and other variables, such as sympathy, may mediate it (Allen & Ferrand 1999).

**Summary and Rationale**

There is agreement in the behavioral literature in general and on PEB in particular that attitudes play a pivotal role in shaping such behaviors. What shapes the relevant attitudes in such settings and regarding such subjects continues to be debated. We chose to focus on three types of predictors associated with PEAs:
demographics—often mentioned in the literature as antecedents of PEA, especially gender and education level. We added religiosity and religion as potential demographic determinants of such attitudes, as these may be associated with individuals’ perceptions of where the responsibility lies and who controls the fate of our natural resources. FO is a relatively recent addition to the concepts that are the focus of attention in environmental research. It may be of added value in our attempts to understand the dynamics behind attitude formation and change in the environmental context because it reflects the propensity of individuals to consider future events and the outcomes of their activities—an issue at the heart of the PEB conflict: am I willing to sacrifice my comfort now for the benefit of future generations? Finally, the veteran concept of LOC reflects the variance in the extent to which individuals feel that they can exert some control over their environment and their own world. Logic suggests that internal LOC is associated with more positive attitudes toward the environment and potential PEB.

We therefore posit that PEAs mediate the associations between demographics, FO, and LOC and PEB. Figure 1 summarizes the proposed model guiding this study.

Method

Sample and Settings

Two hundred thirty participants agreed to take “a survey of perceptions and attitudes about the world around us.” They were recruited through various online social forums in Israel. Of the participants, 79% were women and 21% were men. Their mean age was 34.91 years (SD = 10.97). The majority were Jews (89%), followed by Muslims (3.86%) and Christians (2.29%). The remaining 4.85% either identified as nondenominational or refused to answer. The greatest share of the sample had a bachelor’s degree or equivalent (39%), followed by a masters’ degree (29%), and about 30% who had a secondary school education. Two percent refused to report their education.

Measures

We used online self-report questionnaires; all are validated measures of the variables in our model.

Pro-environmental behavior. Reported PEB was documented using 20 items about environment-related activities, with responses on a 5-point, Likert-type scale ranging from 1 (never) to 5 (almost always). The 20 items were constructed from six categories: resource-conserving actions with personal benefit, environmentally responsible consumerism, nature-related leisure activities, recycling, citizenship, and environmental activism (Yavetz, Goldman, & Pe’er, 2011). The original authors reported an internal reliability of .80.
Pro-environmental attitudes. PEAs were measured using a questionnaire developed by Yavetz et al. (2011), with an overall reliability coefficient of .86. Responses to the 24-item Likert-type scale questionnaire range from 1 (highly agree) to 5 (highly opposed). It includes five categories: the importance of the natural environment, resource management policy, legislation and enforcement as a resource management tool, a sense of ability to influence environmental issues, and the importance of environmental education.

Future orientation. FO was assessed using the Future Motivation subscale (Beal, 2011), a 19-item questionnaire yielding a single total score that offers a brief and reliable measure of the concept. The measure showed good reliability coefficients ranging from .75 to .80.

Locus of control. LOC was assessed using the Locus of Control instrument, a simplified version of the Rotter questionnaire presented by Pettijohn (2004). The 20-item questionnaire contains statements with which respondents can either agree or disagree. The sum of the scored choices yields a single score representing internal LOC. The measure was chosen for its user-friendly structure compared with Rotter’s original measure. In our study it showed adequate reliability (.66).

Demographics. Participants were asked to report their age, gender, level of education, religious affiliation (a correlate of ethnicity in Israel), and religiosity level.

Procedure

After approval of the study by the authors’ IRB, a call for participation was issued in online social media forums, with a link to the questionnaires that also included a brief informed-consent form. Data were gathered in a way that did not require individuals to expose their identity and thus were anonymized throughout the process.

Data Analysis

Preliminary descriptive statistics were calculated using IBM SPSS 24.0. The model-testing path analysis was conducted using ISM AMOS 19.0, which includes a test for direct and indirect effects.

