My Strategy is Better than Yours: Others’ Preparation Strategy Influence How Defensive Pessimists and Strategic Optimists Prepare

DISSERTATION

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Abstract

People often prepare for upcoming events. Two common strategies people use are defensive pessimism and strategic optimism. Defensive pessimists (DPs) set low expectations despite past success, review and rehearse all possible problems that might arise, and prepare for each possible problem. Strategic optimists (SOs) do not worry or think much about what might occur during the performance. Rather, SOs prefer *not* to think about the performance itself. The present research investigates how others’ strategy use may influence one’s choice of preparation strategy. I propose others’ strategy use affects one’s own preparation through the social comparison of one’s own strategy to the others’ preferred strategy. In particular, when a mismatch occurs between own strategy and comparison strategy, one’s own strategy is perceived as superior and perceived effectiveness of one’s own strategy increases, which causes one to engage more strongly in one’s preferred strategy than when a match occurs between own and other strategy or when no comparison information is provided.

Participants prepared for and took a quiz on an essay that they read during the session. Participants’ own chronic strategy was measured beforehand. Participants first read the essay. Then, comparison strategy was manipulated. Participants in the experimental conditions read a previous participant’s response indicating which strategy he or she preferred to complete a task similar to the task participants were asked to complete; those in the control received no information about previous participants. Then
all participants could see practice questions and review the essay (a defensive pessimism strategy) or picture calming scenes (a strategic optimism strategy). Finally, all participants took the quiz and those in the experimental conditions rated the previous participant on a number of dimensions.

Study 1 demonstrated that defensive pessimists derogated a comparison target who preferred a SO strategy, relative to a target who preferred a DP strategy. Furthermore, derogation of the comparison target mediated the effect of comparison condition on preparation behavior, such that the more DPs derogated the comparison target, the more they engaged in their own preferred strategy during the preparation period.

Study 2 examined several alternative explanations for the results of Study 1 and provided a more direct measure of the mediating process. Neither perceived difficulty of the quiz nor predictions of the previous participant’s score accounted for the results of Study 1. In addition, perceptions of perceived effectiveness of one’s own strategy were measured, and mediated the effect of comparison strategy on preparation behavior.

The present research brings a classic social psychological approach to the study of defensive pessimism and strategic optimism, recognizing the role that social comparison may have in shaping defensive pessimists’ and strategic optimists’ behavior. Specifically, social comparison processes can boost individuals’ beliefs in the effectiveness of their preferred strategy to prepare for performance. This, in turn, causes them to engage in their preferred strategy more, and at least in some cases, increases
performance. Implications are discussed with respect to academic settings, social settings, and emergency preparedness.
Dedicated to my parents
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Chapter 1: Introduction

Consider two students preparing for the same exam. Both study and are generally prepared for the exam. Both have received high grades in previous classes. Debbie is quite anxious about the exam; is convinced she will fail the exam, despite her ample preparation; and keeps identifying worst case scenarios and how she will prevent them (e.g., “What if I oversleep and miss the exam? I should set an extra alarm so that will not happen.”). Stacie, on the other hand, is not anxious, thinks she will perform well on the exam, and avoids thinking too much about what the exam will be like and how things will go. Stacie might even distract herself from thinking about the exam, once she has studied sufficiently. When the exams are graded and returned, both students have performed well. Now, consider that the two students are roommates. How would each feel, watching the other prepare for the exam quite differently from the way she is preparing herself? How might this comparison affect each student’s beliefs about herself, her continued use of her preferred study method, and her performance?

The above example illustrates the strategies of defensive pessimism and strategic optimism, by Debbie and Stacie, respectively. A great deal of research has investigated these strategies, in particular to characterize them and identify what happens when individuals are forced to use another strategy. But the idea of whether others’ strategy use might influence one’s strategy use has not yet been examined empirically. The
present research brings this classical social psychological approach to the study of defensive pessimism.

What is defensive pessimism?

The behavior exhibited by Debbie in the opening example reflects a cognitive strategy known as defensive pessimism. Defensive pessimism involves setting low expectations despite past success, reviewing and rehearsing all possible problems that might arise, and preparing for each possible problem. In particular, defensive pessimism is a strategy used in advance of a performance situation by people who tend to be quite anxious about that upcoming performance, despite a history of success in similar situations (Norem & Cantor, 1986ab).

A cognitive strategy is a process that involves the integration of self-knowledge and knowledge of the social world into coherent patterns of appraisal, planning, and effort in order to translate one’s goals into behavior (Norem, 1989). Classifying defensive pessimism as a strategy, rather than a trait or some other stable characteristic, implies that it is flexible, and this is indeed the case. Defensive pessimism is domain specific. One may use a defensive pessimism strategy in academic situations, but not necessarily use the same strategy for financial decisions. The two most common domains in which defensive pessimism has been examined are academic and social situations, and defensive pessimism across these two domains is only modestly correlated, generally around .30 to .40 (Norem, 1989; Norem, 2001a). Other research has shown that although individuals who use defensive pessimism in academic domains (academic defensive pessimists) view academic situations differently than do academic strategic optimists,
academic defensive pessimists and academic strategic optimists view social situations similarly, again arguing for the specificity of the strategy (Cantor, Norem, Niedenthal, Langston, & Brower, 1987).

Furthermore, because defensive pessimism is a strategy that is used to translate a goal into behavior, when goals change, the strategy may be ineffective. As Norem (1989) states:

“The concept of a strategy explicitly recognizes the potential—indeed, the probability—of change as an individual’s goals change. As goals are successfully realized, as cumulative feedback indicates a strategy is unsuccessful or exacts too high a cost, or as tasks in the domain are abandoned or transformed and new goals formulated one would expect to find corresponding strategy change.” (p. 53).

Thus, strategies are expected to change over time and across situations. Defensive pessimism may be an effective strategy to meet one goal, but ineffective for meeting another goal. Thus, strategy use may not be consistent within a domain or across time. One’s use of a strategy may increase or decrease depending on one’s goals and even the situation. In addition to changing goals, not all situations, even within a given domain, are equally suited to utilize the strategy of defensive pessimism (Norem, 2001b). So someone who tends to use a defensive pessimism strategy in academic domains may not use that strategy to accomplish every goal within that domain. A defensive pessimism strategy might require too much effort for class assignments worth a very small proportion of one’s grade, so the strategy might be abandoned in that situation.
Distinguishing defensive pessimism from “realistic” pessimism. Defensive pessimism is conceptually distinct from “realistic” pessimism. Realistic pessimists are defined as those whose low expectations are due to past poor performance. Thus, their low expectations, although pessimistic, are realistic, as opposed to defensive pessimists whose low expectations are unrealistic due to their previous success (Cantor & Norem, 1989). While defensive pessimism is a cognitive strategy that is domain specific, realistic pessimism is thought to more closely resemble a trait or disposition (Cantor & Norem, 1989; Norem, 2001b). Thus, one may be a defensive pessimist in the domain of academics, but not in social domains. Realistic pessimism, on the other hand, tends to occur across a variety of domains.

