THE COST OF NEW IDEAS

BY

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Abstract

Existing research provides extensive advice on how firms can stimulate the generation of ideas, but there is limited research on the potential psychological consequences of idea generation and brainstorming for the people who actively engage in this process. Moreover, theories of counterfactual thinking and comparative evaluation, lead to competing predictions about the downstream consequences of idea generation. Some perspectives would suggest idea generation should lead to an increase in satisfaction with the status quo, while others suggest the opposite. In this paper, I empirically reconcile these competing perspectives to propose that new ideas can serve as upward counterfactuals to experiences, possessions, or organizations, which then make those experiences, possessions, or organizations seem worse by comparison. I conclude by discussing the theoretical and practical implications of these findings for future research on the consequences of idea generation.

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Chapter 1: The Cost of New Ideas

1.1 Introduction

New ideas are a key driver of profit for firms (Hargadon and Sutton, 1997; Paulus and Yang, 2000). In the search for new ideas, companies have turned to both employees and customers to improve not just their products, but also the way the firm itself operates. Pixar, a company specializing in animated films and well known for the creativity of its products, asks employees to come up with ideas to improve work processes. The firm organizes an event called "Notes Day" each year where employees provide ideas for how Pixar could improve everything from corporate culture to technical performance (Catmull and Wallace, 2014). Toyota, the international car manufacturer, has a program to encourage workers on the production lines to submit ideas for ways to improve and streamline the process of making cars. New tools, new processes, and even new chairs have been instantiated based on employee suggestions through this program (Spear and Bowen, 1999). Lays potato chips developed a yearly campaign to solicit ideas for new chip flavors from their consumers. Anyone can send in an idea for a new chip flavor combination, which could then receive a test production run to be reviewed and voted on by the public (Frito Lay America, 2017).

Given the many ways firms draw on employee ideas and suggestions to drive profit, it makes sense that so much academic work has focused on the underlying processes that boost the output of new ideas. Scholars have explored contexts, procedures, personalities, and beyond to understand how the creation of new ideas can be better encouraged (see Hennessey and Amabile, 2010 for a review). On the other hand, very little research has looked at the downstream psychological consequences of engaging in the process of idea generation (Goncalo, Vincent, & Krause, 2015; Khessina, Goncalo & Krause, 2018; Goncalo & Katz, 2019). A newly emerging

stream of research is reversing the equation to investigate how engaging in idea generation might have psychological, behavioral and interpersonal consequences for the person who generates ideas. For instance, recent research has shown that generating creative ideas feels self-disclosing and that hearing a partner's creative ideas makes individuals more confident that they can accurately assess their partner's personality (Goncalo & Katz, 2019).

Shifting our focus toward the consequences of idea generation yields a new set of questions. Would generating ideas for a new management style at Pixar affect the way I feel about my current boss? At Toyota, would the tool I wish I had shape how I feel about using the tool in my hand? And at Lays, would my idea for Orange Mango potato chips change how I feel about the next time I eat a bag with a more conventional flavor? In my dissertation, I carry the analysis of the brainstorming process a step forward to explore whether the act of generating ideas impacts subsequent satisfaction.

In order to understand what the consequences of idea generation may be, I look to previous research on creativity, which often includes idea generation as a central part of the process (Perry-Smith and Mannucci, 2017). Previous research has generally explored positive consequences that come from creative thinking. Creativity has been linked to increased well-being in the clinical literature when it is used as a tool for therapy where subjects visualizing alternative situations and appraisals for themselves were able to cope more favorably with trauma (Metzl, 2009) and anger producing situations (Weber, Loureiro de Assunção, Martin, Westmeyer, & Geisler, 2014). There are also relationships between supportive work environments for creativity and general positive outcomes for employees (Stokols, Clitheroe, & Zmuidzinas, 2002; Madjar, Greenberg, & Chen, 2011). Environments conducive to creativity are also conducive to job satisfaction and high creative performance is linked to high general work

performance (Keller, 2012). Being creative has also been shown to boost intrinsic motivation which, in turn, motivates higher creative performance (Conti, Amabile & Pollack, 1995). Less decisively, positive affect was hypothesized, but not found to be a consequence for those engaging in creative work (Amabile, Barsade, Mueller, and Staw, 2005).

In contrast to this work on positive consequences of creativity, work on dissatisfaction and creativity has generally approached the issue by studying how dissatisfaction can lead to creativity, not the reverse. There are a few papers that link dissatisfaction with the status quo to creative improvements in the domains that a person is dissatisfied with (Zhou & George, 2001; Choi, Madjar, & Yun, 2018). Each of these papers explores the conditions under which dissatisfaction can lead to creativity, though neither shows a broad consistent link between the two contexts. In Zhou and George, (2001), the authors demonstrate that when continuance commitment, coworker support, and organizational support for creativity are all high, there is a positive link between dissatisfaction and creativity. Looking closely at their results though, if any of these conditions is missing, the effect is typically reversed, showing a slight relationship between satisfaction and creativity, as one might more conventionally expect. In Choi, Madjar, and Yun, (2018), there is a similar relationship where employees faced with problems at work who experience high organizational support, have high exchange ideology, and posses strong learning orientation will tend to be more creative. Though often cited as a straightforward link from dissatisfaction to creativity, the empirical works on this paper are much more conditional.

Because existing research has focused almost exclusively on creativity and idea generation as dependent variables, important questions remain about the relationship between idea generation and satisfaction. First, research has assumed that the act of generating ideas should have positive consequences for positive affect and intrinsic motivation and has not

considered the possibility that idea generation might not always have a positive impact. Second, research linking creativity to dissatisfaction has been one sided—investigating whether and how dissatisfaction leads to creativity but not the reverse. This gap is important for several reasons. First, when deciding whether or not to pursue new ideas it is important to account for both the potential positive and negative consequences, including the possibility of diminished satisfaction (Khessina, Goncalo & Krause, 2018). Second, understanding the underling process that might cause idea generators to be less satisfied will inform efforts to mitigate this unintended negative effect. Third, diminished satisfaction, if it occurs, might be an important part of the creative process given that dissatisfaction might stimulate subsequent creativity. Thus, in my dissertation I investigate how engaging in the process of idea generation might causally impact subsequent satisfaction.

1.2 Idea Generation as an Independent Variable

Brainstorming has been a common tactic used by firms, groups, and individuals to solve problems since it was originated in 1939 (Osborn, 1963). Osborn's concept of brainstorming centered around trying to generate as many wide-ranging ideas as possible. He believed that the sheer quantity of ideas would lead to better solutions. Along with its use in the business world, scholars have long studied brainstorming and the contributing factors to its successful. For example, early work introduced one of the key problems in the brainstorming world: that collaborating in groups actually leads to a large loss in productivity compared to idea generation at the individual level (Taylor, Berry, & Block, 1958). Indeed, similar work has continued such that even recent scholars are still investigating productivity loss in groups from brainstorming (Diehl & Stroebe, 1987; Strobe, Nijstad, Rietzschel, 2010). Research on the productivity of brainstorming groups remains an active stream of research (see Paulus and Kenworthy, 2018 for

a review). Yet, though insights about how to boost brainstorming productivity has accumulate over the last three decades, little concern has been rendered for the possible consequences of engaging in the brainstorming process.