Results

Descriptive Statistics and Preliminary Analyses

Before testing the proposed model, we examined the descriptive statistics and preliminary associations between the main variables in the model. Table 1 summarizes these analyses.
Table 1. Descriptive Statistics and Intercorrelations Among the Study Variables

(N = 230)

| Variable           | 1    | 2    | 3    | 4    | 5    | 6    | 7    |
|--------------------|------|------|------|------|------|------|------|
| 1. Gender          | —    |      |      |      |      |      |      |
| 2. Age             | .11  | —    |      |      |      |      |      |
| 3. Religiosity     | .08  | −.09 | —    |      |      |      |      |
| 4. LOC             | .04  | .08  | −.05 | —    |      |      |      |
| 5. FO              | −.05 | −.03 | .00  | .30**| —    |      |      |
| 6. PEB^            | .03  | .32**| −.23**| .05  | −.09 | —    |      |
| 7. PEAs^           | .08  | .29**| −.21**| −.04 | −.10 | .52* | —    |
| Mean               | F = 79% | 34.91 | 1.49 | 14.96 | 3.67 | 2.84 | 1.66 |
| SD                 | M = 21 | 10.97 | .75  | 2.18  | .49  | .89  | .61  |

| Reliability        | —    | —    | —    | .66  | .74  | .72  | .84  |
| Cronbach’s alpha   |      |      |      |      |      |      |      |

Note.  
^ Scales are reversed (lower grades indicate higher endorsement of attitudes or behavior).

LOC = locus of control; FO = future orientation; PEB = pro-environmental behavior; PEAs = pro-environmental attitudes.

*p < .05; **p < .01.

The results suggest reasonable-to-good reliability coefficients for the questionnaire-based scores. The distribution showed no ceiling or floor effect, and standard deviations were noted. The preliminary examination of the associations between the study variables did not necessarily support the proposed model: attitudes and behavior showed a positive correlation, and religiosity was negatively associated with environmental attitudes and behavior. LOC and FO also correlated with each other, as expected, but the expected correlations between FO, LOC, and environmental attitudes and behavior did not emerge in this preliminary analysis.

Model Testing

Path analysis was used to examine the model, and to test for the direct and indirect effects it suggested. This method allowed us to test a full, complex model without the danger of capitalization on chance (Wootton, 1994). The analysis results are summarized in Figure 2 and Table 2. Whereas the original model was not supported by the data at the required level, a slightly modified model did show excellent fit with the data and is presented in the figure.
Figure 2. The empirical model. All marked path coefficients are significant at $p < .04$ or better. Nonsignificant paths and variables, as well as error terms, were omitted from the figure for ease of presentation. LOC = locus of control; FO = future orientation; PEAs = pro-environmental attitudes; PEB = pro-environmental behavior. Goodness-of-fit indices: Chi-square = 1.88 ($df = 4$) $p > .75$; CFI = .99; NFI = .98; RMSEA = .01.

Table 2. Summary of Indirect Effects

| Variable | LOC | FO | Age | PEA |
|----------|-----|----|-----|-----|
| FO       | .00 | .00| .00 | .00 |
| PEA      | .03 | .00| .00 | .00 |
| PEB      | .02 | .47| .12 | .00 |

Note. LOC = locus of control; FO = future orientation; PEB = pro-environmental behavior; PEAs = pro-environmental attitudes. $^*p < .05; ^{**}p < .01$.

The empirical model offers a surprise. Beyond revealing indirect associations between LOC, FO, and the outcome variables (which were not demonstrated through simple correlations), it provided some interesting insights into the nature of the associations found. The most surprising result is that LOC and FO were found to work at different levels, with LOC preceding the effect of FO in the chain of indirect effects. Second, most of the demographic variables, including religiosity (which showed some interesting association patterns at the simple-correlations stage), did not enter the empirical model, with the exception of age—which was positively associated with both PEA and PEB. Overall, the model supported the idea that both personality-driven variables and attitudes mediate the association between individual predispositions and PEB.

The potential implications of this model for theory, future research, and potential interventions are discussed next.