Perhaps the most striking difference between defensive pessimism and realistic pessimism is that realistic pessimism is considered a maladaptive coping strategy, in that it often leads to self-defeating and socially isolating behavior, and can even lead to depression (Cantor & Norem, 1989), while defensive pessimism, although it may have some negative long-term consequences, generally leads to performance that is at least on par with others’ performance (Cantor & Norem, 1989). For example, depressed individuals, who are likely realistically pessimistic, experience high anxiety both in anticipation of a performance and after a performance. Defensive pessimists, on the other hand, are just as anxious as depressed individuals in anticipation of a performance, but for defensive pessimists, anxiety decreases after a performance. In fact, anxiety decreases to roughly the same level as optimists’ anxiety after a performance (Showers & Ruben, 1990). Thus, although there are some similarities between defensive pessimism
and depression, the two groups seem to have very different strategies for coping with their anxiety, and their strategies lead to quite different outcomes.

Key Features of the Defensive Pessimism Strategy to Prepare

The strategy of defensive pessimism is characterized by 3 features: 1) setting low expectations for upcoming performance, 2) reviewing and rehearsing all possible problems that might arise, and 3) preparing for each of those possible problems. This strategy helps defensive pessimists manage the anxiety they feel in anticipation of performance. Furthermore, interfering with any of the 3 features interrupts the strategy and impairs performance.

The prototypical defensive pessimist is the student who walks into every exam proclaiming that he or she is going to “bomb” the exam, despite the fact that this student has never “bombed” an exam before (although see Showers, 1992) and has exerted extraordinary effort to prepare for this and every other exam. It is obvious that this student has set low expectations despite previous success. In addition, the student has put considerable effort into preparing. In particular, a prototypical defensive pessimist exerts considerable energy identifying possible outcomes or events that might prevent a good performance, and identifying ways to negate the negative effects of the problem or prevent the problem entirely. If the defensive pessimist knows that he or she must use a number two pencil for multiple choice exams, then he or she brings extra pencils in case his or hers breaks. If the defensive pessimist knows that he or she cannot complete the math exam without a calculator, then he or she brings extra batteries in case the current batteries run out. If the defensive pessimist knows that he or she will not get much sleep
the night before the exam, and so might be more likely than normal to sleep through the alarm, then, he or she sets an extra alarm. In each of these examples, the defensive pessimist has identified a problem that might occur and thought through how to either negate the negative effects of this problem or prevent the problem entirely. Working through problems like this will allow them to perform better than if they did not use this strategy.

As mentioned earlier, interfering with any part of defensive pessimists’ strategy impairs performance. For example, when defensive pessimists are prevented from setting low expectations, their performance suffers. In one study, participants’ expectations were manipulated. Participants completed demographic information, including reporting their GPA at the beginning of the experiment. As the experimenter was explaining the task that participants would be working on, she told half the participants that given their high GPA, they should be very confident in their ability to perform well on the experimental task. Thus, the experimenters prevented defensive pessimists from setting low expectations. Defensive pessimists who had been encouraged by the experimenter performed more poorly than did defensive pessimists who were not encouraged by the experimenter (Norem, & Cantor, 1986b).

Defensive pessimists’ performance also suffers when they are prevented from reviewing, rehearsing, and preparing for possible outcomes. In one study, participants were assigned to one of three “imagery technique” conditions. In the mastery condition, participants were instructed to walk through a perfect performance. In the relaxation condition, participants were instructed to imagine themselves in a relaxing environment.
And in the coping condition, participants were instructed to imagine that problems occurred during their performance and they adjusted their performance to cope with these problems. The coping condition most closely resembles the process that defensive pessimists engage in, while the mastery and relaxation conditions would prevent them from being able to work through these problems. Defensive pessimists performed best in the coping condition, and performed equally poorly in the mastery and relaxation conditions (Spencer & Norem, 1996). Thus, when defensive pessimists cannot work through worst-case scenarios, their performance suffers.

Defensive Pessimism and Anxiety

As stated previously, defensive pessimists tend to experience high anxiety in anticipation of events (Showers & Ruben, 1990). However, whether high anxiety is good or bad for defensive pessimists’ performance is somewhat unclear. Generally, there is a curvilinear relationship between anxiety and performance such that very low and very high anxiety are associated with decreased performance while moderate anxiety is associated with increased performance (e.g. Eysenck, 1982; 1985). Given that defensive pessimists experience high anxiety, one might expect that they would generally perform poorly, but this is not the case. Rather, defensive pessimists tend to perform as well as others (Norem, 1989; Norem & Cantor, 1986b; Norem & Illingworth, 1993; Spencer & Norem, 1996).

Some evidence suggests that anxiety may function differently for defensive pessimists than for others. Defensive pessimists seem to have an ability to harness their
anxiety—to turn this immobilizing fear into a motivating force. According to Norem (2001b),

“Defensive pessimism involves learning to tolerate negative emotions in order to get things done. Their tolerance isn’t passive wallowing in negative feelings; it embodies confronting those feelings and rejecting the premise that feeling good should always be our most immediate aim.” (pp. 95-96).

Indeed, it appears that defensive pessimists may consciously attempt to increase their anxiety in order to increase motivation. In one study, participants’ tendency to engage in defensive pessimism was measured and they were asked to write a description of how they feel and what they do the night before an exam. Researchers identified themes in participants’ descriptions by assessing how common various phrases were in their descriptions. Individuals who were identified as defensive pessimists often wrote that before an exam they identified ways in which they were unprepared in order to motivate themselves to work harder (Norem & Cantor, 1986b). Identifying ways in which one is unprepared would likely lead to increased anxiety, but it seems that defensive pessimists are able to do this without suffering a corresponding decrease in performance. When interviewed about their study habits, defensive pessimists volunteer that thinking more negatively motivates them to work harder (Martin, Marsh, Williamson, & Debus, 2003). Thus, this harnessing of anxiety may be a conscious effort by defensive pessimists to attempt to increase their motivation.

