Blind in one eye: How psychological ownership of ideas affects the types of suggestions people adopt

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ABSTRACT

Two experimental studies demonstrated that feeling as though an object, such as an idea, is "ours" (i.e., experiencing feelings of psychological ownership) propels people to selectively adopt others' suggestions for change. Whereas feelings of ownership caused individuals to embrace the adoption of suggestions that expanded upon their possessions (additive change), it simultaneously made them shun the adoption of suggestions that shrank them (subtractive change) (Studies 1 and 2). Furthermore, results indicated that both a sense of personal loss and negative affect sequentially mediated this joint effect of psychological ownership and change type on the adoption of others' suggestions for change (Study 2). Our findings suggest that the nature of change and how it impacts high ownership people's sense of loss and negative affect is an important determinant of whether feelings of ownership will cause individuals to remain open to or resist others' suggestions for change.

Introduction

Making important decisions, solving difficult problems, or developing new products or services all require that people revise or otherwise change their opinions, solutions, or ideas in response to the suggestions and comments they receive from their colleagues, customers, etc. (e.g., Gino & Schweitzer, 2008; Hargadon & Bechky, 2006). The ability to adapt to changes in one's (informational) environment is of particular importance given the enhanced need in contemporary organizations to collaborate, often with people of different backgrounds and of different perspectives or viewpoints (Page, 2007; Sawyer, 2007). While in some situations individuals seem to embrace others' feedback and spare no personal expense in adapting their work to incorporate the inputs they receive, in other situations people seem to resist such efforts outright.

Although people may have many reasons to embrace or resist others' inputs, one concept that seems to be particularly suited to examine this issue but that has received relatively limited attention to date is the notion of psychological ownership (e.g., Dirks, Cummings, & Pierce, 1996). People are known to generate strong bonds

to the material or nonmaterial objects (e.g., decisions, solutions, ideas, prototypes, etc.) they create or develop. In fact, research suggests that creating an object is one of the most powerful means of generating psychological ownership—a state wherein people feel as though an object, or part of it, is theirs (Pierce, Kostova, & Dirks, 2001, 2003; Pierce, O'Driscoll, & Coghlan, 2004; Van Dyne & Pierce, 2004). Previous work points to a variety of benefits associated with ownership, including increased commitment and effort devoted to the target of ownership (e.g., O'Driscoll, Pierce, & Coghlan, 2006). Yet, at the same time, feelings of ownership may also lead one to experience a need to "mark" and "defend" the object (Brown, Lawrence, & Robinson, 2005). Applied to the above question, this research suggests that psychological ownership may provide the impetus for individuals to actively cultivate their work and, as a result, welcome attempts by others to shape it. On the other hand, psychological ownership may also cause people to feel a need to "protect" their opinions, thoughts, or ideas and, as a consequence, to reject attempts by others to shape them.

Unfortunately, we know very little about the conditions that determine when psychological ownership may cause individuals to embrace change and to remain receptive to others' inputs or to resist such efforts thereby rejecting suggestions for change. We propose that one factor that may regulate whether ownership will result in the adoption or rejection of others' contributions is the nature of these change efforts (Dirks et al., 1996). Specifically,

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we contend that whether others are trying to shape one's work by (1) diminishing it (subtractive change) or (2) building upon it (additive change) determines how people with varying levels of psychological ownership will respond to these change attempts.

Although previous theory has highlighted the potential for psychological ownership to determine individuals' openness or resistance to change (Dirks et al., 1996), no prior work has empirically investigated the complex interplay between psychological ownership *and* change type on the adoption of change. Our study fills this important gap in the literature. Specifically, in the present study we examine ownership of people's *ideas* and how such ownership propels people to adopt or reject others' suggestions for change, depending on whether such change is subtractive or additive in nature. Our focus on people's ideas seems to be particularly timely and relevant, given that many countries, including the US are in the process of becoming "creative economies" (Florida, 2002; Howkins, 2002). In addition, we decided to test our arguments in a distributed collaboration environment given the prevalence of such environments in contemporary organizations (Keisler & Hinds, 2002).

Background and hypothesis development

Psychological ownership

Consistent with previous research, we define psychological ownership "as the state in which individuals feel as though the target of ownership or a piece of that target is 'theirs' (i.e., 'It is *mine*!')" (Pierce et al., 2003, p. 86). At the conceptual core of the state of ownership is a sense of possession of a particular target (e.g., the results of one's labor, such as an idea or an artistic creation) and of being psychologically tied to that target. In other words, psychological ownership reflects a relationship between a person and an object (material or nonmaterial) in which the object of ownership is experienced as being closely connected to the self, that is being part of the *extended self* (Belk, 1988; Dittmar, 1992). In essence, psychological ownership provides the answer to the question "What do I feel is mine?"

Feelings of ownership can develop for a variety of objects, both material *and* nonmaterial. So long as an object allows important needs, such as the need to feel efficacious or competent to operate and to be satisfied (Dirks et al., 1996; Pierce et al., 2003), feelings of ownership are bound to emerge. Indeed, Brown and Robinson (2011) showed that individuals feel ownership over a wide range of targets including both material (e.g., products, workspaces, etc.) and nonmaterial (e.g., ideas, roles, etc.) objects and exhibit similar responses involving these objects. In addition, feelings of ownership can emerge in a variety of ways. Research on the mere ownership effect, for example, has demonstrated that simply being randomly associated with a material (Beggan, 1992) or a nonmaterial object, such as a set of arguments (De Dreu & van Knippenberg, 2005) can be enough to elicit feelings of ownership and the self-enhancing biases that are operative when possessions become part of our extended self. Be it via simple association, through the investment of time and effort into an object, or by having the opportunity to control it (e.g., Pierce et al., 2003), feelings of ownership are ubiquitous and can have some important implications.

What, then, are the consequences of individuals being psychologically tied to a set of ideas? Previous research suggests that people with strong bonds to their psychological possessions are likely to experience a sense of responsibility and concern for them (Dipboye, 1977; Korman, 1970) and, in turn, a need to care for and nurture them. Thus, when individuals feel as though a set of ideas is truly theirs, they are likely to invest time and energy into cultivating it, for example, by considering and adopting others' suggestions

for changing these ideas. According to this logic, then, a sense of ownership may propel individuals to be open to others' suggestions for change. Consistent with these arguments, ownership of various targets, such as one's job, work group, or organization has been shown to positively relate to a number of outcomes reflecting people's concern for and desire to invest in their possessions, such as commitment, citizenship behaviors, and improvement attempts (O'Driscoll et al., 2006; Van Dyne & Pierce, 2004; Vandewalle, Van Dyne, & Kostova, 1995; Wagner, Parker, & Christiansen, 2003), and to negatively relate to outcomes reflecting a lack of responsibility, such as workplace deviance (Avey, Avolio, Crossley, & Luthans, 2009).

In contrast to the perspective that psychological ownership primarily has beneficial effects, Brown et al. (2005) cautioned that feelings of ownership might also have a "dark side," causing individuals to engage in protective behaviors directed toward the target of ownership. For example, individuals may resist sharing their ideas with their colleagues in an attempt to hide or hoard them (Brown & Robinson, 2007; Webster et al., 2008) or, even if the ideas are shared, may want to retain exclusive control over them, resulting in the rejection of others' attempts to contribute to them (Choi & Levine, 2004; Pierce, Jussila, & Cummings, 2009). Applied to the context of the present research, this implies that psychological ownership may lead individuals to reject others' efforts at refining their ideas thereby becoming resistant to others' change attempts.