Discussion

Understanding the antecedents of PEB grows increasingly important in both the educational and the general public contexts. Although many agree that environmental issues pose a pressing threat and challenge to the world’s population (Volcovici, 2019), relatively few express commitment to PEAs, and even fewer adopt a pro-environmental way of life—or, in the terms discussed here, show high levels of PEB. What may account for this gap? In this study we aimed
to learn more about the implications of personal characteristics for PEAs and PEB and to reveal those that may play a significant role in the relationship between the two concepts. The model we presented and tested here suggests that certain demographics and personality aspects may play a role in the adopting of PEAs—and, as a result, in PEB. From the existing literature on PEAs we identified demographics such as age, gender, education level, and even religiosity, and from the literature on personality we identified both FO and LOC as potential factors associated with PEA. To our best knowledge, unlike in the present study, previous research did not examine LOC and FO simultaneously. Our empirical model focused on a narrower scope of concepts and variables: whereas for the demographic variables, only age was positively associated with both PEA and PEB, for the personality factors we found a serial mediation effect, which is slightly different from what we expected: FO and PEAs both serially mediated the association between LOC and PEB. This may mean that LOC allows for higher levels of FO, and that this in turn leads to the formation of more positive environmental attitudes. Those attitudes are eventually associated with PEB.

Although these results were not predicted by the original model, they make sense and fit the existing literature on LOC and FO (see, e.g., Ahlin & Antunes, 2015; Stratham et al., 1994). However, this is the first time, to the best of our knowledge, that they have been applied in such a manner in the context of accounting for PEAs and PEBs.

The role of personality traits and patterns in environmental behavior has been explored for a few decades (e.g. Arbuthnot, 1977); however, the findings accumulated thus far were mainly anecdotal and did not necessarily form a coherent model of how personality may be associated with PEB. Thus, for example, Harland, Staats, and Wilke (2007) found that both environmental and personality-related cues may trigger PEB, but they did not offer a comprehensive model. Additional research looked for typical personality profiles that are associated with PEB (Markowitz et al., 2012). A relatively recent line of research has attempted to conceptualize the path leading from personality predispositions to PEB. Such studies have suggested that values and attitudes may play a mediating role in the association between personality-level variables and PEB (Bamberg & Möser, 2007; Hirsh, 2010; Vredin Johansson, Heldt, & Johansson, 2006). Our study, then, joins this line of investigation, proposing a model in which personality traits at different levels (LOC and FO) work hierarchically to shape attitudinal factors that may in turn shape behavior.

From the demographic characteristics studied, only age was associated positively with both PEAs and PEB. Previous studies were inconclusive about this relationship. Some studies indicated that younger people are more likely to demonstrate concern for the environment (Fransson & Gärling 1999; Van Liere & Dunlap, 1980) and PEB (Johnson, Bowker, & Cordell, 2004; Newman & Fernandes, 2016); others found no relationship (Newman & Fernandes, 2016); and yet others (Newman & Fernandes, 2016; Shen & Saijo, 2008) reported a negative relationship (i.e., older persons are more engaged in PEB).
Understanding the personal variables that may account for individuals’ PEB is vital to enabling optimal educational intervention and education programs in the future, to improve the PEB of the world population. From our findings it emerges that designing a structured environmental educational program that will induce and empower students’ LOC and FO regarding the environment may help increase their PEAs and PEB.

Study Limitations and Suggestions for Future Studies

When considering the study results, the reader may do well to consider the study limitations. First, participants were sampled from a specific country (Israel) whose environmental legislation and culture may differ from those of other samples (however, studies conducted with Israeli samples do not show significant deviations from well-recorded results patterns; for examples, see Carmi, 2013; Laor, Gan, & Avisar, 2018). Second, the use of self-report measures, however prevalent and acceptable, might introduce biases recorded in the literature (Donaldson & Grant-Vallone, 2002). Finally, the effects found in the study, although statistically significant and potentially theoretically important, are still of mild magnitude and should be considered with care.

Future studies may wish to use actual behavior outcomes as a criterion; use broader, preferably international samples to test the model explored here; and explore whether it indeed applies to diverse settings and target populations.

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