Furthermore, physiological measures have shown that defensive pessimists’ anxiety remains high during performance when they have been allowed to use their
preferred strategy to prepare for the task. Baseline physiological measures were taken at the beginning of an experimental session. Then, defensive pessimists were instructed to think through worst-case scenario, think through best-case scenarios, or relax before an experimental task. Physiological measures were taken again during performance. Defensive pessimists who were instructed to think through worst-case scenarios showed increased cardiac output and total peripheral resistance from baseline to performance compared to defensive pessimists who were instructed to relax. These results indicate a heightened threat response, meaning that situational demands exceed personal resources.\(^1\) Defensive pessimists in this condition also performed better on the task than did defensive pessimists who thought through best-case scenarios or relaxed, despite the fact that participants were provided with no opportunities to prepare for the scenarios they identified (Seery, West, Weisbuch, & Blascovich, 2008). In fact, threat response, as measured by cardiac output and total peripheral resistance, partially mediated the effect of imagery condition on performance. Thus, these data show that defensive pessimists’ strategy increases their anxiety during performance and that they do indeed harness this anxiety to achieve higher performance. Thus, it appears that anxiety reduction is not a goal of the defensive pessimism strategy. Rather, anxiety is beneficial to performance for

\(^1\) According to Blascovich & colleagues’ (Blascovich, 2008; Blascovich & Tomaka, 1996) biopsychosocial model of challenge and threat, challenge and threat exist as opposite ends of a single bi-polar distribution. Challenge occurs when personal resources are perceived to meet or exceed situational demands, while threat occurs when situational demands are perceived to exceed personal resources. Thus, one could also state that when defensive pessimists are allowed to identify worst-case scenarios, they tend to perceive that the situational demands exceed their personal resources. When however, defensive pessimists were prevented from identifying worst-case scenarios, physiological measures actually indicated challenge, meaning participants perceived their own resources as meeting or exceeding situational demands.
defensive pessimists and they may even attempt to increase their own anxiety to increase their motivation to prepare.

However, other research suggests that increased anxiety does, at times, interfere with defensive pessimists’ performance. In particular, when defensive pessimists are prevented from using their preferred strategy their self-reported anxiety, measured just before performance, is higher than when they are allowed to use their own strategy (Norem & Illingworth, 1993). As stated earlier, defensive pessimists’ performance decreases when they are prevented from using their preferred strategy (Norem & Cantor, 1986b; Norem & Illingworth 1993; Seery et al., 2008; Spencer & Norem, 1996). When defensive pessimists’ are prevented from identifying and attempting to prevent worst-case scenarios, anxiety likely fails to serve the motivational function it serves when they are able to use their own preferred strategy. Thus, anxiety seems to serve defensive pessimists well when they are allowed to use their own strategy, but interferes with performance when they are prevented from using their own strategy.

The findings presented in the two preceding sections appear contradictory. Physiological measures showed that defensive pessimists who were prevented from using their preferred strategy showed a decreased threat response as compared to defensive pessimists who were allowed to use their preferred strategy to prepare (Seery et al., 2008). But self-reported measures indicated that defensive pessimists who were prevented from using their preferred strategy reported greater anxiety compared to defensive pessimists who were allowed to use their preferred strategy to prepare (Norem
There are several possible explanations for these contradictory findings.

First, the anxiety experienced by a defensive pessimist who is allowed to use a defensive pessimism strategy and the anxiety experienced by a defensive pessimist who is prevented from using a defensive pessimism strategy may be qualitatively different. When using their preferred strategy, anxiety functions to motivate a defensive pessimist. In fact, the anxiety may not be experienced as negative; rather it is simply a motivating factor that pushes defensive pessimists to work harder. This anxiety seems to have a positive linear relationship with performance. When, however, defensive pessimists are prevented from using their preferred strategy, the anxiety that results appears to be experienced as negative, and the more common curvilinear relationship between performance and anxiety emerges.

Second, defensive pessimists in these two situations may be anxious about different things. In particular, defensive pessimists who have used their preferred strategy could be anxious about the worst-case scenarios they have identified and worried that one or more of those scenarios might occur. When worst-case scenarios did not occur, or when defensive pessimists were able to cope with any problems that did occur, their anxiety might decrease. Defensive pessimists who have been prevented from using their own strategy may be anxious because they feel unprepared. Thus, when a problem arose, their anxiety would increase further. Again, anxiety would function differently in these two situations. For the defensive pessimist who has thought about worst-case scenarios, increased anxiety would seem to lead to greater reflection and planning for
additional worst-case scenarios, which would leave the defensive pessimist even more prepared and more likely to perform well. For the defensive pessimist who has been prevented from thinking through worst-case scenarios, increased anxiety would decrease feelings of preparedness and self-efficacy, which would like decrease performance.

Neither of these explanations has been examined empirically. Thus at this point, either is plausible. However, both explanations suggest that anxiety operates differently when defensive pessimists use their preferred strategy versus when they are prevented from using their preferred strategy. The anxiety that emerges when defensive pessimists use their preferred strategy appears to facilitate performance, while the anxiety that emerges when defensive pessimists are prevented from using their preferred strategy appears to hinder performance. Thus, when defensive pessimists are allowed to use their own strategy versus prevented from using their own strategy, the anxiety that defensive pessimists experience seems to serve different functions and have different consequences.

How is Defensive Pessimism Different from Strategic Optimism?

One strategy that is often compared to defensive pessimism is strategic optimism. Strategic optimism is often thought to be the polar opposite of defensive pessimism, although the two constructs are actually independent. One may engage in a defensive pessimism strategy in some domains, but engage in a strategic optimism strategy in other domains. In addition, within the same domain, one may engage in a defensive pessimism strategy for some tasks and engage in a strategic optimism strategy in other tasks. Like defensive pessimists, strategic optimists have experienced past success. Unlike defensive pessimists, strategic optimists set realistically high expectations, based on this past
success (Norem, 1989). Unlike defensive pessimists, strategic optimists are not particularly anxious in advance of a performance and do not worry or think much about how things will go during the performance. Rather, the strategic optimist prefers *not* to think about the performance itself, preferring even distraction to thinking about the performance. In fact, forcing strategic optimists to think in advance about how a performance will go, particularly thinking about what could go wrong, increases their anxiety (Norem & Illingworth, 1993) and interferes with their performance (Spencer & Norem, 1996). Strategic optimists are generally not anxious before a performance. Thus, thinking about things that could go wrong actually increases their anxiety, which causes a corresponding decrease in performance (Norem & Cantor, 1986ab). The prototypical strategic optimist is the student who walks into the exam rather nonchalantly. He or she has studied, but has not put much effort at all into thinking about how things will go. If the strategic optimist’s pencil breaks while filling in a scantron, he or she will deal with the problem at that point. He or she has not considered this possibility beforehand.