Given the potential for psychological ownership both to promote openness and resistance to others' change attempts, it is essential to identify the conditions that regulate whether or not people with ownership of their ideas are likely to adopt or reject other's feedback. It is to the discussion of these moderating forces that we now turn.

Moderating effects of change type

Consistent with previous theoretical work (Dirks et al., 1996), we distinguish between change that shrinks people's possessions (subtractive change) and change that expands upon them (additive change) and suggest that this distinction has important implications for our understanding of when individuals with varying levels of ownership will adopt or reject others' suggestions for change. For the purpose of the present research, we define subtractive change as those contributions that aim at refining a person's ideas by eliminating certain aspects of them. We define additive change as those contributions that aim at refining an individual's ideas by building upon or extending them. It is important to note that subtractive and additive change can both be of equal value—it may be as important to identify aspects of an object, such as an idea, that are flawed as it is to enhance those aspects that are strong suits. Thus, although the terms subtractive and additive might have certain connotations attached to them (e.g., negative versus positive), both can be useful types of change.

How will change that is subtractive or additive in nature impact the effects of psychological ownership on the adoption of such suggestions? As noted earlier, at the core of psychological ownership is the feeling of possessiveness and of being psychologically tied to an object with the result that the object is considered part of the extended self. Beggan (1992), for example, suggested and showed that material possessions can easily become part of the extended self and, as a result, are prone to the same self-enhancing biases as the core self. In a series of three experiments, he demonstrated that participants rated a material object (e.g. cold drink insulator) more favorably simply because they owned it—an effect termed the *mere ownership effect*. De Dreu and van Knippenberg (2005) showed that the mere ownership effect also applied to nonmaterial objects, such as arguments and attitudes. Indeed, in a series of four experiments

these authors showed that a set of arguments associated with the self (i.e., that participants came to own randomly) were valued more than otherwise identical arguments not associated with the self (i.e., that participants did not own). Given individuals' need to see the self and its extended parts—material or nonmaterial—in a positive light (Allport, 1937; McDougall, 1933), any contribution that jeopardizes the satisfaction of this need for self-enhancement should be negatively received and, as a result, less likely to be adopted (e.g., Kiesler, 1971; Petty & Cacioppo, 1986).

Subtractive change constitutes such a condition. Specifically, by eliminating certain elements of a person's ideas, subtractive change takes away or diminishes what the individual has attached him- or herself to. This, in turn jeopardizes the need for self-enhancement—when parts of what we consider to be ours shrink, this effectively serves to temporarily reduce the self, resulting in an elevated sense of personal loss (Furby, 1980; James, 1890). In contrast, as people with limited ownership tend not to be invested as heavily in their possessions and are unlikely to consider them part of the extended self, they should be less likely to respond to others' suggestions for subtractive change with a temporary decline in the self. In essence, we anticipate people with a strong sense of ownership of their ideas to experience others' attempts to eliminate certain elements of their ideas as a relatively greater threat. As a result, we expect such individuals to incorporate relatively fewer subtractive changes into their ideas as compared to people with limited ownership.

In contrast, under conditions of additive change, psychological ownership should boost the adoption of others' suggestions for change. Additive change satisfies the need for self-enhancement—when parts of the self grow because others are building on or extending our psychological possessions (i.e., our ideas), this effectively works to temporarily enhance a person's self resulting in a sense of personal growth (i.e., reduced sense of loss) (Dirks et al., 1996). In contrast, as people with limited ownership tend to be less invested in their psychological possessions and are unlikely to consider them part of the extended self, they should be less likely to view others' suggestions for additive change as a vehicle to expand the self. In essence, we anticipate people with a strong sense of ownership of their ideas to experience others' attempts to build upon or add to their ideas as a relatively greater opportunity for enhancement. As a result, we expect such individuals to incorporate relatively more additive changes into their ideas as compared to people with limited ownership. Thus, we hypothesize the following:

Hypothesis 1. Psychological ownership and change type will interact to affect the adoption of others' suggestions for change; participants with enhanced ownership of their ideas will adopt fewer subtractive and more additive suggestions for change than participants with limited ownership.

Study 1: psychological ownership, change type, and the adoption of change

Method

Participants

Participants were 102 undergraduate students who received extra credit points in exchange for their time. The sample consisted of 55% women and the average age was 21.56 years ($SD = 1.53$). Participants were randomly assigned to one of the two ownership conditions with additive/subtractive change as a within-subjects factor.

Procedure and materials

Upon their arrival in groups of six, participants were asked to complete a questionnaire assessing their demographic information. All participants were then instructed to assume the role of a member of a virtual team charged with the development of a promotion strategy for a new restaurant. Participants were also told that an initial strategy proposal had already been developed by some members of their team and that their task was to revise the proposal in a two-stage process prior to submitting it to an evaluation committee. In the first stage, participants were instructed to review the proposal and then to send it via email to a different virtual team member (one who was not involved in the initial development of the proposal) for feedback. In reality, however, the proposal was sent to a research assistant who delivered experimenter-composed feedback to the participants. In the second stage, participants were told to revise the proposal based on the feedback that was provided to them and then to submit it to the evaluation committee—a group of students who would vet the different proposals and forward the most promising to the restaurant ownership.

Following this general introduction, the experimenter handed each participant the same written instructions and then assigned each person to a private room. After setting up their laptop computers, the experimenter handed each participant the proposal. Although largely identical, the initial version of the proposal varied slightly as a function of the two experimental conditions. Specifically, while the proposal in the limited ownership condition was completely finished, participants in the enhanced ownership condition were told that the proposal had not yet been finished and that they had to complete the missing details (e.g., restaurant name, location, etc.,) before resubmitting it (for details, see *Manipulation of psychological ownership*). Participants were given 30 min to review their proposal.

After sending the proposal to their colleague for feedback, participants then completed a questionnaire assessing felt ownership over the proposal. Before receiving the feedback, the experimenter instructed participants that they did not have to change anything in response to the feedback if they did not want to. Fifteen minutes after emailing the proposal, participants received the feedback, which was identical in both conditions. Participants were then given an additional 15 min to revise the proposal, after which they emailed the proposal to the selection committee. Participants then completed a third questionnaire and returned to the main room where they were debriefed and dismissed.

Manipulation of psychological ownership

We created two levels of psychological ownership by varying the degree to which participants were able to alter the initial version of the proposal. According to previous work, there are three mechanisms—or routes—through which a sense of ownership may emerge: (1) exercising control over the target of ownership, (2) getting to know the target intimately, and (3) investing the self in the target (Pierce et al., 2001, 2003). Through the exercise of control, objects become a part of the extended self, in the process of which feelings of ownership are likely to emerge. In addition, as a result of coming to intimately know a target and deeply investing the self into it, a sense of personal ownership is likely to emerge as one or more of the motives for ownership (i.e., efficacy and effectance, self-identity, and having a place to dwell) are stimulated and satisfied (Pierce et al., 2009). Allowing participants varying amounts of control over the proposal and to invest themselves more into it should therefore regulate the extent to which people experience causal efficacy and come to see the proposal as part of the self.