More broadly, idea generation is seen as a key basis for creativity in groups and organizations (Paulus and Yang, 2001). As well, it is typically seen as an early step in broader creative process models that move from idea generation, to elaboration, to eventual implementation (Amabile & Pratt, 2016; Perry-Smith & Mannucci, 2017). Similar to that of brainstorming, the antecedents are widely studied, but the consequences of the creative process are under explored (Khessina, Goncalo & Krause, 2018). Drawing from decision making literatures, I propose that because creative ideation involves the generation of novel alternatives, these novel alternatives may serve as counterfactuals to reality, which would then influence subsequent satisfaction.

Across a wide variety of literatures, researchers have explored how the evaluation of a target exists not solely on the objective characteristics of that target, but it is also evaluated in comparison to other potential alternatives. Comparing a target to a better alternative makes individuals feel worse. Conversely, comparing a target to something worse makes individuals feel better. For example, Medvec, Madey, and Gilovich (1995), found that third place finishers felt better about their outcome than second place finishers in races. This is because the third-place finishers compare their results to the possibility of fourth place, which is worse than what they actually placed, making them feel better about reality. In contrast, second-place finishers compare themselves to first-place finishers, which are better than their actual reality, making them seem worse by comparison. In other words, evaluation is subjective and depends on the context. The same target may be evaluated differently depending on whether the target is

compared to something inferior or superior. This pattern emerges across a wide variety of domains, from social comparison (Festinger, 1954, Richins, 1991), to job satisfaction (Clark and Oswald, 1996), to counterfactual thinking (Roese 1997; Medvec, Madey, & Gilovich, 1995; Markman, McMullen, & Elizaga, 2008).

In social comparison (Festinger, 1954), evaluation of the self and one's own characteristics is dependent on how those characteristics relate to others in a social circle. For example, John's opinion of his abilities as a swimmer may change not just as he improves his skills in that area but also when he meets others who may be better or worse than him at swimming. Other work in marketing expands this social comparison to hypothetical others who may not actually exist. In these works, the presence of an alternative in an advertisement can shape how someone feels about themselves (Richins, 1991). In this paper, women reported feelings of inadequacy and dissatisfaction with themselves in response to idealized images of women presented in advertisements. These comparisons functioned similarly to general social comparisons, where the young women in the study compared themselves to the women seen in advertising, just as if they were real people within their social circle. In both of the above cases, satisfaction with the self and evaluation of one's characteristics changes based on observing other people, whether those other people are real members of one's social circle, or even fictional people used in advertisements.

A similar process unfolds in the domain of job satisfaction. Comparisons in this domain can be drawn not just to specific others, but to generalized others who are working in similar jobs. For economists, early work on the way that satisfaction with wages is affected by the wages of others in your field was seen as a radical departure from established theory (Clark and Oswald, 1996). Similar to other economic work though, it analyzes people at the aggregate level

and does not delve deep into why satisfaction can be altered based on how much other people are making. This work shows that job satisfaction is driven not only by one's own income, but by how that income level relates to the average income level of a profession. For example, I will be less satisfied making $100,000 per year if the average person in my profession makes $150,000 than if the average person makes $90,000. Similar to the way that job satisfaction can be affected by anonymous others, satisfaction with some consumption goods can be affected by surrounding others.

For a subset of comparative evaluation known as counterfactual thinking, a person compares their recent experience to a possible alternative experience that they believe they could have had (Roese, 1997; Markman, McMullen, & Elizaga, 2008). So, rather than comparing my performance in a race to someone else's, I compare my performance in a race to how I feel I could have done in that race. Counterfactual thinking also differs from the comparisons above because it is not about what a person's characteristics are, how much money they are making, or what they are consuming at this moment, but instead counterfactual thinking is always focused on past events and experiences (Roese, 1997). For example, the counterfactual thinking versions of the above are how I would have done things based on how I used to be, how much I could have made last year, or what I could have consumed.

Though the pattern is consistent across social comparison, job satisfaction, and counterfactual thinking, the way that alternatives can affect evaluation is not always the same. For example, work shows that how satisfied a person is with their jewelry is dependent on the quality of jewelry that others in their area typically possess (Hsee, Yang, Li, & Shen, 2009), this work also shows that feeling too hot is unpleasant regardless of whether those around you are feeling it too. A lack of air conditioning that makes you feel more unpleasantly hot than those

around you who do have air conditioning leads to a similar level of dissatisfaction as a heat wave that you and all of those around you experience together. This means that when looking at a new context, one cannot be sure that comparison will actually change evaluation, despite the precedent in a wide variety of settings. In addition to determining how the direction of comparison will shape satisfaction, one must conduct empirical studies to be sure that the comparison is meaningful.

I investigate the possibility that ideas may serve as alternatives that make the status quo seem worse by comparison. In the case of idea generation and brainstorming, it is unclear whether these new ideas would be thought of as better or worse than the status quo, which would shape whether people would become more or less satisfied by the ideas they generated. A variety of research has suggested that people by default much prefer the status quo to new alternatives (Samuelson & Zeckhauser, 1988; Eidelman, Crandall, & Pattershall, 2009; Gong, Zhou, & Chang, 2013). This research suggests that any ideas they generated would be seen as worse than the status quo, which would then make people even happier with the status quo compared to this downward counterfactual. On the other hand, overconfidence biases (West & Stanovich, 1997; Moore & Healey, 2008) suggest that people would overrate their own ideas—believing their own ideas are better than they really are. Thus, these ideas would seem better than the status quo and these upward counterfactuals would make the status quo seem even worse by comparison. Given the nature of brainstorming, the fact that it is typically employed to generate positive ideas, or ideas for improvements, ideas generated seem more likely to serve as upward counterfactuals, which would then decrease the satisfaction of those who generated the ideas. Thus, I hypothesize that Generating ideas about a product, service, or job will trigger a comparison between the idea and reality. And (2) this comparison will, in turn, lead to a decrease in satisfaction.

Changes in satisfaction could then have several important consequences for those generating ideas. In the employment domain, job satisfaction is a key predictor of organizational commitment (Kooij, Jansen, Dikkers, & De Lange, 2010), turnover intentions (Porter, Steers, Mowday, & Boulian, 1974), and organizational citizenship (Williams, & Anderson, 1991). In the consumption domain, satisfaction is a key antecedent of consumers purchasing that good again (Möhlmann, 2015). In terms of satisfaction with the self, also conceptualized as self-esteem, this is seen as an overall measure of happiness and well-being for populations and can be used to measure effect of national policies or levels of wealth (Frey & Stutzer, 2010).

1.3 Method

Across all studies, total sample size was determined before any analysis was performed and no additional data were collected after the initial samples. Across all studies, exclusions took place blind to experimental condition and before any analyses were conducted. The two potential reasons for exclusion were failing the attention check of identifying the number of items the participant was asked to generate or entering nonsense answers in response to prompts.

1.4 Study One

In this baselines study, I wanted to find a simple way to assign one group to do an idea generation task, while another group served as the control. I did not have the subjects generate ideas under a five or seven-minute time limit, as is typical of idea generation experiments (Goncalo, Chatman, Duguid, & Kennedy, 2015; Zitek and Vincent, 2015). The reason I opted instead to prompt participants for ten ideas or ten existing options has to do with the online nature of the study administration. On a computer, a timer is easily circumvented by switching windows and just doing something else. So, one participant might generate ideas for only a minute before doing other things on their computer while waiting for the timer to run down. If I

asked for a specific number of ideas instead, participants would have more reason to stay within the study, thereby reducing random variance. As for why I ask for ten ideas specifically, I were concerned that asking for too many ideas could, in and of itself, produce dissatisfaction, or make it difficult to generate enough ideas. For this reason, when deciding on the number of ideas to ask participants to generate, I selected a number that was below the mean number of ideas generated in similar studies, using similar tasks (De Dreu, Baas, & Nijstad, 2008; Duguid & Goncalo, 2015) to ensure participants could easily complete the task.