One might refer to defensive pessimism as an anticipatory strategy, and strategic optimism as a post-hoc strategy for coping with possible failure. Defensive pessimists exert extraordinary effort before a performance to ensure that it will go well and attempt to prevent poor performance. Strategic optimists, on the other hand, are generally well-prepared. For example, they study adequately for exams. However, they do not put effort into ensuring that a performance will go well. Instead, they readily engage in many self-protective strategies *after* the performance, in the case of failure. For example, strategic optimists are more likely than defensive pessimists to rely on post-hoc strategies.
such as the self-serving bias. The self-serving bias involves denying responsibility for negative outcomes or failures (e.g. Larson, 1977). When using the self-serving bias, students who fail an exam do not claim responsibility for their grade (i.e. do not say that they failed because they were incompetent or did not study enough); rather, when using the self-serving bias, students deny control over the outcome, and instead blame outside factors (i.e. claim the exam was unfair, say the instructor is biased against them, say noise interfered with their concentration). Strategic optimists are more likely to use these types of self-esteem repair strategies than are defensive pessimists (Norem & Cantor, 1986a). Furthermore, defensive pessimists readily claim control over the outcome when they fail (Norem & Cantor, 1986a).

Despite their radically different approaches to tasks, defensive pessimists and strategic optimists, upon entering college, show few demographic differences. They do not differ in high school grade point average (GPA), high school rank, standardized test scores, socioeconomic status, or number of family members in college (Norem, 1989). This lack of differences has led Norem (1989) to state: “There is no reason to suspect that the difference in strategies among these individuals is a simple function of intelligence, past performance, scholastic aptitude, preparation for college, or some readily identifiable influence from their social structure” (p. 48).

In addition, defensive pessimists and strategic optimists tend to perform equally well when they are allowed to use their own preferred strategy. For example, one study followed defensive pessimists and strategic optimists over the first semester of college, and found that although defensive pessimists reported at the beginning of the term that
they expected to receive lower grades than did strategic optimists, the first semester GPAs of the two groups did not differ (Cantor et al., 1987). Similar results have been found in controlled laboratory studies. For example, when experimenters allowed defensive pessimists and strategic optimists to use their own preferred strategy, the two groups performed equally well on a line-tracing task (Norem & Cantor, 1986b), a dart-throwing task (Spencer & Norem, 1996), and mental arithmetic problems (Norem & Illingworth, 1993 – although see Norem & Illingworth 2004 for an exception). Thus, strategic optimism and defensive pessimism seem to be equally effective strategies for those who naturally use them, in that they both tend to lead to positive performance.

Influence of Others

One important factor that has not yet been investigated with respect to defensive pessimism and strategic optimism is the role that others’ strategy use may play in terms of shaping individuals’ own strategy use. Several studies have investigated consequences of forcing individuals to change their strategy (i.e. prepare in another way), but more subtle influences upon individuals’ choice of strategy has not been investigated. Previous research on defensive pessimism has primarily used a personality or individual differences approach. The present research complements previous research by adding a social psychological perspective to the study of defensive pessimism. In particular, the present research examines the effect that others’ strategy use has on one’s own strategy use.

A great deal of social psychological research has examined the role that others play in shaping one’s affect, behavior, and cognition. For example, extensive research on
social comparison suggests that others can influence how people feel, beliefs they have about themselves, and even how they perform (Festinger, 1954; Wehrens, Kuyper, Dijkstra, Buunk, & Van der Werf, 2010; Wheeler, 1966). Social comparison involves comparing one’s standing on a given dimension to that of another person on the same dimension. When people compare with others who performed better than they did, it is termed upward social comparison, and when people compare themselves with others who performed worse than them, it is termed downward social comparison (Wheeler, 1966).

Festinger’s (1954) original conceptualization of social comparison, as well as much of the research that followed, focused fairly extensively on whom individuals chose to compare themselves with (Zell & Alicke, 2010). Most studies have found that people prefer to compare themselves to those who are slightly superior to themselves (i.e. most people prefer upward comparison), although this is not true in all situations (Blanton, Buunk, Gibbons, Kuyper, 1999; Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Collins, 2000; Miller, 1984; Wehrens et al., 2010; Wheeler, 1966). For example, one study asked Dutch high school students to identify whom they preferred to compare themselves to. Students’ grades in seven courses were also reported. On average, the person with whom students chose to compare themselves had slightly, but significantly, higher grades (Blanton et al., 1999).

More recent research suggests that the decision to engage in social comparison is not always conscious or explicit. In fact, much of the social comparison people engage in is “implicit” (Zell & Alicke, 2010). By implicit social comparisons, Zell & Alicke (2010) mean “those that people do not consciously register” (p. 368). In fact, some
research suggests that implicit comparisons are more common than explicit comparisons (Mussweiler, Ruter, & Epstude, 2004). Thus, people may not always consciously choose their comparison target, and may even implicitly compare themselves to someone they would not consciously choose to compare with. In addition, even subliminal exposure to a comparison target can affect self-evaluations. In one study, participants were subliminally primed with either Albert Einstein or a clown. Individuals who had been primed with a clown (i.e. a downward social comparison) rated their own intelligence more favorably than did individuals primed with Albert Einstein (i.e. an upward social comparison) (Stapel & Blanton, 2004). Thus, even social comparisons that people do not consciously choose to make can affect their self-evaluations.

Social comparison may serve a number of goals. The three most common goals examined by social comparison researchers are self-evaluation, self-enhancement, and self-improvement. When pursuing a self-evaluation goal, one is seeking more accurate knowledge about one’s performance or one’s standing on some trait, skill, or attribute (Suls & Wheeler, 2000). To accomplish this goal, individuals often compare to others who are similar to oneself. Similarity might be assessed via performance outcomes (Wheeler, 1966) or via characteristics that are related to performance (Goethals & Darley, 1977; Smith & Arnkelsson, 2000). For example, to assess one’s running ability, a novice marathon runner should compare his or her race time with that of another novice runner, who is of similar age and physical health.

When pursuing a self-enhancement goal, one is seeking to increase one’s positive affect (Suls & Wheeler, 2000). To accomplish this goal, individuals often compare to
others who performed worse than they did (i.e. they use downward social comparison). For example, the novice marathon runner could compare themselves to someone who ran the race more slowly or who dropped out before completing the race.