Limited psychological ownership condition

To limit the emergence of feelings of psychological ownership, participants in this condition were not allowed to alter the content or format (font, layout, etc.) of the initial version of the proposal. Thus, after receiving the proposal on a sheet of paper, we instructed participants to simply retype the proposals into their computers. Participants were told that it was important for them to retype the proposal prior to receiving their feedback as they would have only limited time to respond to the feedback and retyping would ensure that they are familiar with all details of the proposal.

Enhanced psychological ownership condition

We elicited feelings of psychological ownership by omitting certain details from the proposal and encouraging participants to complete these missing details. Specifically, participants were instructed to (1) propose a name for the restaurant and describe the qualities that this name would embody, (2) identify a celebrity who could be used to promote the restaurant, (3) decide on a location and to provide a justification for this decision, and (4) add their name to the proposal. As explained above, allowing participants to manipulate the proposal and add in "personalized" elements (i.e., naming the restaurant) increases the connection of the self to the object and thus should encourage feelings of ownership. Although constraining participants to only change predetermined elements of the proposal likely dampened feelings of ownership (as opposed to creating the entire proposal themselves), this was necessary so as to avoid that the proposal would systematically vary in content across the two ownership conditions thereby representing a potential confound. In addition, we encouraged participants to alter the format of the proposal. Due to the time required to perform all of these activities, participants were not required to retype the proposal but rather were provided an electronic copy of the document on a flash drive.

Measures

Adoption of subtractive change

To construct a measure of the adoption of subtractive change, we suggested in the feedback given to participants that two elements of the proposal, the reference of targeting the restaurant to an "upscale" customer base as well as to working women, be eliminated and replaced with alternatives. The elements of the proposal that were the target of subtractive change were identical across both ownership conditions (i.e., not the missing elements we encouraged participants in the ownership condition to complete). Adoption of subtractive change was measured as the extent to which participants removed these two elements from the proposal and ranged from 0 (*no change*) to 2 (*both "upscale" customers and working women dropped*).

Adoption of additive change

To construct a measure of the adoption of additive change, in the feedback given to participants we recommended that participants include specific menu and product items in the proposal. Adoption of additive change was then measured as the extent to which participants added any of these two types of items to the proposal and ranged from 0 (*no change*) to 2 (*both menu and product items added*).

Two research assistants, blind to the purpose of the study, independently coded the submitted proposals for the adoption of these different types of change. Few discrepancies between the coders emerged and those that arose were resolved by one of the authors.

Manipulation check

After submitting the proposal for feedback, participants responded to four items (Cronbach's α = .95) adapted from previous research (Pierce et al., 2004; Van Dyne & Pierce, 2004) using a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*): "I feel a high degree of personal ownership over this proposal;" "This is my proposal;" "I feel like this is my proposal;" "I sense that this proposal is mine."

Results

As expected, participants in the enhanced ownership condition (*M* = 4.16, *SD* = 1.46) reported significantly higher levels of felt ownership than participants in the limited ownership condition (*M* = 2.60, *SD* = 1.26), *t*(100) = 5.78, *p* < .01, *d* = 1.14. Supporting Hypothesis 1 that participants in the enhanced ownership condition would adopt fewer subtractive and more additive suggestions for change than participants with limited ownership, a repeated measures ANOVA with psychological ownership (limited ownership vs. enhanced ownership) as the between-subjects factor and change type (subtractive vs. additive) as the within-subjects factor produced a statistically significant interaction on the adoption of others' suggestions for change, *F*(1,100) = 15.29, *p* < .01, η_p^2 = .13. As expected, participants in the enhanced ownership condition (*M* = .39, *SD* = .67) adopted statistically significantly less subtractive change than participants in the limited ownership condition (*M* = .70, *SD* = .82), *t*(98.52) = 2.09, *p* < .05, *d* = 0.41. In addition, results revealed that participants in the enhanced ownership condition (*M* = .92, *SD* = .61) adopted statistically significantly more additive change than participants with limited ownership of their ideas (*M* = .53, *SD* = .64), *t*(99.92) = 3.16, *p* < .01, *d* = 0.63. These results provide support for Hypothesis 1 (see Fig. 1).

Additional analysis

To test Hypothesis 1, we measured adoption of subtractive change not by focusing on the details of the proposal participants had completed themselves, but by focusing on its communal parts—elements that members of the participant's team supposedly had generated prior to the experiment. As individuals are
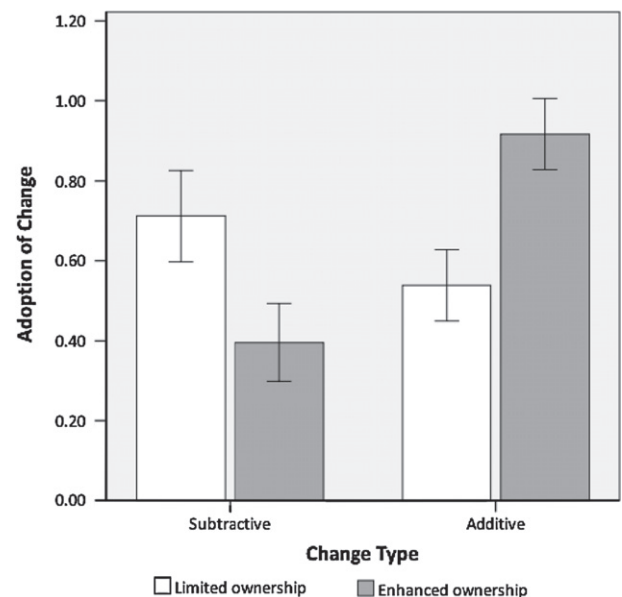

Fig. 1. Mean levels of adoption of change across different types of change and by ownership condition, Study 1. *Notes*: Error bars represent standard errors.

likely to experience less ownership over these communal parts as compared to the more personal elements of the proposal, our test of the subtractive component of Hypothesis 1 is a conservative one. However, our feedback also included recommendations for the elimination and replacement of two elements of the proposal that participants had developed themselves—the name of the restaurant and the celebrity identified.[1] This provided us with the opportunity to conduct an additional test of the subtractive component of Hypothesis 1. In contrast to communal aspects of the proposal, specific features that participants had decided upon themselves are likely to elicit stronger feelings of proprietary attachment because the individual's identity is more uniquely associated with and expressed in such ideas.[2] As a result, subtractive change targeting personal as opposed to communal elements of the proposal should be met with greater resistance resulting in fewer adopted changes. Indeed, a study by Choi and Levine (2004) found that choosing which strategy to pursue in an on-line simulation produced significantly higher levels of resistance to a newcomer's suggestion for changing the strategy as compared to a condition in which the strategy was assigned. Thus, not only should there be a statistically significant difference between the ownership conditions in terms of the number of adopted *personal* subtractive changes, but the difference between conditions should be significantly larger when subtractive change is targeted at personal as opposed to communal elements of the proposal.

Supporting this logic, participants in the ownership condition ($M = .49$, $SD = .65$) adopted significantly fewer subtractive changes targeting personal elements than participants in the limited ownership condition ($M = 1.19$, $SD = .71$), $t(100) = 5.18$, $p < .01$, $d = 1.03$.[3] In addition, a repeated measures ANOVA with ownership (limited ownership vs. enhanced ownership) as the between-subjects factor and subtractive change type (communal vs. personal) as the within-subjects factor produced the expected statistically significant interaction, $F(1, 100) = 4.59$, $p < .05$, indicating that the difference in subtractive change between the limited ownership and the enhanced ownership conditions was statistically significantly larger for personal ($\Delta M = .70$, $SE = .15$) than for communal ($\Delta M = .31$, $SE = .13$) elements of the proposal.