In study one, I randomly assigned participants to perform a task that either demanded idea generation or did not, by asking them to either generate new restaurant ideas (idea generation) or to list existing restaurants (control). Restaurants were selected as a topic since it would be something that all randomly selected participants would have extensive experience with. All participants then completed a survey measure of their satisfaction with the restaurant options currently available to them.

Participants. I recruited 202 participants (116 men, 85 women, 1 other, M_{age} = 35, SD_{age} = 9.5, 71% white) to take part in the experiment through Amazon's Mechanical Turk platform in exchange for $1 upon completion of the study. Before any analysis was conducted, eleven participants were excluded per the criteria mentioned above, leaving a final n = 191. Of those, 80 were in the idea generation condition and 111 were in the control condition.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "Please come up with 10 ideas for new restaurant concepts that could go in your city or town." While those randomly assigned to the existing concepts conditions read, "Please come up with 10 restaurant concepts that already exist in your city or town."

Satisfaction Measures. It is an often taken for granted feeling to the point that ratings of satisfaction often directly ask about satisfaction using the word itself, either asking single item measures such as "to what extent are you satisfied with this service" (Diener, 1985; Wanous and Lawler, 1972) or "to what extent are you satisfied with your job" or measuring several items that ask satisfaction with different aspects of one thing. The focal concept can also vary, for example, some research that seeks to measure job satisfaction also asks about satisfaction with wages, coworkers, and managers as part of the overall job satisfaction construct (Möhlmann, 2015; Zablah, et al., 2016). Due to concerns about the reliability of single item measures (Diener, 1985), I adapted a four-item satisfaction scale based on those used for other topics in the literature (Möhlmann, 2015; Zablah, et al., 2016). All participants rated their satisfaction with restaurants they currently frequent on a five-item scale with seven-point Likert responses ranging from "strongly disagree" to "strongly agree" ($\alpha = .90$). The items responded to were as follows: "I am satisfied with the current state of the restaurants I frequent," "I would recommend the restaurants I usually visit to a friend," "Typically, I am happy with my experience at restaurants," "I have confidence in the people running most restaurants," and "I enjoy the food I get when eating out."

1.4.1 Results

The results showed that participants who generated new ideas for restaurant concepts were significantly less satisfied ($M = 5.37$, $SD = .84$) than those who thought about existing restaurant concepts ($M = 5.66$, $SD = .89$; $t(189) = 2.27$, $p = .024$) Cohen's $d = .34$.

1.4.2 Discussion

The results of study one showed that people who generated ideas became less satisfied with restaurants in general than those in the control group. This supports my hypothesis that idea

generation leads to a decrease in satisfaction with the status quo. To explore the robustness and replicability of this effect, I carried out an additional study with a different organizationally relevant brainstorming topic and a different measure of satisfaction.

1.5 Study Two

While Amazon Mechanical Turk is a widely used subject pool in social science research (Buhrmester, Kwang, and Gosling, 2011) that has been shown to be reasonably reliable (Paolacci, Chandler, & Ipeirotis, 2010), some organizational scholars might be concerned that this population is different from those who are typically employed. Thus, for study two I draw from a population of people who are currently employed. As well, I take this opportunity to test out whether the effect found in the above study extends to domains beyond restaurants. For study two, I employed a similar procedure to study one, but I changed the domain so that participants were generating ideas about their employer. I randomly assigned participants to perform a task that either demanded idea generation or did not. I wanted to test if brainstorming new ideas about their employer would make people less satisfied with their job compared to those contemplating existing processes or practices.

Participants. I recruited 201 participants (101 men, 99 women,1 other, M_{age} = 38.6, SD_{age} = 10.5, 75% white), who reported being currently employed through the Turkprime recruitment surveys, drawn from the Amazon Mechanical Turk population. Participants took the study online and were compensated $1 upon completing the study. Before any analysis was conducted, eight participants were excluded, leaving a final n = 193. Of those, 91 were in the novelty condition and 102 were in the control condition.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "Please come up with 10 new ideas for work processes or practices that are very different from

what your employer currently does." While those randomized into the existing concepts conditions read, "Please list 10 work processes or practices that your employer currently does."

Satisfaction Measures. Existing scales for the measurement of job satisfaction vary between those that sum up the whole experience of work with a single item (Kooij, Jansen, Dikkers, & De Lange, 2010), to those that ask about aspects like employers, wages, and general duties (Braun, Peus, Weisweiler, & Frey, 2013), with others in between (Chen, Ployhart, Thomas, Anderson, & Bliese, 2011). For this work, I adapt a satisfaction scale representing this broader perspective that parallels the early measure of satisfaction used in study one. Responses were on a seven-point Likert response scale ranging from "strongly disagree" to "strongly agree" ($\alpha = .95$). The items responded to were as follows: "I am very satisfied with the current state of my job," "I would recommend the job I have to someone who is looking for work," "I have confidence in the people running the company I work for," and "I am generally satisfied with my job." Some reviewers had concerns about the novel nature of this satisfaction scale and because of that, I recruited 101 employed subjects in order to perform a supplemental analysis. This supplemental analysis shows that the measure I used is significantly correlated with a simpler measure of job satisfaction (Wanous, Reichers, & Hudy, M. J., 1997) as well as the related constructs of organizational identification (Jones & Volpe, 2011) and turnover intentions (Kelloway, Gottlieb, & Barham, 1999) positively and negatively respectively[1].

[1] A supplemental analysis of 101 participants (58 men, 43 women, $M_{age} = 38$, $SD_{age} = 10.1$, 72% white) who were currently employed revealed that the job satisfaction measure from experiment two was significantly related to the more typical job satisfaction measure ($p < .001$, $r = .88$) as well as to both turnover intentions ($p < .001$, $r = -.66$) and organizational identification ($p < .001$, $r = .69$).

1.5.1 Results

Those who generated new ideas for their employer were significantly less satisfied (M = 4.68, SD = 1.55) than those who thought about existing employer behaviors (M = 5.23, SD = 1.47; $t(191) = 2.49$, p = .014) Cohen's $d = .36$.

1.5.2 Discussion

This experiment extended the findings of study one to show that those generating new ideas about their employers were less satisfied with their jobs than those listing existing policies and procedures. This gives evidence that the decrease in satisfaction is driven not by the choice of topic, restaurants or an employer, but by idea generation itself. Across the two topics, the effect size was also quite similar (Cohen's d = .36 and .34), which supports the uniformity of this effect across domains. Overall, these two studies support the hypothesis that brainstorming new ideas decrease satisfaction with the status quo.

1.6 Study Three

The results of studies 1 and 2 converge on the possibility that idea generation reduces satisfaction, but an important question remains Does the distance between the ideas generated and the status quo matter? And do ideas that are more different from existing options cause greater decreases in satisfaction? By having one group generate more different ideas than the other, I hope to causally tests how the difference between the ideas generated and the status quo affects satisfaction. I opt to directly manipulate the novelty of ideas generated through goal setting built into the instructions (Shalley, 1991).