When pursuing a self-improvement goal, one is seeking to improve one’s performance or skills (Suls & Wheeler, 2000). To accomplish this goal, individuals often compare to others who performed better than they did (i.e. they use upward social comparisons). For example, the novice marathon runner might compare his or her time to the race winner’s time. Longitudinal studies suggest that upward comparisons do serve the goal of self-improvement. One study asked Dutch high school students to identify the person with whom they preferred to compare grades, and also assessed performance in reading and math. Two years later, the researchers again measured performance in reading and math. Students who made upward comparisons at time 1, performed better at time 2 (Wehrens et al., 2010).

Often, rather than assessing one’s standing relative to others after a performance, individuals seek to predict how they will perform, and social comparison information can be useful for this prediction. The proxy model suggests that when an individual encounters a comparison other who has already completed a task the comparison other may serve as a proxy for the self to predict one’s own performance (Wheeler, Martin, & Suls, 1997). The proxy model suggests that if self and other perform similarly on one task, then the other’s performance on a second task may be used to predict one’s own performance on the second task. Furthermore, the most useful proxy is one who not only performed similarly on task 1, but also possesses other similar related attributes.
Returning to the marathon runner, the novice ran his or her first race, and wants to predict his or her race time in a triathlon. A comparison other, who was also a novice, ran a similar time in the first race and has just completed his or her first triathlon. The comparison other’s performance can be used to predict one’s own performance in the upcoming triathlon. Furthermore, to the extent that the comparison other has similar skills and abilities, this person serves as a better, or more accurate, proxy (Martin, 2000). Thus, to serve as a good proxy, one would need to share additional attributes with the comparison other, such as similar swimming experience, and similar amount of time to train.

The Present Research

The goal of the present research was to address a gap in the defensive pessimism literature, namely the lack of research on the influence of others’ strategy use on individuals’ tendency to engage in defensive pessimism versus strategic optimism in preparation for a performance. In particular, I will investigate how comparing strategy preferences with another person influences one’s own subsequent strategy use. The academic domain, a favorite of defensive pessimism researchers, is an excellent domain in which to investigate social comparison with others. Indeed, these processes routinely occur in the classroom. Students ask others what grade they received on an exam and how they studied for the exam. But in a classroom setting, students also likely overhear others discussing their grades and how they prepared. Thus, it seems likely that social comparison could influence strategy use, and that students might not always consciously choose their comparison target.
In the present study, I focused on an implicit social comparison, in that participants were not able to choose the type of social comparison they wanted to engage in. When making explicit social comparisons, people generally prefer upward social comparison, but people often have little choice when making implicit social comparisons. Particularly in an academic setting, students are exposed to a wide array of social comparison targets, much of which they may not consciously choose.

I wanted to examine whether defensive pessimists and strategic optimists would alter their strategy given some knowledge about how others had prepared for the same situation. Given that there are multiple features that characterize defensive pessimism and strategic optimism strategies, there are a number of ways in which individuals could alter their strategy. Thus, I sought to design a procedure that would allow me to examine the effect of this social comparison on all aspects of the two strategies. The procedure I designed, which is similar across both studies included in the present research, involved preparing for and taking a quiz over an essay that participants read during the session. Participants’ own chronic strategy was measured beforehand, and comparison target was manipulated during the session. Participants first read the essay, which ensured that all participants had done some preparation, and could feel prepared. Then, comparison target was manipulated. Participants in the experimental conditions read a previous participant’s response indicating which strategy he or she preferred to complete a similar task to the task participants were asked to complete. This was omitted in a no comparison control condition. At this point, participants’ anxiety was measured (pre-preparation measure). Then participants were given the opportunity to see practice questions and
review the essay (a defensive pessimism strategy) or to picture calming scenes unrelated to the quiz (a strategic optimism strategy). Participants’ anxiety was again measured (pre-quiz measure). Finally, participants took the quiz and those in the experimental conditions then rated the comparison target on a number of dimensions.

I propose that in the present studies social comparison serves a self-evaluation goal and that individuals use the comparison target’s strategy preference to predict the likelihood that they will succeed on the task. Participants have all taken quizzes before, but rarely do they have such a short amount of time to learn the material. Succeeding on the task requires considerable effort, and participants likely do not want to exert that effort if the likelihood of success is quite low. Thus, self-evaluation, rather than self-enhancement would be the more likely goal that participants are pursuing. Furthermore, their goal in evaluating the self is to predict whether exerting effort is likely to lead to a good outcome, rather than simply assessing how their own ability to succeed compares to others’ ability to succeed.

Social comparison research typically examines comparisons of performance or opinions. However, comparisons can still be made on the basis of strategy use. Thus, one who uses an inferior strategy could be said to represent a downward social comparison. How one defines an inferior strategy will likely depend on one’s own strategy. Given that one’s own strategy has lead to previous success, a requirement for being classified as a strategic optimist or defensive pessimist, and given that individuals generally hold positive beliefs about themselves a strategy that differs from one’s own is expected to represent a downward social comparison.
Predictions

Among participants who were in the control condition, who were not given information about a previous participant’s strategy, I predicted that chronic defensive pessimists, as compared to chronic strategic optimists would: 1) report greater anxiety pre-preparation and pre-quiz; 2) predict that they would answer fewer questions correctly on the quiz; 3) choose to spend more of their preparation time practicing (i.e. engaging in a defensive pessimism strategy) rather than relaxing (i.e. engaging in a strategic optimism strategy); 4) perform as well as strategic optimists on the quiz.

I predicted that participants in the experimental conditions, who read about the strategy someone else preferred, would react differently depending on their own chronic strategy and the comparison target’s strategy (See Figure 1). When participants’ own strategy and the comparison target’s strategy matched (e.g., both individuals preferred defensive pessimism), I expected the comparison target’s strategy to have no effect on participants’ anxiety, preparation strategy, or performance, compared to the appropriate control condition (i.e. individuals in the control condition who preferred the same strategy). When participants engage in social comparison, neither upward nor downward social comparison would occur because own strategy and comparison strategy match and no information was given about the comparison target’s performance.