Discussion

The results of our first study suggest that change type plays an important role in determining whether individuals with strong psychological bonds to their possessions remain open to others' suggestions for change or resist those change attempts. As predicted in Hypothesis 1, individuals with enhanced ownership of their ideas, as compared to those with limited feelings of ownership, were more likely to adopt additive change and less likely to adopt subtractive change. Additional analyses revealed that the effects of ownership were more pronounced when subtractive change was directed at elements of the proposal that people had generated themselves as compared to those that had been generated by participants' teammates. These findings provide additional

evidence that it is indeed psychological ownership that produced the effects observed in Study 1. That is, people experienced stronger psychological bonds to the elements of the proposal they had generated themselves as compared to the communal elements they came to possess merely by being part of a larger team, and it was this difference in psychological ownership that is likely to have produced the relatively smaller effect in the case of the more communal elements of the proposal.

Although previous theoretical work has shed some light on the conditions that regulate the effects of psychological ownership on the adoption of change, little is known about the mechanisms mediating these effects. Indeed, our first study is silent on the psychological mechanism transmitting the effects of ownership and change type on the adoption of change. Thus, an important extension of extant research in this area is to identify *why* people with a strong sense of ownership of their ideas are less likely than people with limited ownership to adopt others' suggestions for subtractive change but more inclined to incorporate suggestions that are additive in nature. In the following, we argue that it is a *sense of personal loss* and feelings of *negative affect* that are likely to sequentially mediate the effects of the interaction between psychological ownership and change type on the adoption of change.

Study 2: sense of personal loss and negative affect in a two-stage mediation model

Implicit in our earlier arguments was the assumption that the effect on the adoption of change of both psychological ownership and change type is a direct result of the changes to the self that people with varying degrees of ownership experience when confronted with subtractive versus additive change. In the following we concretize this logic by suggesting that it is the extent to which individuals with ownership of their psychological possessions experience a sense of personal loss that initially determines how they respond to subtractive and additive change.

Previous research suggests that feedback generally commands and receives considerable attention, with the consequence of altering individuals' locus of attention (Kluger & DeNisi, 1996). Feedback that is critical in nature, such as the feedback intervention in the present study, is likely to direct at least some amounts of individuals' attention to the self. Whether it is through change that eliminates certain aspects of the proposal or through change that requires the extension of existing ideas, both subtractive and additive feedback signal the need for further improvement and adjustment and, as a result, are likely to be construed as a challenge or potential threat to the self (i.e., the proposal is not yet good enough and requires additional investment of time and effort). Indeed, previous research suggests that change that implies that the "old ways" of doings things may have been suboptimal can be threating to the self as it causes people to lose face (Kanter, 1985). Baumeister, Smart, and Boden (1996) defined a threat to the self as a situation "when favorable views about oneself are questioned, contradicted, impugned, mocked, challenged, or otherwise put in jeopardy" (p. 8) (see also Campbell & Sedikides, 1999). Given that individuals typically see themselves in a positive light (Baumeister, 1998), any change that threatens the self is likely to cause at least a temporary decline in the self (Jussim, Yen, & Aiello, 1995; McFarlin & Blascovich, 1981; Swann, Griffin, Predmore, & Gaines, 1987). We refer to this temporary decline as a *sense of personal loss* (James, 1890).

The above logic suggests that any change—subtractive or additive—can be potentially threatening and, as a result, elicit at least some sense of personal loss. However, the level of threat and personal loss experienced in response to subtractive and additive change should vary considerably as a function of the extent to

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[1] Participants in the limited ownership condition were asked to eliminate and replace the same two elements as participants in the enhanced ownership condition. The only difference was that they had not previously developed these themselves but they were included in the proposal that was given to them.

[2] Altman (1975) differentiated between primary territories, objects that individuals feel are theirs exclusively, and secondary territories, objects are objects that are understood to be shared by a group. People feel more ownership over primary versus secondary territories. In this study, the proposal is a secondary territory and the elements of the proposal that the participant added (i.e., restaurant name) can be considered primary territories.

[3] Please note that the absolute rate of adopted subtractive change for personal and communal elements cannot be compared as they targeted different elements of the proposal.

which people have psychological ownership of their possessions. While individuals with limited ownership should perceive subtractive and additive change as similarly challenging or threating to the self, those with ownership of the proposal are likely to experience subtractive and additive change quite differently.

For people with strong psychological bonds to their ideas, the thought of adopting subtractive change should be particularly threatening. As the proposal has become an integral part of a person's extended self—research has highlighted that similar to the core self, the extended self is prone to threat (De Dreu & van Knippenberg, 2005)—the thought of adopting change that actively shrinks one's ideas is likely to represent a relatively greater threat (as compared to people with limited ownership). With the extended self being under greater threat, a stronger sense of personal loss is bound to emerge. In contrast, as people with limited ownership are unlikely to consider the proposal an integral part of the extended self, they should perceive subtractive change as relatively less threatening and, as a result, experience a more limited sense of personal loss. Thus, when confronted with subtractive change, we expect individuals with ownership of their ideas to experience a relatively greater sense of personal loss relative to people with limited ownership.

The opposite pattern is likely to emerge when people with psychological ownership of their ideas are presented with additive change. As the proposal has become an important part of a person's extended self, the thought of adopting change that allows the self to grow should reduce any sense of threat (as compared to people with limited ownership) induced by the feedback. With the extended self being under limited threat, feelings of personal loss should be relatively lower. In contrast, as people with limited ownership are less likely to consider the proposal an integral part of the extended self, they are less likely to perceive additive change as a vehicle to enhance the self. Consequently, additive change does little in such circumstances to reduce any sense of threat or loss that may have emerged in response to feedback signaling the need to further improve and extend the proposal. Thus, when confronted with additive change, we expect individuals with ownership of their ideas to experience a relatively weaker sense of personal loss as compared to people with limited ownership. Overall, then, we hypothesize the following:

Hypothesis 2. Psychological ownership and change type will interact to affect individuals' sense of personal loss; compared to participants with limited ownership, participants with enhanced ownership of their ideas will experience higher levels of personal loss when faced with subtractive change and lower levels of personal loss when faced with additive change.

So far we have hypothesized that the thought of adopting subtractive change should cause people with psychological ownership of their possessions (relative to those with limited ownership) to experience a rise in their sense of personal loss whereas the thought of adopting additive feedback should cause those individuals to experience a marked decline in their sense of loss. But how does a sense of personal loss ultimately impact the extent to which various types of change are adopted? In the following, we address this issue by expanding our mediation logic. Specifically, we suggest that elevated levels of personal loss are likely to be accompanied by feelings of negative affect. It is these feelings of negative affect that ultimately determine the adoption of change.