Participants. I recruited 203 participants (107 men, 91 women, 4 other, $M_{age} = 36$, $SD_{age} = 11.6$, 81% white) to take part in the experiment through Amazon's Mechanical Turk platform in exchange for $1 upon completion of the study. Two participants were excluded before analysis,

leaving a final n = 201. Of those, 113 were in the less different condition while 88 were in the more different condition.

Manipulation. Those randomly assigned to the less different condition read the following "Please come up with 10 ideas for restaurant concepts that are very similar to what exists in your city or town." While those randomly assigned into the more different condition read "Please come up with 10 ideas for restaurant concepts that are very different from what exists in your city or town."

Satisfaction Measures. All participants then rated their satisfaction on the same scale employed in experiment 1 ($\alpha = .91$).

Manipulation Check. To confirm that participants really were following instructions to generate novel ideas, two coders, who were also blind to the experimental conditions and hypotheses of the study, coded each idea for novelty on a one to five scale. Because the two coders demonstrated significant agreement in their ratings of the ideas ($r = 0.76$), their assessments were averaged together. All idea scores for each participant were then averaged to create an overall novelty score for that participant. Indeed, participants randomly assigned to the novel condition, generated significantly more novel ideas ($M = 2.22$, $SD = .69$) than participants assigned to the less novel condition ($M = 1.53$, $SD = .42$; $t(200) = 8.19$, $p < .001$) Cohen's $d = 1.21$.

1.6.1 Results

Consistent with the results of studies 1-2, participants generating ideas that were very different from existing concepts were significantly less satisfied ($M = 5.10$, $SD = 1.07$) than those who generated ideas that were very similar to existing concepts ($M = 5.55$, $SD = .98$; $t(200) = 3.07$, $p = .002$) Cohen's $d = .44$.

1.6.2 Discussion

The results of this experiment suggest that generating novel ideas in particular, an important part of the creative process (Amabile, Barsade, Mueller, and Staw, 2005), causes decreases in satisfaction. Those who were asked to generate ideas that were more different from the status quo experienced a greater decrease in satisfaction than those asked to generate ideas that were more similar. In general, this suggests that the more different the ideas are from reality, the greater the resulting decrease in satisfaction. This also gives evidence that the decrease in satisfaction does not result from the mere act of generating any alternatives. These results are also suggestive of the hypothesized underlying counterfactual mechanism, since those generating ideas far from the status quo experienced a greater contrast between those ideas and reality, causing the greater decrease in satisfaction. I shift to exploring this mechanism more directly in the following study.

1.7 Study 4

Study four seeks to show direct empirical support for counterfactual thinking as a mediator in the relationship between idea generation and decreasing satisfaction such that idea generation causes beliefs in the existence of better possible alternatives, which then cause a decrease in satisfaction with reality. This study follows the same procedure of study one, but adds a scale measuring counterfactual beliefs in between the manipulation of idea generation and the measurement of satisfaction.

Participants. I recruited 202 participants (128 men, 72 women, 2 other, M_{age} = 34, SD_{age} = 10.1, 74% white) to take part in the experiment online in exchange for $1. Before any analysis was conducted, nine participants were excluded according to the criteria mentioned above, leaving a

final n = 193. Of those, 85 were in the idea generation condition and 108 were in the control condition.

Manipulation. The manipulation was the same one used in study one.

Measures. Participants rated the degree to which they endorsed upward counterfactuals (e.g. the restaurant scene could be better) on a five-item scale with similar 7 point Likert response scale as above ($\alpha = .83$). The items were as follows: "Restaurants could be much better than they are currently," "Most restaurants are as good as they could be," "I think most restaurants have a lot of room for improvement," "My usual restaurant experience couldn't be better," and "Restaurants these days leave a lot to be desired." Participants then responded to the same 5 item satisfaction scale used in studies 1 and 3, and their responses were once again reliable ($\alpha = .89$). The correlation between these two measures was -.52, $p < .001$.

1.7.1 Results

Replicating the results of the previous studies, participants who generated new ideas for restaurant concepts were significantly less satisfied (M = 4.75, SD = 1.27) than those who thought about existing restaurant concepts (M = 5.26, SD = .93; $t(191) = 3.22$, p = .0015) Cohen's $d = .46$. In addition, those in the idea generation condition had significantly stronger upward counterfactual beliefs (M = 4.52, SD = 1.14) than those in the control condition (M = 4.10, SD = 1.03; $t(191) = 2.71$, p = .0074) Cohen's $d = .39$. I tested for mediation using a standard bootstrapping procedure in R (Imai, Keele, and Tingley, 2010) with 10,000 simulations. This produced a 95% confidence interval for the indirect effect that did not include zero [-.3883, -.0526]. Therefore, belief in an upward counterfactual mediated the effect of idea generation on satisfaction.

1.7.2 Discussion

The results of study four replicated the main effects findings of study one and provided direct empirical support that belief in upward counterfactuals mediates the effect of idea generation on satisfaction. This supports the notion that ideas contrast with real experiences to make people believe those real experiences could have been much better, thereby making them less satisfied.

1.8 Study Five

Previous work on consequences of creativity has shown that the concept of creativity can be primed (Gino and Ariely, 2012) which may, in turn, produce a mindset that carries over to subsequent, unrelated, tasks or situations (Vincent and Kouchaki, 2016). Therefore, an important question to address is whether the act of generating ideas can prime the concept of creativity that, in turn, reduces satisfaction even in domains unrelated to the topic of the brainstorming task. On the other hand, if idea generation triggers a comparison process in which existing options are less satisfying than new ideas, then the effect should be domain specific—e.g. ideas generated about new work processes should not make the food that I eat seem worse by comparison (a domain unrelated to work). In the next experiment, I sought to test these two possibilities.

Participants were randomly assigned to generate ideas about either restaurant concepts or about Amazon Mechanical Turk (Buhrmester, Kwang, and Gosling, 2011), they were then asked to evaluate their satisfaction with both of those topics. Ideas about Amazon Mechanical Turk was chosen because it would be relevant to all participants who were recruited through that service.

Participants. I recruited 202 participants (103 men, 99 women, 1 other, M_{age} = 38, SD_{age} = 12.4, 81% white) to take part in the experiment through Amazon's Mechanical Turk platform in

exchange for $1 upon completion of the study. Six participants were excluded before analysis, leaving a final n = 196. Of those, 99 completed the restaurant prime while 97 responded to the prime about Amazon Mechanical Turk.

Manipulation. Those randomized into the restaurant condition saw the prompt "Please come up with 10 ideas for restaurant concepts that are very different from what currently exists in your city or town." While those in the Amazon Mechanical Turk condition read "Please come up with 10 ideas for Amazon Mechanical Turk that are very different from what currently exists."

Satisfaction Measures. Participants then responded to two scales presented in random order. One evaluated satisfaction with restaurants using the same satisfaction scale from experiments 1 and 2 ($\alpha = .90$). The other scale evaluated satisfaction with Amazon Mechanical Turk using five items in the same seven-point Likert response format as the previous scales ($\alpha = .83$). The items responded to for the new scale were as follows: "I am satisfied with my usual experience with Amazon Mturk," "I enjoy the rewards I get from doing work for Amazon Mturk," "I am satisfied with the current state of Amazon Mturk," "I enjoy the experience of doing HITs on Amazon Mturk," and "I have confidence in the people managing Amazon Mturk."