When, however, there was a mismatch between own chronic strategy and comparison target strategy (e.g., when a defensive pessimist read that the previous
participant preferred a strategic optimism strategy), I expected this information to influence participants’ anxiety, preparation strategy, and performance. Given that all participants report experiencing previous success in the domain of academics, a requirement of classification as a defensive pessimist or strategic optimist, I predict that participants will believe their own chronic strategy is a more effective strategy for them than the comparison strategy. Thus, when comparing strategies, participants will perceive this social comparison as a downward social comparison, which will bolster participants’ belief in the effectiveness of their own strategy. In other words, this downward social comparison would affirm participants’ beliefs that their preferred strategy was best. Thus, beliefs about the effectiveness of one’s own chronic strategy (e.g., defensive pessimism) would mediate the effect of comparison target’s strategy on participant’s own preparation behavior, (See Figure 1)

Figure 1. Predicted model depicting the effect of own chronic strategy, comparison strategy and perceived effectiveness of own strategy on preparation
An open question in the present research is the influence of comparison strategy on performance. When individuals are prevented from using their own chronic strategy performance suffers relative to when they are explicitly instructed to use their preferred strategy (Norem & Cantor, 1986b; Norem & Illingworth, 1993; Spencer & Norem, 1996). However, none of this research included a control condition in which participants chose how to prepare themselves. Thus, it is unclear whether the relationship between strategy use and performance is linear or a step function. It is possible that greater use of one’s chronic strategy leads to better performance, but it is also possible that as long as one uses one’s chronic strategy, performance will be high. In the present research when a mismatch occurs between own chronic strategy and comparison target’s strategy, individuals are expected to use their own strategy more to prepare. This may lead to an increase in performance, or may have no effect on performance.

Although high anxiety is associated with defensive pessimism, I make no predictions about how comparison to another’s strategy will affect defensive pessimists’ anxiety. I do, however, predict that defensive pessimists will experience greater anxiety than strategic optimists throughout the study. Downward social comparisons, as would be experienced when a mismatch between one’s own strategy and the comparison strategy occur, tend to lead to positive affect (Wills, 1981). Thus, one might expect mismatches to lead to reduced anxiety. However, if use of a defensive pessimism strategy increases anxiety, as is suggested by physiological evidence (Seery et al., 2008) then mismatches might lead to increased anxiety because they would lead to increased
use of a defensive pessimism strategy. Given these opposing forces, it is unlikely that comparison strategy will moderate the effect of own strategy on anxiety.
Chapter 2: Effect of Own Chronic Strategy and Comparison Strategy on Defensive Pessimists’ Preparation Behavior

Study 1

Overview

The primary goal of study 1 was to examine whether own chronic strategy and comparison strategy affected defensive pessimists’ preparation behavior. Own chronic strategy was measured before the experimental session, and comparison target’s strategy was manipulated during the session. I predicted that when a match occurred between own chronic strategy and comparison target’s strategy, participants’ preparation behavior would be unaffected compared to the appropriate no comparison control condition (e.g., preparation would not differ between chronic defensive pessimists in the defensive pessimism comparison condition and chronic defensive pessimists in the no comparison control condition). When, however, a mismatch occurred between own chronic strategy and comparison target’s strategy, I predicted that individuals would engage in their own preferred preparation strategy more than individuals in the appropriate no comparison control condition. Strategic optimists were not included in this study due to recruitment issues, described later. Instead, defensive pessimists (DPs) and non-defensive pessimists (non-DPs) were recruited. Non-DPs may include strategic optimists (SOs) as well as individuals who use other strategies (i.e. self-handicapping) and who do not have a
preferred strategy. Thus, neither the DP comparison condition nor the SO comparison condition was expected to be a match or mismatch for non-DPs, on average. In other words, comparison target condition was not expected to affect non-DPs preparation strategy.

A second goal of Study 1 was to examine the proposed mediating process of the effect of comparison strategy on preparation behavior. I propose that this mediation occurs through social comparison. One’s own strategy, given that it has served one well in the past, will be perceived as superior to an alternative strategy. Thus, a downward social comparison will occur in which one perceives one’s own strategy as better than the comparison strategy. Thus, I expected that when a mismatch occurred between own chronic strategy and comparison strategy, individuals would rate the comparison target less positively than when a match occurred between own chronic strategy and comparison target’s strategy. In other words, participants would derogate the comparison target when a mismatch occurred between own chronic strategy and comparison strategy. Furthermore, participants’ rating of the comparison target was expected to mediate the relationship between comparison strategy and preparation behavior, and this mediated effect was expected to be moderated by own chronic strategy.

To investigate these hypotheses, participants were asked to prepare for and take a quiz over an essay they read during the experimental session. Participants’ own chronic strategy was measured beforehand, and comparison target’s strategy was manipulated during the session. Participants first read the essay, which ensured that all participants had done some preparation, and could feel prepared. Then, comparison target was
Participants in the experimental conditions read a previous participant’s response indicating which strategy he or she preferred to complete a similar task to the task participants were asked to complete. This was omitted in a no response control condition. Then all participants were given the opportunity to see practice questions and review the essay (a defensive pessimism strategy) or to picture calming scenes unrelated to the quiz (a strategic optimism strategy). Finally, participants took the quiz and those in the experimental conditions then rated the previous participant on a number of dimensions.

Method

Participants

One hundred eight introductory psychology students participated in exchange for partial course credit. Two participants had incomplete data due to a computer programming error, and were removed from analyses. In addition, data from one participant were removed because he or she reported suspicion that the response given by a previous participant was not actually written by a participant. Thus, one hundred five participants were included in analyses.

Materials

Defensive Pessimism Measure. The 4-item defensive pessimism subscale of the Defensive Pessimism Inventory (DPI) measures the extent to which individuals engage in a defensive pessimism strategy (Norem & Cantor, 1986b).² Participants rate the extent

² Participants completed the strategic optimism subscale of DPI as well. This 4-item scale measures the extent to which they engage in a strategic optimism strategy. Typically, the defensive pessimism subscale score is subtracted from the strategic optimism subscale score, and individuals from the top and bottom portions of the distribution are recruited, representing strategic optimists and defensive pessimists,
to which each item (e.g. “I go into academic situations expecting the worst, even though I know I will probably do OK.”) is descriptive of them using an 7-point scale ranging from 1 (Not at all true of me) to 7 (Very true of me). An additional item (“I’ve generally done well in academic situations in the past.”) is used to distinguish defensive pessimists from realistic pessimists. Defensive pessimists have low expectations and worry about upcoming performances despite previous success. Thus, only participants who score above the midpoint on this final item are considered for recruitment. Then, the items from the defensive pessimism subscale are summed. Participants from the top and bottom quartiles of the distribution were recruited for the study, and identified as defensive pessimists (DPs) and non-defensive pessimists (non-DPs), respectively. Non-DPs represent a heterogeneous group. Non-DPs could be strategic optimists or they could use an entirely different strategy, such as self-handicapping.