We suggested earlier that a sense of personal loss emerges as a result of individuals' mostly positively views of the extended self being temporary derailed or lowered due to the presence of a threat, such as the request for change. When the positive views of the self are derailed, important motives such as the need for self-enhancement are jeopardized. Given that people are known to experience elevated levels of frustration and anger as their

needs are thwarted (Berkowitz, 1989; Dollard, Doob, Miller, Mowrer, & Sears, 1939), we would expect people who experience a strong sense of personal loss to also experience relatively higher levels of negative affect. Supporting this logic, James (1890) noted that people feel "cast down" when their possession dwindle, that is, when they experience a sense of personal loss. In addition, Dirks et al. (1996) suggested that any change that poses a threat to a person's self is likely to evoke intense feelings of negative affect and may even produce the motivation to retaliate. Finally, the aforementioned study by De Dreu and van Knippenberg (2005) demonstrated that when people experienced a threat to their extended self, hostility and aggression arose. Although this study did not assess participants' affective state directly, it stands to reason that hostility and aggression were accompanied by elevated levels of negative affect.

Based on this previous theory and research, we suggest that there will be a positive relation between the extent to which participants experience a sense of personal loss and the degree to which they experience negative affect. Thus, we hypothesize:

Hypothesis 3. Sense of personal loss will be positively related to negative affect.

So far we have argued that the nature of others' contributions has important implications for whether people with ownership of their psychological possessions (as compared to those with only limited ownership) experience a heightened or reduced sense of personal loss and that (2) the experience of personal loss is likely to result in negative affect. Here we suggest that the extent to which people with ownership of their ideas experience differing degrees of negative affect determines the extent to which they adopt or reject others' suggestions for change.

According to the affect infusion model (AIM, Forgas, 1995), affective states can exert a pervasive influence on individuals' judgments, decision-making, and behavior. At the heart of this model is the assumption that the influence of affective states on our judgments and behaviors depends on the type information processing strategies individuals employ in a particular situation. Situations that require more elaborate, substantive processing strategies are most likely to be infused by affect, whereas situations that encourage more direct, automatic types of responses should be least affected by affect. Given the nature of the task employed in the present study, at least some level of elaborate, substantive processing can be expected thereby allowing for affective infusion.

Affect infusion describes the process whereby affectively laden information shapes and is integrated into a person's cognitive and behavioral processes, infusing their constructive deliberations and ultimately coloring the outcome in a mood-congruent direction (Forgas, 1995; Forgas & George, 2001). According to this logic, the sense of loss and negative affect that people with ownership experience when confronted with subtractive change should infuse their deliberations as to whether or not they should adopt the changes suggested to them. Elevated levels of negative affect should color these deliberations in a more negative way, potentially causing people to evaluate the suggested changes as less useful or helpful, which should ultimately reduce the likelihood that these suggestions will be adopted.

Previous research provides support for this logic. For example, Forgas (1998) demonstrated that responses to requests showed a significant-mood congruent bias. Eliciting negative moods caused participants to form a more critical, negative view of a simple request as compared to participants in a more positive mood. Actual compliance with the request showed a similar pattern—those in negative affective states were less likely to comply with the request. Similarly, in a study of 360° feedback ratings, Brett and Atwater (2001) showed that people who responded with negative

affect to feedback were also more likely to judge it as less useful potentially depressing the ultimate willingness to take this feedback to heart.

Additional evidence for a potentially negative link between negative affect and change adoption can be found in recent research highlighting the demotivating qualities of negative affect (e.g., Illies, Judge, & Wagner, 2010; Seo, Barrett, & Bartunek, 2004). According to this stream of work, individuals in negative affective states are more likely to focus on possible negative outcomes fostering a generally more defensive behavioral orientation, less likely to exert effort, and less likely to persist in their task activities (Ellis, Thomas, & Rodriguez, 1984; Porath & Erez, 2009; Seo et al., 2004). Consistent with this view, Ellis et al. (1984) observed a reduction in cognitive effort in individuals that had been induced with negative affect.

Based on this previous theory and research, we suggest that there will be a negative relation between the extent to which participants experience negative affect and the extent to which they ultimately adopt change. The more negative affect people experience, the more likely it is that they will view others' suggestions for change in generally negative terms—as less useful and helpful. This negative view of feedback along with the generally more defensive behavioral orientation toward these changes should cause people to shun these changes and to exert relatively little effort in considering their implementation ultimately resulting in lowered levels of adoption. Thus, we hypothesize:

Hypothesis 4. Negative affect will be negatively related to the adoption of others' suggestions for change.

Taken together, our arguments suggest that sense of personal loss and negative affect sequentially mediate the joint effects of ownership and change type on the adoption of change resulting in a two-stage mediation model. Specifically, we expect ownership and change type to jointly impact individuals' sense of personal loss, which then regulates their affective responses, which ultimately determines the degree to which different types of change are adopted. We formalize this logic in the following hypothesis:

Hypothesis 5. Sense of personal loss and negative affect will sequentially mediate the joint effects of psychological ownership and change type on the adoption of others' suggestions for change.

We tested Hypotheses 2 through 5 in Study 2 by including measures of participants' sense of personal loss and negative affect. Specifically, we instructed participants to report their sense of loss and their negative affective states after they received the feedback from their virtual team member but before they revised the proposal for resubmission to the evaluation committee.

In addition to examining the mediating roles of personal loss and negative affect, in Study 2 we also addressed two potential limitations of our first study. First, in Study 1 we utilized a hybrid of a between-subjects (limited ownership vs. enhanced ownership) and within-subjects (subtractive vs. additive change) design. Although providing participants simultaneously with suggestions for both subtractive *and* additive change was thought to enhance the realism of our design, it is not clear whether the overall feedback was perceived as either subtractive or additive. To address this limitation, in Study 2 we employed a 2 (limited ownership vs. enhanced ownership) × 2 (subtractive vs. additive change) between-subjects design.

Second, our suggestions for change did not only differ in type (i.e., subtractive vs. additive) but also in content (i.e., subtractive change asked participants to eliminate the reference to "upscale" customers/working women; additive change asked participants to add food/products items to the proposal). Thus, the differential reactions of the Study 1 participants to the subtractive versus additive nature of the suggestions may be confounded with their reactions to the *content* of these recommendations. To address this

limitation, in Study 2 we used the same set of content issues for both subtractive and additive change.

Method

Participants

Participants were 88 undergraduate students, recruited from an introductory organizational behavior course, who received extra credit points in exchange for their time. The sample consisted of 48% women and the average age was 19.57 years ($SD = 2.02$). Participants were randomly assigned to one of four conditions: limited ownership/subtractive feedback, limited ownership/additive feedback, enhanced ownership/subtractive feedback, and enhanced ownership/additive feedback.

Procedure and materials

The procedure was identical to the one employed in Study 1, with four exceptions. First, we modified the existing materials to accommodate the 2 × 2 between-subjects design. The initial version of the proposal now varied not only as a function of the two ownership conditions but also as a function of the type of change participants were presented with. Specifically, while the proposal in the subtractive change condition included certain details (i.e., a promotion section including references to a rewards program and "buy-one-get-one-free" initiatives, three specific menu items), these elements were omitted in the version of the proposal used in the additive change condition. Second, the feedback that was sent to participants now differed depending on whether they were in the subtractive or additive change condition. In the subtractive change condition, the feedback encouraged participants to eliminate the promotion section (including a rewards program and "buy-one-get-one-free" initiative) and the three menu items; in the additive change condition the feedback encouraged participants to add a promotion section (including a rewards program and "buy-one-get-one-free" initiative) and the specific menu items to the proposal. Third, none of the elements that participants were asked to subtract or add were those that they had previously generated themselves as part of the ownership manipulation—a prerequisite for holding constant the content of the change suggestions across the different experimental conditions. Lastly, after receiving the feedback but before revising the proposal, participants were asked to report both their sense of personal loss as well as their negative affect.