1.8.1 Results

Overall, participants were significantly less satisfied with topics they had just generated ideas about (M = 5.23, SD = 1.04) than with the unrelated topic (M = 5.61, SD = 1.01; $t(194) = 3.57$, p = .0005)[2] Cohen's $d = .37$. Looking at satisfaction with Amazon Mechanical Turk, those who generated ideas within the domain were significantly less satisfied (M = 5.22, SD = 1.14) than those who generated ideas outside of the domain (M = 5.59, SD = 1.18; $t(194) = 2.23$, p = .027) Cohen's $d = .32$. For satisfaction with restaurants in general, those who generated ideas for

[2] The correlation between the two satisfaction measures for participants was .10. A repeated measures ANOVA was not used because two t-tests provide a stronger test more consistent with the hypotheses.

new restaurant concepts were significantly less satisfied (M = 5.25, SD = .93) than those who generated ideas outside of domain (M = 5.62, SD = .81; $t(194) = 2.97$, p = .0034) Cohen's d = .42.

1.8.2 Discussion

These results show that brainstorming ideas about a topic decreased satisfaction with that topic, but not with topics very different from what participants were generating ideas about. These new ideas generated about restaurants easily contrasted with real restaurant experiences, but, given the vast difference in domain, did not meaningfully contrast with participants' real-world experience with Mturk. This provides further support that the comparison between ideas generated and reality drives the relationship between idea generation and decreased satisfaction. This domain limitation would not have been the case if idea generation merely activated a creative mindset, thus ruling out an important alternative explanation about the source of dissatisfaction.

1.9 Study Six

Throughout these previous experiments, I have uncovered a consistent and intriguing pattern that people feel less satisfied with something after idea generation according to self-report measures of feelings about current options. Having established the robustness and replicability of the effect, I now turn to consider the implications of dissatisfaction for behavioral intentions. In this experiment, I hope to explore if reduced satisfaction will impact purchasing decisions individuals intend to make in the future. In addition, I also want to know if the ideas generated alter evaluations of past experiences. In other words, does generating ideas cause people to revise their recollections about the past in a more negative light?

Participants. I recruited 207 participants (82 men, 125 women, M_{age} = 20.2, SD_{age} = 1.6, 49% white) students from a large midwestern university to take part in the experiment in exchange for course credit. Ten participants were excluded before analysis for not responding to the idea generation prompt or recording nonsense in response to that prompt leaving a final n = 197. Of those, 100 were in the idea generation condition, while 97 were in the control.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "Please come up with 10 ideas for new restaurant concepts that could go in your city or town." While those randomized into the existing concepts conditions read, "Please come up with 10 restaurant concepts that already exist in your city or town."

Future Behavioral Intentions. To measure participant interest in future engagement with restaurants, they responded to the following prompt "A new service is considering selling gift certificates redeemable for $20 worth of food at any restaurant in the local area. What is the most you would be willing to pay for one of those gift certificates?"

Evaluation of Past Experience. To retrospectively evaluate a specific past experience, participants were asked to respond to "How would you rate the last restaurant you went overall, on a scale from 1-5, where 1 is the worst and 5 is the best?"

1.9.1 Results

Those generating ideas were willing to pay significantly less for the gift certificate (M = $11.5, SD = 4.75) than those in the control condition (M = $13.1, SD = 5.0; $t(196) = 2.28$, p = .02) Cohen's d = .33. As well, those in the idea generation condition rated the last restaurant they had been to significantly lower (M = 3.56, SD = .78) than those in the control condition (M = 3.84, SD = .70; $t(196) = 2.59$, p = .01) Cohen's d = .38.

1.9.2 Discussion

The results show that people are indeed willing to pay less for a product that they generated ideas about. This is a meaningful behavioral measure because it suggests that companies soliciting ideas from consumers are potentially making those consumers less willing to buy the company's products. In addition, this experiment showed that participants are rating the last restaurant they visited lower based on idea generation, which shows that these ideas are shifting evaluation not just of the current domain, but of specific recent experiences in that domain as well. Together, these two measures show that idea generation can change both past evaluations and future engagement.

1.10 General Discussion

Creativity is seen as the basis of inventions, the key to innovation, and a driver of profit for firms both internally and externally. For these reasons, it is no surprise that firms hire based on the creative skills of employees (Florida, 2014) and seek to encourage environments that facilitate more creative thinking from their employees (Paulus & Yang, 2000). With these great benefits coming from creativity, it seems tempting to assume that any association with creativity would be a positive one, but I show that there are some downstream negative consequences for idea generation, a core part of the creative process.

This work shows that engaging in idea generation can lead to dissatisfaction with the domain that a person is creative about, whether that topic ranges from restaurants, to an employer, to the platform through which participants take part in experiments. Experiments 1 and 2 showed a simple main effect that idea generation causes a decrease in satisfaction with the topic a person is generating ideas about. These two experiments also showed that this effect is robust across different populations and across both the topics of restaurants and the job of the

person being creative. Experiment 3 highlighted the way that the distance between the ideas generated and reality shapes this decrease in satisfaction such that those generating more different ideas were less satisfied than those generating less different ideas.

Experiment 4 showed, through causal mediation, support for counterfactuals as the process mechanism of this effect. Ideas change people's opinions of what an optimal situation could be, which then contrasts with reality to decrease satisfaction. Experiment 5 showed that this decrease in satisfaction was not a broad mood-based phenomenon that applied to all topics, but was indeed specific to the topic that a person was generating ideas about. It also established that this decrease in satisfaction is not due to a mere priming of the idea of creativity, but instead it is due to the specific act of generating creative ideas about a topic. This finding further highlighted the importance of context and subject when examining idea generation outcomes. Experiment 6 explored a wider range of outcomes to show that not only did ideation reduce participants willingness to pay for the topic they generated ideas about, it also decreased quality evaluations of a recent experience in that domain. Putting those results together, idea generation provides counterfactual alternatives to the status quo which, in turn, decrease satisfaction within the domain that a person is being creative about.

1.11 Theoretical Contributions

Although previous work has described the importance of comparison in creative thinking (Amabile and Mueller, 2008), the unintended side-effects of those comparisons have not been explored up until now. In early conceptions of the creative process, after generating ideas, people would then compare those ideas to reality in order to validate them (Amabile, 1983). Other creativity research has looked at the role of these comparisons and evaluation at the group level (Harvey and Kou, 2013; Mueller, Wakslak, and Krishnan, 2014), where discussions and

interactions can be examined to see how ideas are compared. At the individual level, it is difficult to observe this micro process directly, so it has not been heavily studied (Lubart, 2001). This work enhances the study of those convergent comparison processes by examining how those comparisons may indeed decrease satisfaction. By understanding these consequences, I may also begin to understand the comparative process itself better as well. For example, the decrease in satisfaction stemming from idea generation suggests that people naturally compare the ideas they generate to their real-life experiences on that topic, rather than needing to be prompted to do so.

While previous work has linked creativity and evaluation through discussion of how people evaluate creative ideas (Mueller, Melwani, & Goncalo, 2012; Mueller, Melwani, Loewenstein, & Deal, 2018), this work expands this discussion to show how idea generation can affect evaluation of a much broader range of topics, such as a job in which one is employed or a restaurant one has been to. The effects explored in this work also differ from other forms of comparative evaluation. The ideas that are compared to reality in this effect come from inside the mind of the person evaluating reality, which contrasts with effects such as social comparison, for example, where other people shape your evaluation (Festinger, 1954). External versus internally driven sources of comparison may have meaningfully different implications or antecedents, which can be explored in future work. This also contrasts with counterfactual thinking, which includes a comparison to experiences that might have been (Byrne, 2016), by extending to experiences that are ongoing or even potentially in the future. Thinking about how you could have done in a race (Medvec, Madey, and Gilovich, 1995) is different from thinking of what your employer could be doing now and in the future. This different temporal scope may shape how this affect could be enhanced or nullified.