**Essay.** All participants read an essay, and later took a quiz on the information presented in the essay. The essay was approximately 1500 words and concerned “life in the United States in the 1920s”. Participants read the essay on the computer. It was split across 5 screens and participants could spend as much time as they liked reading each screen. The essay was adapted from a Wikipedia article on the history of the United States (“History of the United States (1918-1945)”, 2010). See Appendix A for full text of the essay.

respectively (Norem & Cantor, 1986b). The SO subscale had particularly low reliability in this sample (Cronbach’s alpha < .60). Other researchers have reported similar issues (i.e. Seery, et al., 2008) and have recruited using only the DP subscale.
Preparation Tasks. During the session, participants were presented with two tasks and had 3 minutes to divide their time between the two tasks. One task, “Extra Practice”, involved viewing practice questions for the upcoming quiz (i.e. “In what year did President Harding die of a heart attack?”). Only questions appeared; no possible answers appeared. Participants could then choose to view the corresponding section of the essay (i.e. the screen concerning the economy), to view another practice question, or to switch to the other task. The Extra Practice task included 10 practice questions, and participants were informed that 2 of these questions would appear on the quiz they would take later in the session. See Appendix B for a full list of the Extra Practice Questions.

The second task, “Relaxing Scenes with Pictures”, asked participants to close their eyes and pictures themselves in a number of relaxing scenes (i.e. “You slowly savor your favorite dessert.”). The text for each scene appeared at the top of the screen, and a picture of that scene appeared below. The Relaxing Scenes with Pictures tasks included 10 relaxing scenes. Participants could view each scene as long as they liked, and when they were finished, they could either select another relaxing scene or they could switch to the Extra Practice task. See Appendix C for a full list of the Relaxing Scenes.

Quiz. Participants completed a 10-item multiple-choice quiz. Each question had five response options and participants were instruction to select the correct answer according to the essay they had read earlier in the session. Participants were given no feedback about their performance during the quiz. The 10 questions appeared in the same fixed order for all participants. See Appendix D for questions and response options.
**Brief Mood Introspection Survey.** The Brief Mood Introspection Survey (BMIS) is a 16-item scale measuring current mood state (Mayer & Gaschke, 1988). The BMIS measures 8 mood states (i.e. energetic) with 2 adjectives each (i.e. active and peppy), resulting in a total of 16 items. This measure was selected because it includes two adjectives to measure the mood state of anxiety, which was the feeling I was most interested in. In addition, the other adjectives serve as filler or distracter items, so that participants were less likely to assume that anxiety was focal to the purpose of the study. Participants rate the extent to which these adjectives are descriptive of their current mood using a 4-point scale ranging from 1 (Definitely do not feel) to 4 (Definitely feel). The 16 items appeared in a random order for each participant.

**State-Trait Anxiety Inventory.** The state version of the State-Trait Anxiety Inventory (STAI) consists of 20 items that measure temporary changes in anxiety (Kendall, Finch, Auerbach, Hooke, & Mikulka, 1976). Participants were presented with items such as “I am worrying over possible misfortunes”, “I am nervous”, and “I am at ease” (reverse scored), and asked to indicate how they feel “right now, that is, at this very moment” using a 4-point scale that ranged from 1 (not at all) to 4 (very much so).

**Procedure**

Participants completed the DPI in prescreening. We recruited participants who scored in the top and bottom quartiles of the DP subscale. Participants were told that they would “learn fun trivia” in the session.

Upon arrival at the experimental session, participants were notified that they had the opportunity to earn a $10 cash prize in the session. In particular, they were told that
they would be taking a 10-item multiple choice trivia quiz later in the session and that participants who score 90% or better would be contacted within 1 week and given instructions to claim their $10 cash prize. Next, participants were given an outline of the study procedure.

After reading the description of the session, participants then began reading the essay. They were allowed to spend as much time as they liked on each of the 5 screens of the essay, but they could only view each screen once; they could not return to a portion of the essay once they had moved ahead. After reading the essay, participants answered two sample questions. They were told that these two questions would not appear in the 10-item quiz but were similar to those questions. Just as in the quiz later, participants saw a question and chose between five alternatives. For these two sample questions, participants were provided with performance feedback. After answering each question they were told, “Your answer was correct” if they correctly answered the question and were told, “The correct answer was …” if they selected an incorrect response.

At this point, comparison target was manipulated. Two-thirds of participants were told that they would be reading a response from a “Phase 1 participant”. (The remaining one-third were in the no comparison control condition and proceeded immediately to the next part of the session.) In order to reduce suspicion that this part of the study was intended to influence their task choice later, participants were led to believe they would choose which previous participants’ response they would view. Ten participants were listed on a screen, labeled only by their participant number (i.e. Participant 023), and participants selected one participant. The participant number of the
person that participants selected was inserted into later materials (i.e. “Participant 023 was asked the question…”). Participants then saw one of two responses, which was randomly assigned. One response corresponded to a DP strategy (“I would want to take a longer sample quiz and see my score on the quiz and answers to the questions I missed.”), while the other response corresponded to a SO strategy (“I would want to watch some funny videos so I would be in a good mood before I took the quiz.”). Participants then answered two questions about the previous participant’s response. These questions were intended to bolster the cover story that we were interested in what participants thought of the previous participant’s response. Participants first rated how enjoyable they thought the activity the previous participant described would be, and then rated how helpful they thought the activity would be.

Next, all participants completed the BMIS (items appeared in a random order) and then proceeded to the preparation time during which they chose between two tasks. Participants were informed that there were 10 tasks that we were interested in, but we were having each participant choose only 2. Similar to the way that previous participant information was presented, participants saw a list of 10 tasks, labeled only by number (i.e. Task 1). Participants selected 2 tasks from this list. Then, all participants were informed that the two tasks they had selected were “Extra Practice” and “Relaxing Scenes with Pictures”. Each task was described to them. Then participants were again informed that they would have 3 minutes during which they could divide their time in any way they wanted between the two tasks. Participants were explicitly told that they could choose to work on just one task, or to switch as often as they would like between
the two tasks. Participants then proceeded to select practice questions or relaxing scenes that they would like to view, and had the option when reading the practice questions to also view the corresponding portion of the essay.