Measures

Sense of personal loss

This was measured with three items developed for this study. Using a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), participants indicated their agreement with the following items: "The thought of adopting this feedback makes me feel like I am giving up a part of myself;" "The thought of adopting this feedback makes me feel like I am losing something;" "The thought of adopting this feedback makes me feel like the proposal no longer reflects what is really important to me" (Cronbach's $\alpha = .81$).

Negative affect

We measured participants' negative affective states via a shortened 5-item version (Cronbach's $\alpha = .79$) of the Positive and Negative Affect Schedule (PANAS; Foo, Uy, & Baron, 2009; Watson, Clark, & Tellegen, 1988). Using a scale ranging from 1 (*not at all*) to 7 (*extremely*), participants indicated the extent to which they experienced negative affect at the present moment. Sample items included: "upset" and "frustrated."

To establish discriminant validity of our measure of sense of personal loss vis-à-vis the PANAS-based measure of negative affect, we submitted the five negative affect items along with the three

items measuring loss to a confirmatory factor analysis (CFA). The hypothesized two-factor model was then tested against a one-factor model (Anderson & Gerbing, 1988). Model fit was determined by inspecting the chi-square ratio (i.e., chi-square divided by degrees of freedom), the comparative fit index (CFI) (Bentler, 1990), as well as the root mean square error of approximation (RMSEA) (Steiger & Lind, 1980). Following convention, we took a chi-square ratio of two (or less) as a guideline for acceptable model fit. For the CFI and the RMSEA, we considered values of .95 (or larger) and .06 (or smaller), respectively, to indicate acceptable model fit (Hu & Bentler, 1999). Results revealed that the hypothesized two-factor solution (χ^2_{16} = 19.50, p > .05, χ^2/df = 1.22, CFI = .99, RMSEA = .05) fit the data reasonably well. In addition, results revealed that the two-factor solution fit the data significantly better ($\Delta\chi^2_1$ = 27.50, p < .01) than the one-factor solution (χ^2_{17} = 47.00, p < .01, χ^2/df = 2.77, CFI = .90, RMSEA = .14). These results suggest that negative affect is distinct from sense of personal loss.

Adoption of change

This was measured via the extent to which participants dropped/ added a promotion section along with certain details (i.e., rewards program, "buy-one-get-one-free" initiative). This part of the measure ranged from 0 (*no change*) to 3 (*promotion section with reference to both rewards program and "buy-one-get-one-free" initiatives dropped/added*). Second, we asked participants to drop or add a set of three specific menu items. This part of the measure ranged from 0 (*no change*) to 3 (*all three menu items dropped/ added*). Thus, the overall indicator ranged from 0 to 6.

Manipulation check

Using a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), participants reported their felt ownership of the proposal on the same four-item scale as in Study 1 (Cronbach's α = .98).

Results

Attesting to the success of our manipulation, participants in the enhanced ownership condition (*M* = 4.34, *SD* = 1.11) reported significantly higher levels of felt ownership than participants in the limited ownership condition (*M* = 1.64, *SD* = 1.03), *t*(86) = 11.79, *p* < .01, *d* = 2.51. To test Hypothesis 1 that participants in the ownership condition would adopt fewer subtractive and more additive suggestions for change than participants with limited ownership, we subjected our measure of change to an ANOVA in which psychological ownership and change type served as between-subjects factors. Results revealed a statistically significant interaction between psychological ownership and change type on the adoption of others' suggestions for change, *F*(1,84) = 18.03, *p* < .01, η^2_p = .18, consistent with Hypothesis 1. As expected, participants in the enhanced ownership condition (*M* = 2.73, *SD* = 2.45) adopted statistically significantly less subtractive change than participants in the limited ownership condition (*M* = 4.23, *SD* = 1.78), *t*(38.21) = 2.33, *p* < .05, *d* = .70. In addition, results revealed that participants in the enhanced ownership condition (*M* = 4.05, *SD* = 2.03) adopted statistically significantly more additive change than participants with limited ownership of their ideas (*M* = 1.73, *SD* = 2.12), *t*(42) = 3.70, *p* < .01, *d* = 1.12. These results provide support for Hypothesis 1 and replicate our findings from Study 1 (see Table 1 and Fig. 2).

To test our two-step mediation model in which psychological ownership and change type were hypothesized to jointly impact an individual's sense of personal loss, which then would determine negative affect and ultimately the degree to which different types of change are adopted, we used the bootstrapping procedure outlined by Hayes, Preacher, and Myers (2010). This procedure

Table 1
Means, standard deviations, and intercorrelations, Study 2.

| Variables	1	2	3
1. Sense of personal loss	–		
2. Negative affect	.54**	–	
3. Adoption of change	−.15	−.42**	–
Limited psychological ownership/subtractive change			
M	1.55	1.12	4.23
SD	0.72	0.19	1.78
Enhanced psychological ownership/subtractive change			
M	2.59	2.16	2.73
SD	1.15	0.99	2.45
Limited psychological ownership/additive change			
M	1.96	1.99	1.73
SD	1.09	0.77	2.12
Enhanced psychological ownership/additive change			
M	1.39	1.33	4.05
SD	0.56	0.40	2.03

* *p* < .05.
** *p* < .01.
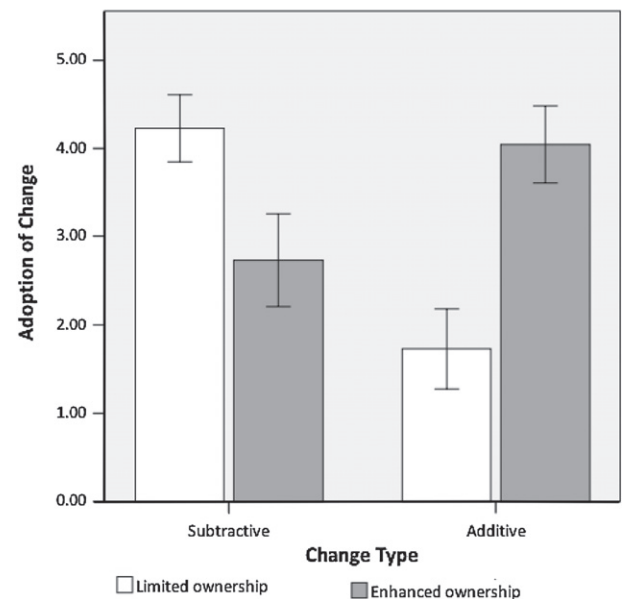
Fig. 2. Mean levels of adoption of change across different types of change and by ownership condition, Study 2. *Notes*: Error bars represent standard errors.

estimates the total, direct, and indirect effects of a set of independent variables through a multiple-step mediation model on a dependent variable. Specifically, based on bootstrapping 5000 resamples, we estimated the indirect effects of psychological ownership, change type, and their interaction through personal loss and negative affect on adoption of change.