The limited research in the past provided somewhat conflicting explanations of what creativity could cause. While some have previously tied creativity to positive affect (Isen, Daubman, and Nowicki, 1987) or job satisfaction (Stokols, Clitheroe, & Zmuidzinas, 2002), others have hypothesized, but not found that positive affect should directly result from creativity (Amabile, Barsade, Mueller, and Staw, 2005). In some ways, this work could be seen as disagreeing with previous more positive work, since it shows a negative consequence of a part of the creative process. A closer look at the constructs and contexts involved though shows how this work fits in with broader research on creativity and its consequences. While positive affect, satisfaction, and well-being may often be related, they have importantly different antecedents and consequences. Aspects of creativity in a certain context may affect one without significantly changing another. In this case, creativity altered satisfaction in one domain, while leaving broader domains of satisfaction unchanged (experiment 5). In our experiment 4, I showed that idea generation in one domain does not necessarily cause wider scale changes in satisfaction across domains. Only when ideas were generated about a given topic did changes in satisfaction with that topic occur. Putting these together I see the importance of understanding not just the context, but also the subject of creative thinking itself. Understanding these different potential factors will be an important task as the limited research on the consequences of creativity grows.

1.12 Practical Implications

Experiment 6 suggests some very clear practical implications for creative ideation drawn from consumers. Idea contests, such as the new flavor campaign for Lays mentioned above, should make people willing to pay less to receive the standard Lays product, similar to the gift certificate. Based on the same experiment, I can predict that surveys of the type that ask “what could I have done differently?” given so often at restaurants and other establishments, should

lead to lower ratings later on in the feedback form, similar to the rating of the last restaurant experience rating. Companies will have to be warry of these issues when soliciting ideas and attempting to receive feedback.

With respect to employees in firms, a basic practical implication of this work is that idea generation in the workplace may cause workers to be less satisfied with the work they are doing. Naturally, companies may respond by attempting to mitigate these issues. A simple response to the negative consequences of generating ideas would be to implement those ideas, thereby eliminating the contrast between those creative ideas and the status quo. There are broad potential barriers to implementing creative ideas (Baer, 2012), but even if all ideas generated were then implemented, this may not completely address the psychological consequences. For example, if a person imagines a change to his job where management finds a way to increase his pay, that imagined change will contrast with reality to decrease satisfaction with his current job, as shown above. But, even if that higher wage is implemented, satisfaction may not increase to the expected level, especially longer term (Kahneman, Krueger, Schkade, Schwarz, and Stone, 2006). Thus, even a person whose ideas are implemented may be disappointed twice: once when reality doesn't live up the imagine idea and again when even the newly implemented idea fails to meet expectations.

Despite the difficulty, it is important to address the decrease in satisfaction caused by idea generation because other serious consequences may result from that change. Decreased satisfaction with a job or product stemming from creative thinking could result in decreased performance (Judge, Thoresen, Bono, and Patton, 2001), higher turnover (Porter, Steers, Mowday, and Boulian, 1974), decreased organizational engagement (Williams and Anderson, 1991) and decreased firm value (Luo, and Bhattacharya, 2006). In light of these potential

consequences, the individual level results of the creative process should be managed in addition to any focus on antecedents of idea generation. The first clue to how these consequences should be managed is that, if possible, idea generation should be directed at something not organizationally relevant. An employee who directs his ideas toward improving a product of the firm may become less satisfied with that product, but that would not be as damaging as that employee being less satisfied with the job itself, or a customer becoming dissatisfied with the product. It is possible that anchoring (Furnham, & Boo, 2011), a cognitive bias, could actually be employed in order to mitigate this effect. If employees are asked about their feelings towards a firm before generating creative ideas, they may be more prone to stick to those initial feelings of satisfaction, even after their attitude would have changed from coming up with creative ideas. By understanding the negative consequences of creativity, firms may be able to enact programs to limit, decrease, or counteract ensuing problems.

While this work paints a somewhat dreary picture of idea generation, it is also possible that the dissatisfaction stemming from idea generation could lead to other positive outcomes. Perhaps by serving as a motivator for change, this dissatisfaction could encourage people to actual implement the ideas they have thought of to avoid that harsher seeming reality (Zhou & George, 2001). In this way, their initial dissatisfaction would be a sort of down payment on future progress.

1.13 Limitations and Future Research

This work shares the limitations of most experiments, in that the context of subjects generating ideas within this experiment was not identical to the broader work context. I believe though that the topics used and the breadth of the theoretical underpinning allows the generalizability of these findings to those other contexts. Those asked to generate ideas to change

their work in an organizational context should experience similar psychological processes to those who were asked to change their work above, but there may be additional consequences stemming from that organizational context. Future research and theorize can shape our understanding about how different operationalizations of creativity and different contexts where that creativity is expressed will shape the consequences. Based on the above experiments, I also cannot know the duration of these satisfaction effects in the real world, which is a common limitation in lab experimentation. Though, companies like Amazon often stress continuous improvement and constant consideration of alternatives, so even a short duration effect would be meaningful if it is continuously reaffirmed.

While this work manipulated the practice of idea generation, it would also be useful to understand how trait and personality level encouragement of idea generation might lead to these consequences. Do people who are more naturally creative feel less satisfied with their lives because they tend to generate alternatives to what those could be? Could their propensity to generate better possible alternatives about what their employers could be doing be another reason that entrepreneurs drop out of the conventional work force? How might optimism, locus of control, or other personality traits enhance of mitigate some of these effects?

Future research will be needed to understand whether thinking deeply or expanding upon one idea in a domain would cause the same decrease in satisfaction that coming up with many ideas in that domain does. With recent expanded focus on the idea of the full creative journey (Perry-Smith and Mannucci, 2017), it is possible that different steps along that path may have different consequences. Our hope is that this research may be a jumping off point for future exploration off different types and aspects of creativity.

From another angle, these experiments do not show how the group soliciting the ideas change this effect. For example, a company directly soliciting ideas may also make employees feel heard and like they have a voice in potential changes. There are a variety of other literatures to draw from and link with in future studies, such as the change literature that shows how the positive effects linked to employee voice about potential changes (Coch and French, 1948; Oreg, Bartunek, Lee, and Do, 2016). Future work can also explore the effects and interactions of how ideas are implemented, rewarded, or ignored. Taking this work to the group level more broadly may also pay dividends in the future. Showing how creativity during interactions may result in dissatisfaction and further downstream consequences could illuminate work on the existing link between creativity and conflict (Van der Vegt & Janssen, 2003; De Dreu, 2006).

Overall, this work examines a topic that builds on existing theory in a new direction. Consequences of idea generation and connections between organizational and decision-making scholars are all underserved areas that this work strives to supplement. I hope that our initial experimentation can form the basis for future work that more deeply explores this phenomenon to better enhance our understanding of creativity and the processes surrounding it.