Consistent with Hypothesis 2 that compared to participants with limited ownership, enhanced ownership participants would experience lower levels of personal loss when faced with additive change and higher levels of personal loss when presented with subtractive change, the interaction between psychological ownership and change type related statistically significantly to sense of personal loss (*b* = −1.61, *p* < .01) (see Fig. 3). An ANOVA, *F*(1,84) = 17.21, *p* < .01, η^2_p = .17, revealed that when faced with subtractive change, participants with enhanced ownership of their ideas (*M* = 2.59, *SD* = 1.15) experienced statistically significantly higher levels of personal loss than participants in the limited ownership condition (*M* = 1.55, *SD* = .72), *t*(35.18) = 3.62, *p* < .01, *d* = 1.08. Also confirming expectations, when confronted with
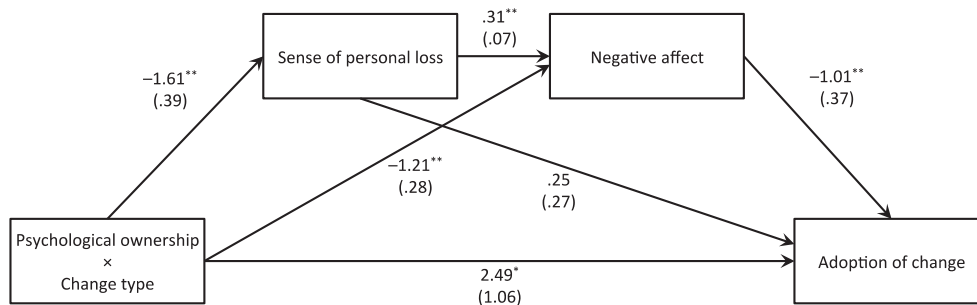
Fig. 3. Mediation analysis, Study 2: Sense of personal loss and negative affect as mediators of the joint effects of psychological ownership and change type on the adoption change. *Notes*: Direct effect of psychological ownership × change type reported while controlling for the individual and joint indirect effects through sense of personal loss and negative affect. Standard errors in parentheses. $^*p < .05$. $^{**}p < .01$.

Table 2
Mediation analysis, Study 2: summary of indirect effects.

Mediator model	B	95% CI (lower bound)	95% CI (upper bound)	Bootstrap SE
Sense of personal loss	−.40	−1.43	.58	.49
Negative affect	1.23*	.32	2.38	.53
Sense of personal loss and negative affect	.50*	.07	1.19	.29
Total	1.33*	.09	2.55	.62

Notes: Inferences about indirect effects based on bootstrapping 5000 resamples.
* $p < .05$.

additive change, participants with enhanced ownership ($M = 1.39$, $SD = .56$) experienced statistically significantly less personal loss than limited ownership participants ($M = 1.96$, $SD = 1.09$), $t(42) = 2.18$, $p < .05$, $d = .66$ (see Table 1). These results provide support for Hypothesis 2.

Hypothesis 3 predicted a positive relation between sense of personal loss and negative affect. As shown in Fig. 3, this hypothesis was supported ($b = .31$, $p < .01$). In addition to the indirect effect via personal loss, there was also a direct effect of the interaction between psychological ownership and change type on negative affect ($b = −1.21$ $p < .01$) (see Fig. 3). An ANOVA, $F(1,84) = 15.09$, $p < .01$, $\eta_p^2 = .30$, revealed that when faced with subtractive change, participants with enhanced ownership of their ideas ($M = 2.16$, $SD = .99$) experienced statistically significantly higher levels of negative affect than participants in the limited ownership condition ($M = 1.11$, $SD = .19$), $t(22.57) = 4.86$, $p < .01$, $d = 1.47$. When confronted with additive change, participants with enhanced ownership ($M = 1.33$, $SD = .40$) experienced statistically significantly less negative affect than limited ownership participants ($M = 1.99$, $SD = .77$), $t(31.63) = 3.57$, $p < .01$, $d = 1.08$ (see Table 1). Thus, the effect of the interaction between psychological ownership and change type on negative affect mirrored the one we observed for personal loss.

Hypothesis 4, which predicted a negative effect of negative affect on the adoption of change was also supported ($b = −1.01$, $p < .01$) (see Fig. 3). Finally, consistent with Hypothesis 5 that the effect of the interaction between psychological ownership and change type on the adoption of change would be sequentially mediated by both personal loss *and* negative affect, results revealed that this indirect effect was indeed positive and statistically significant ($b = .50$, $p < .05$), as indicated by the 95% confidence interval excluding zero (see Table 2). The total mediation effect (combining the individual indirect effects through personal loss and negative affect with the joint indirect effect through both mediators) was also statistically significant ($b = 1.33$, $p < .05$) (see Table 2). Given that the effect of the interaction between ownership and change

type on our dependent variable remained statistically significant ($b = 2.49$ $p < .05$), even when controlling for the individual and joint indirect effects of personal loss and negative affect, we can only speak of partial mediation (see Fig. 3). Overall, Hypothesis 5 is partly supported.

Discussion

The findings of Study 2 showed that as predicted in Hypothesis 1, individuals with stronger feelings of ownership of their ideas, as compared to those with limited feelings of ownership, were more likely to adopt additive change and less likely to adopt subtractive change. These findings replicate the results of Study 1 in a between-subjects design thereby providing additional support for our arguments that the effects of psychological ownership on the adoption of others' suggestions for change are contingent upon the nature of change.

As predicted in Hypotheses 2 through 5, the pattern of results we observed in Study 2 could be attributed, at least partly, to the varying levels of personal loss and negative affect that people experienced when confronted with the thought of shrinking or expanding upon their possessions. Specifically, extending the findings of Study 1, the results of our second study demonstrated that the joint effect of ownership and change type and change adoption was partially mediated by an individual's sense of personal loss and the feelings of negative affect that arose subsequently. Although our results provided support for the indirect effect we postulated in Hypotheses 2 through 5, because the direct effect of the interaction between ownership and change type on the adoption of change remained statistically significant even after controlling for the significant indirect effects through personal loss and negative affect, Study 2 provided only partial support for Hypothesis 5.

General discussion and conclusion

The main purpose of the present research was to answer the question of why people sometimes embrace change and other times seem to outright reject it. We suggested that psychological ownership—the extent to which people feel as though an object is truly theirs—may be at the root of this phenomenon. In addition, we argued that whether people who feel a strong psychological bond to an object remain open to adopting others' suggestions for changing that object or resist such attempts is in large part determined by the nature of the change attempt itself. Consistent with this logic, we hypothesized that whereas psychological ownership would cause people (relative to those with limited ownership) to embrace the adoption of suggestions that expand upon

their possessions, it would at the same time make them shun the adoption of suggestions that shrink their possessions.

Across two studies, we found support for this hypothesis. Specifically, our results indicated that people with a sense of ownership of a set of ideas were less likely, relative to those with limited ownership, to adopt change that diminished their ideas and more likely to adopt suggestions that expanded them. Thus, whereas people with ownership are relatively "blind" when change is subtractive in nature shrinking one's possessions, those who lack a strong bond to an object appear to be relatively "blind" when change is additive requiring additional investments to develop one's idea. These findings emerged irrespective of whether people were presented with only subtractive or additive change (Study 2) or with both types simultaneously (Study 1) attesting to the robustness of this effect.

Results of Study 2 revealed that the difference in how people with and without ownership of their ideas responded to subtractive versus additive change could be explained in large part by the extent to which they experienced a sense of personal loss and, as a result, negative affect. Specifically, results of our second study demonstrated that the thought of expanding upon or shrinking one's possessions triggered people with ownership of their ideas to experience more or less of a sense of personal loss which then evoked varying levels of negative affect which then ultimately determined the extent to which subtractive and additive change were adopted.