1.14 The Next Steps

One of the most common reactions or questions I get to this work has been about how to overcome this problem or potential negative consequences. Thus, if I managed to have some change in the manipulation or creativity that would reduce or get rid of the dissatisfaction that results in creativity, it could provide an appealing follow-up to the presentation. While nothing in my work so far suggests a simple way to eliminate the negative consequences when being creative, other literature suggests that the negative consequences of dissatisfaction could actually lead to more creativity in the future (Zhou and George, 2001). Thus, perhaps a multi-step

exploration of creativity could have positive results where creativity leads to dissatisfaction, which then leads to more creativity. An issue in potentially exploring that is how that cycle could be distinguished from simply the effect of spending more time on a creative task. Previous research has established that persistence leads to greater creativity throughout a brainstorming session (Baas, De Dreu, & Nijstad, 2011; De Dreu, Baas, & Nijstad, 2008), so a person attempting to be creative in one session, then another, would likely be more creative than a person attempting to be creative for the first time.

Meaningfully in the research on dissatisfaction, there is only the link to creativity when dissatisfaction is directed at the status quo. This would be easier to harness or differentiate if the above overall creative consequences effect was not already directed at the status quo. Potentially though, this link between dissatisfaction and the status quo could be strengthened, which may lead to a greater increase in creativity in the second stage than those people who are less focused on status quo when coming up with creative ideas. Thus, if I were able to increase focus on the status quo for idea generation, it may have more positive consequences down the line than otherwise. It is unclear though how else it may affect performance in the first task. As well, this doesn't seem ideal because it seems more like a use of some other research and an exploration of that effect than really an expansion of the above effect. But it seems possible and useful if no other way to moderate the effect can be found.

Another thing people ask about often is how these consequences of creativity might change if they were not based on idea generation. Would dissatisfaction still result from idea elaboration for example? This would be somewhat simple to explore using an existing paradigm that was used to explore idea ownership and creativity (Baer and Brown, 2012). In this experiment people were asked to take a partially finished proposal for a new business and to

expand it and complete the proposal. I could then ask people to expand it in a more or less creative way, then measure a similar satisfaction with restaurants to what I have looked at before. This experiment would show whether the same dissatisfaction consequences of creative activity extended from idea generation to idea elaboration.

While the decreased price for the gift certificate or change in past rating provide behavioral intention measures of dissatisfaction, I do not have anything to measure actual behavior or to show this idea generation in an organizational setting. An interesting aspect to this is that in some ways, the potential field follow-up already exists. Upon hearing about this finding, people will sometimes ask if the new dissatisfaction may inspire future creativity, though Zhou and George (2001) indeed demonstrated that with the correct support, dissatisfaction motivated creativity. While this paper shows that idea generation may lead to dissatisfaction through experimental means, other work has already demonstrated correlation between creativity and depression (DeMoss, Milich, & DeMers, 1993; Jamison, 1995; Post, 1996). With these potential extensions already existing in the literature, there is still room though for potential field experimentation that could demonstrate the idea generation to dissatisfaction link outside of the lab.

1.15 A Classroom Follow-Up

In the previous studies, each of the participants might have been rating a different thing from the others. For example, each participant could have been rating their satisfaction with a different set of restaurants or a different job than the others. To address these concerns and to further expand the findings to another area, I was able to survey a group of students in a single class to see whether having them generate ideas about ways to change the course would lower their satisfaction with the course.

Participants. I recruited 51 participants (24 men, 22 women, 1 other, M_{age} = 21, 51% white) students from a large midwestern university to take part in the experiment as part of an in-class activity. Of those, 26 were in the idea generation condition, while 25 were in the control.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "Please come up with 10 ideas for things the professor could do differently when teaching this course" While those randomized into the control condition read, "Please tell us 10 things about this course"

Satisfaction. All participants rated their satisfaction with the course on a five-item scale with seven-point Likert responses ranging from "strongly disagree" to "strongly agree" (α = .84). The items for the scale were: "I am satisfied with the course," "I would recommend the course to a friend," "I am learning a lot in this course," "I have confidence in the professor of the course," and "I enjoy the course."

1.15.1 Results

Those generating ideas were significantly less satisfied (M = 6.33, SD = .46) than those in the control condition (M = 6.75, SD = .87; $t(49) = 2.12$, p = .038) Cohen's d = .59.

1.15.2 Discussion

These results replicate previous findings that idea generation reduces satisfaction within the domain being generated about. They also extend these results into the academic domain. In replicating the findings of previous studies under these new conditions, the results also demonstrate that it was not some idiosyncrasy about differences in participant ratings targets themselves, some being from cities while others were rural for example, that were driving the effect.

1.16 Creativity and Change

Openness to change is a longstanding and important management challenge. Some of the earliest published research in management endeavored to study when employees were more accepting of change to their routines (Coch & French, 1948). In this research, which took place in a textile factory, employees were performing their jobs in a suboptimal manner. Management wanted to convince these employees to adopt a new, more efficient, process. Typically, these employees were so resistant to change that attempts to move people to the new methods resulted in high turnover and increased acts of resistance. This fear of change persists in the organizational literature today where scholars continue to explore factors that make employees more amenable to change, and to decrease negative side effects from process changes or organizational changes such as restructuring (DeCelles, Tesluk, & Taxman, 2013; Sverdlik & Oreg, 2015; Wisse, & Sleebos, 2015).

Drawing on and extending my findings that generating ideas can prompt dissatisfaction with the status quo (Katz, 2019), I intend to investigate the possibility idea generation might also make employees more open to change. In a series of studies, I have demonstrated a strong causal link between idea generation and subsequent dissatisfaction. I intend to extend this causal chain in a new direction by showing how idea generation leads to dissatisfaction, which may then, in turn, make individuals more open to change. Previous work has established a link from dissatisfaction to creativity and the motivation to initiate change (Zhou & George, 2001). In this work, employees who dissatisfied at work were also rated as more creative by their supervisors and they are also were more motivated to enact potential changes in work. If this hypothesis is confirmed, an implication of my findings would be that managers might be able to use idea

generation, not as a tool to promote creativity, but a technique that might help to employees to be more open to change. Therefore, I hypothesize the following:

Hypothesis 1: Idea generation leads to dissatisfaction within that domain, which then motivates makes idea generators more open to change.

1.17 Study 1

In study one, I randomly assigned participants to perform a task that either demanded idea generation or did not, by asking them to either generate new ideas for Amazon Mechanical Turk policy (idea generation), or to generate existing Amazon Mechanical Turk practices (control). I chose Amazon Mechanical Turk as a subject for the idea generation because it was something all participants should be invested in, and all participants would be affected by proposed changes in the system. All participants then rated their general satisfaction with Amazon Mechanical Turk. After that, each participant read about three proposed changes to Mechanical Turk policy (in a randomized order) and after each change was described, they rated their opinions of that change. Each person would read a description, then rate their opinion, then read the next description and so on.

Participants. I recruited 190 participants (110 men, 79 women, 1 other, M_{age} = 36.3, 81% white) to take part in the experiment through Amazon's Mechanical Turk platform in exchange for $1 upon completion of the study. Of those, 113 were in the idea generation condition and 77 were in the control condition.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "In this first task, please come up with 10 ideas for things that Amazon Mechanical Turk could do differently, in terms of policies or practices." While those randomly assigned to the existing

concepts conditions read, “In this first task, please list 10 current policies or practices that Amazon Mechanical Turk has.”

Change Scenarios. Each participant reacted to the following three change scenarios, which were presented in a random order. “Amazon may actually sell off its MTurk services to allow them to be run by another company,” “Amazon may change their policy to be more restrictive about who is allowed to post HITs,” and “Amazon may implement a fundamentally new interface for users of Mturk.”