Our findings contribute to the literature on psychological ownership by spotlighting both the positive and negative implications for change of being psychologically tied to an object, and the critical role of the nature of change in determining which of these consequences are likely to occur. Most previous empirical efforts have focused exclusively on the positive implications associated with ownership (e.g., O'Driscoll et al., 2006; Van Dyne & Pierce, 2004) and largely ignored its potential negative consequences (for a notable exception see, De Dreu & van Knippenberg, 2005). The findings of the present research suggest that psychological ownership can be beneficial propelling people to remain open to others' suggestions for change but they also highlight that ownership can have negative consequences causing people to resist change. Thus, rather than assuming that experiencing ownership will always have beneficial effects, our results solidify the perspective that ownership seems to be a double-edged sword with very different consequences, depending upon whether change results in an extension or reduction of one's psychological possessions. Future research therefore should examine more systematically both the beneficial and detrimental consequences associated with feelings of ownership (Pierce et al., 2009).

In addition to highlighting the dual nature of ownership, our research demonstrates that a sense of personal loss and negative affect together represent one of the key mechanisms transmitting the effects of ownership and change type on adoption of change. These findings represent a much-needed step toward identifying the mediators of the effects of psychological ownership. Unfortunately, previous work has been silent on this issue. Thus, our findings contribute to extant theory on psychological ownership by highlighting the importance of the self and affective states, particular negative affect, in explaining *why* ownership delivers its anticipated effects.[4] Theoretical work on psychological ownership should therefore consider more explicitly the role of both the self and affect

in understanding the effects of ownership on a variety of different outcomes.

Limitations and potential avenues for future research

Our research is subject to a number of limitations that suggest fruitful directions for future research. First, our use of a laboratory setting involving undergraduate students raises questions about the validity of our findings. Although we attempted to operationalize psychological ownership and change in ways reflective of the real world by employing a task that was seen as realistic and engaging, it may be possible that we did not capture all essential elements of these concepts. Thus, future research is needed to examine the generalizability of our results beyond the laboratory setting and the undergraduate student population.

Second, the target of psychological ownership in the present research was people's ideas in the form of a proposal. However, as argued throughout, the observed effects are not limited to intellectual property but should also emerge in the case of other nonmaterial targets (Brown & Robinson, 2011). Roles and responsibilities, for instance, should be subject to the same forces. When individuals are presented with changes that result in an expansion of their roles, we expect people to embrace such changes with open arms. In contrast, when change necessitates that those who are deeply invested in their roles have to relinquish some of their responsibilities, we should see people exhibit great resistance to these change efforts. Material objects should also operate under the same principles. Future research is now needed to investigate these possibilities.

Finally, although our results provided support for the mediating role of a person's sense of loss and the negative affective states that subsequently arose, together these factors only served as partial mediators. The joint effect of psychological ownership and change type on the adoption of others' suggestions for change remained significant even after controlling for the indirect paths through sense of personal loss and negative affect. These results suggest that we have only started to uncover the mechanisms delivering the effects of psychological ownership.

One way for future research to address this issue is to consider adding precision to the mediating variables identified and examined here. For example, we conceptualized personal loss without specifying which part of the self would be affected by this experience of loss. Pierce et al. (2001, 2003) suggested that psychological ownership is rooted, at least partly, in three human motives: (1) self efficacy and effectance (White, 1959), (2) self-identity (Dittmar, 1992; Mead, 1934), and (3) having a place in which to dwell (home; Heidegger, 1967; Polanyi, 1962). A sense of personal loss may emerge with respect to all three motives—people may experience a loss of self efficacy and control, a loss in their perceived ability to define themselves and to express their identity, or a loss in their sense of connection, of having a place of one's own. Alternatively, it may be that a sense of personal loss depresses some motives more strongly than others depending upon the mechanism or route that lead to the emergence of ownership in the first place. More clearly specifying the precise pathways that are operative may result in mediation models that more fully transmit the effects of ownership and change type.

Practical implications

Our results suggest that individuals who feel a strong sense of psychological attachment to their possessions may selectively respond to and incorporate different types of suggestions for change, focusing on those that build upon and extend their possessions and largely ignoring those that shrink them. This may be problematic,

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[4] In a third study not reported here, we replicated the mediating role of negative affect in transmitting the joint effect of psychological ownership and change type on the adoption of change ($b = .35$, $p < .05$). However, as in Study 2, negative affect served only to partially mediate this effect as the direct effect of the interaction between ownership and change type on change adoption remained statistically significant ($b = 2.40$, $p < .01$).

however, in a number of domains, two of which we would like to highlight here—creativity and advice taking.

Developing creative ideas is often the result of a collaborative effort (e.g., Perry-Smith & Shalley, 2003; Sawyer, 2007). For example, struggling with finding a solution to a problematic situation, individuals may actively seek out the assistance of others or may be approached by others willing to offer their time and attention. It is during such interactions that individuals share their ideas and thoughts, allowing others to build upon and refine them, thereby laying the groundwork for new and better ideas to emerge (Hargadon & Bechky, 2006). An important implication of this collaborative approach to idea development is that the refinement of ideas hinges upon individuals' willingness to allow others to shape their ideas and to accept their contributions. However, our findings indicate that people who are deeply invested in their ideas are unlikely to adopt suggestions that are subtractive in nature and more likely focus on those that expand upon to their ideas. Assuming that both additive and subtractive contributions are equally important for improving the quality of a set of ideas—it may be as or even more important to weed out ideas with limited potential as it is to identify those that have promise—our results suggest that people with ownership of their ideas may be "blind in one eye" and are unlikely to harvest all the advantages a collaborative environment may have to offer.

One mechanism managers can employ to make sure that individuals consider both additive and subjective feedback equally, for example, is to foster a culture in which ideas are not considered to be individual properties but rather collective possessions, for example, as practiced by the design firm IDEO (Kelley & Littman, 2001). Another mechanism that may be fruitfully applied is the rule of agreement—an integral element of team improvisation. Indeed, one of the cardinal sins of improvisation is blocking someone else's contribution (Frost & Yarrow, 1990). Thus, cultivating norms of agreement and openness by applying techniques that require people to "agree, accept, and add" (Vera & Crossan, 2005), without blocking or denying someone else's contribution may be helpful in overcoming the "blind-in-one-eye" effect.

Research on advice taking has similarly highlighted the potential pitfalls of individuals being unsympathetic to others' suggestions and contributions (e.g., Yaniv & Kleinberger, 2000; see Bonaccio & Dalal, 2006 for a review). For example, Gino and Schweitzer (2008) showed that individuals who experienced anger—a negative affective state similar to those that emerged in the present study when ownership participants were confronted with subtractive change—were less likely to accept advice and, as a result, less accurate in their judgments. Thus, being invested in one's opinions or judgments may cause people to shun others' advice (Yaniv, 2004), especially in cases in which advice runs counter to one's initial inclinations and therefore has the potential to trigger negative affective responses such as anger. Under such circumstances, individuals can be expected to be less likely to listen to others' advice ultimately comprising their judgment or decision making accuracy. This suggests that people need to be mindful of their level of psychological investment in an opinion or judgment so as to avoid rejecting others' potentially helpful advice before making important decisions.

Acknowledgments

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