Satisfaction Measures. All participants rated their satisfaction with Amazon Mechanical Turk frequent on a five-item scale with seven-point Likert responses ranging from “strongly disagree” to “strongly agree” ($\alpha = .90$). The items responded to were as follows: “ I am satisfied with my usual experience with Amazon Mturk,” “I enjoy the rewards I get from doing work for Amazon Mturk,” “I am satisfied with the current state of Amazon Mturk,” “I enjoy the experience of doing HITs on Amazon Mturk,” and “I have confidence in the people managing Amazon Mturk.”

Suspicion of Change. After each description, participants rated their suspicion of the change on a six-item scale, adapted from (Sverdlik & Oreg, 2015). These items read as follows, “I'm worried about what things will be like after the change,” “I would be excited about the change,” “I would be very sad about the change,” “I don't really think this change is necessary,” “I'll be better off after the change, in comparison with my situation before,” and “The change will do us good.” For all topics, restriction ($\alpha = .89$), interface ($\alpha = .83$), and sale ($\alpha = .89$), the suspicion of change scale was reliable.

1.17.1 Results

The findings of previous work replicated to show that those who generated new ideas about Amazon Mechanical Turk were significantly less satisfied (M = 4.81, SD = 1.28) than those who thought about existing restaurant concepts (M = 5.17, SD = 1.16; $t(188) = 2.00$, p = .047) Cohen's $d = .29$. For the different proposed changes though, the results were less consistent. Participants did not show a significant difference in change attitudes in response to the proposals of sale of Mturk (M = 5.01, SD = 1.38 versus M = 4.97, SD = 1.23, $t(188) = .16$, p = .87), or interface change (M = 3.74, SD = 1.21 versus M = 4.03, SD = 1.03, $t(188) = 1.74$, p = .082). In response to potential restriction in who could post HITs though, participants who generated ideas were significantly less suspicious of the change (M = 3.45, SD = 1.39) than those in the control condition (M = 3.84, SD = 1.22, $t(188) = 2.02$, p = .045).

1.17.2 Discussion

These results would favor hypothesis one that those generating ideas are less suspicious of change, and therefore more open to proposed changes. The results from this particular study are too mixed to draw decisive conclusions though, so further study is required to see if the significant change in response to one proposal was real, or just a spurious relationship found in response to multiple testing issues or randomness.

1.18 Study 2

The overall goal of this study was to field a more focused replication of the previous work to see whether there were indeed real differences in suspicion of change caused by idea generation or whether those were spurious relationships.

Participants. I recruited 195 participants (110 men, 79 women, 1 other, $M_{age} = 36.3$, 81% white) to take part in the experiment through Amazon's Mechanical Turk platform in exchange for $1

upon completion of the study. Of those, 111 were in the idea generation condition and 84 were in the control condition.

Manipulation. Participants randomly assigned to the idea generation condition read the prompt, "In this first task, please come up with 10 ideas for things that Amazon Mechanical Turk could do differently, in terms of policies or practices." While those randomly assigned to the existing concepts conditions read, "In this first task, please list 10 current policies or practices that Amazon Mechanical Turk has."

Change Scenarios. Each participant reacted to both of the following change scenarios, which were presented in a random order: "Amazon may change their policy to be more restrictive about who is allowed to post HITs," and "Amazon may implement a fundamentally new interface for users of Mturk."

Satisfaction Measures. All participants rated their satisfaction with Amazon Mechanical Turk frequent on a five-item scale with seven-point Likert responses ranging from "strongly disagree" to "strongly agree" ($\alpha = .91$). The items responded to were as follows: " I am satisfied with my usual experience with Amazon Mturk," "I enjoy the rewards I get from doing work for Amazon Mturk," "I am satisfied with the current state of Amazon Mturk," "I enjoy the experience of doing HITs on Amazon Mturk," and "I have confidence in the people managing Amazon Mturk."

Suspicion of Change. After each description, participants rated their suspicion of the change on a four-item scale, adapted from (Sverdlik & Oreg, 2015). These remaining items read as follows, "I'm worried about what things will be like after the change," "I would be very sad about the change," "I don't really think this change is necessary," and "I'll be better off after the change, in

comparison with my situation before." For topics, restriction (α = .85) and interface (α = .73), the suspicion of change scale was reliable.

1.18.1 Results

The findings of previous work replicated to show that those who generated new ideas about Amazon Mechanical Turk were significantly less satisfied (M = 4.82, SD = 1.21) than those who thought about existing restaurant concepts (M = 5.19, SD = 1.44; $t(193) = 2.03$, p = .044) Cohen's $d = .26$. Replicating the initial findings of study one, when evaluating an expected restriction in who could post tasks, those who generated ideas were significantly less suspicious (M = 3.79, SD = 1.28) than those in the control condition (M = 4.29, SD = 1.30; $t(193) = 2.70$, p = .0076), Cohen's $d = .40$. In evaluating a potential interface change though, those who generated ideas were not significantly more or less suspicious (M = 3.98, SD = 1.09) than those in the control condition (M = 4.14, SD = 1.09; $t(193) = 1.02$, p = .311).

1.18.2 Discussion

Based on the previous experiments, it seems that for at least some changes, there is a significant effect of idea generation on expectations of those changes. For a proposal of restricting who is able to post tasks on the site, participants felt less negative about that proposal after having generating ideas for potential changes to Mturk policies and procedures. This would be in line with hypothesis one, but it is not yet clear what separates this proposed change from other changes that did not show the same effect. The other complicating factor about this result is that the magnitude of the effect is larger for ideas changing the expectations of change than it is for ideas causing dissatisfaction. This suggests that while dissatisfaction may play a role in the mechanism driving this effect, there must be other major forces at play.

1.19 General Discussion

One of the most frequent questions about the idea generation to dissatisfaction link is about what happens next. What happens after people become dissatisfied due to the ideas that they generated? Are they more motivated to change? Based on the two studies above, the answer seems to be, “sometimes”. Though the mechanism and mediators are not yet full explored, the above experiments show promising evidence that is it possible for idea generation to alter attitudes toward change such that those generating ideas about a topic will be more open to potential changes in that topic. One mechanism for this effect is the previously established link from dissatisfaction to creativity (George and Zhou, 2001), where people who were dissatisfied with something were motivated to try to change the status quo. The full chain suggested by synthesizing that result with the above experiments would be that people generate ideas about a topic, which then causes them to become dissatisfied with that topic, which then leads them to be more open to change within that domain.

Openness to change is a widely desired outcome in organization literature (), so any potential intervention that would facilitate that state could be valuable for managers and firms. While the initial idea generation to dissatisfaction link does not provide any simple suggestions for managers to apply to improve their business, the down the chain relationship with change just might. Frequently in organizations, managers or even outside consultants encourage employees to adopt the latest practices. Whether those are simply to improve efficiency or for reasons like increasing organizational diversity and inclusion, employees are often resistant to any change. This idea generation intervention could provide a tool to make those employees more open and accepting of that change.

1.20 Limitations and Future Directions

The limitations and future directions for this work are directly linked as future research will hope to fill in the gaps in the theoretical story so far. At this point, it is not known what mechanisms may be driving the relationship between idea generation and change other than through the dissatisfaction pathway. Related to that unknown, it is also not yet clear what moderating factors are at play in this idea to change relationship emerging for some proposals, but not others. Whether it has to do with domain specificity, time horizon, novelty, or some other factors, hopefully future research can make that clear.

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