After three minutes, participants were informed that time had expired and that they would answer a few questions before completing the quiz. Participants responded to the STAI scale, predicted the number of questions they would correctly answer in the quiz, and rated how much control they believed they had over their performance. Participants then completed the quiz.

After completing the quiz, participants were asked to answer a few additional questions. Participants again predicted the number of questions they thought they correctly answered on the quiz and rated how much control they felt they had over their performance. Participants rated the two tasks they completed during the preparation period.

Next, participants in the DP response and SO response condition were asked to rate the previous participant on several dimensions. Participants were reminded of the previous participant’s response, and then rated the participant on a number of 7-point bipolar scales (likeable-unlikeable, calm-anxious, friendly-unfriendly, reasonable-unreasonable, warm-cold, lucky-unlucky, rational-irrational). Next, these participants rated the previous participant on a number of other dimensions, including rating how similar the previous participant was to them using a 5-point scale ranging from 1 (not at all similar) to 5 (extremely similar).
Finally, participants completed a number of demographic questions. Participants were debriefed and thanked for their participation.

Results

Following procedures used in previous research (Seery et al., 2008) participants were classified as DPs (N = 61) or non-DPs (N = 44) based on their DP subscale scores from the DPI. This represents participants’ own chronic strategy. Participants were randomly assigned to a comparison target condition (DP target, N = 36; SO target, N = 38; No comparison control, N = 31). All dependent variables, except where otherwise noted, were submitted to a 2 (Own Strategy: DP or non-DP) X 3 (Comparison Condition: DP target, SO target or No comparison) Analysis of Variance (ANOVA).

Behavior

Preparation Strategy. During the three-minute period, participants could have used a DP strategy by viewing practice questions and reviewing a portion of the essay or they could have used a SO strategy by viewing relaxing scenes. To examine the extent to which participants engaged in a DP versus SO strategy, I summed the number of practice questions and portions of the essay that participants viewed and subtracted from this the number of relaxing scenes that participants viewed to compute a preparation index. On this preparation index positive numbers indicate a greater engagement in a DP strategy and negative numbers indicate a greater engagement in a SO strategy. Because two behaviors comprise the use of a DP strategy while only one behavior comprises the use of a SO strategy, negative scores are less likely than positive scores on this index. However, this index still represents the extent to which participants used a DP strategy or SO
strategy. I predicted that comparison condition would affect the extent to which participants engaged in each strategy. Specifically, among participants in the no comparison control condition, I expected that chronic DPs would use a DP strategy to a greater extent than would chronic non-DPs. When comparison strategy matched participants’ own chronic strategy, I expected comparison condition to have no effect on strategy use during the preparation period. Thus, chronic DPs in the DP response condition should not be different from DPs in the no response control condition. When, however, a mismatch occurred between chronic strategy and comparison strategy, I predicted that participants would use their own chronic strategy to a greater extent than in the appropriate control condition. Thus, DPs in the SO response condition should use a DP strategy more than DPs in the no response condition.

Consistent with this prediction, a marginal main effect of participants’ chronic strategy emerged \( F(1, 99) = 3.68, p = .06 \). Chronic DPs used a DP strategy \((M = 8.98)\) to

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3 Each of the three behaviors (viewing practice questions, essay, and relaxing scenes) was also analyzed separately. The pattern of results was consistent across the two measures of DP strategy use, and the opposite pattern emerged for the measure of SO strategy use. For practice questions, a marginal interaction of chronic strategy and comparison condition emerged, \( F(2, 99) = 2.60, p = .08 \). Among chronic DPs, participants in the SO comparison condition viewed more questions \((M = 11.80)\) than chronic DPs in the DP comparison condition \((M = 8.71)\) and marginally more questions than chronic DPs in the No comparison condition \((M = 9.47)\), \( F(2, 99) = 4.05, p = .02 \). In addition, chronic DPs in the SO comparison condition viewed more practice questions than did chronic non-DPs in the SO comparison condition \((M = 9.00)\), \( F(1, 99) = 4.73, p = .03 \). For essay views, no significant effects emerged, all \( ps > .10 \), however, the means followed the same pattern as for practice questions. For relaxing scenes, a main effect of participants’ own chronic strategy emerged, \( F(1, 99) = 7.05, p = .009 \). Chronic DPs viewed fewer relaxing scenes \((M = 5.16)\) than did chronic non-DPs \((M = 7.70)\). This main effect was qualified by a chronic strategy by comparison condition interaction, \( F(2, 99) = 3.36, p = .04 \). Among chronic DPs, participants in the SO comparison condition viewed fewer relaxing scenes \((M = 3.05)\) than chronic DPs in the DP comparison condition \((M = 6.59)\) and marginally more questions than chronic DPs in the No comparison condition \((M = 5.84)\), \( F(2, 99) = 3.12, p = .05 \). In addition, chronic DPs in the SO comparison condition viewed fewer relaxing scenes than did chronic non-DPs in the SO comparison condition \((M = 8.94)\), \( F(1, 99) = 14.38, p < .001 \).
a greater extent than chronic non-DPs ($M = 5.38$). This main effect was qualified by a chronic strategy by comparison condition interaction, $F(2, 99) = 3.51, p = .03$. Among chronic DPs, participants in the SO comparison condition used a DP strategy ($M = 13.75$) to a greater extent than chronic DPs in the DP comparison condition ($M = 5.73$) and No comparison condition ($M = 7.47$), $F(2, 99) = 4.11, p = .02$. In addition, chronic DPs in the SO comparison condition used a DP strategy to a greater extent than did chronic non-DPs in the SO comparison condition ($M = 3.33$), $F(1, 99) = 11.59, p = .001$. See Figure 2.

Figure 2. Effects of Comparison Condition and Chronic Strategy on Preparation Behavior in Study 1

![Figure 2](image)

Note. Higher numbers on Preparation Index Score indicate greater use of DP strategy.

I predicted that among participant s in the no comparison condition, DPs would engage in a DP strategy to a greater extent than would non-DPs. This prediction was not
supported, $F(1, 99) < 1, p > .80$. This effect may be the result of recruiting non-DPs rather than SOs. Rather than consistently preferring the opposite strategy, as SOs do, non-DPs are simply less likely to engage in a DP strategy. Thus, non-DPs are not as consistently different from DPs as SOs are, making it more difficult to find a significant effect among participants in the control condition in this study.

Predictions of Quiz Scores. Defensive pessimists tend to set low expectations for an upcoming performance. Thus, I predicted that before taking the quiz, chronic DPs would predict that they would answer fewer questions right than chronic non-DPs. I did not predict any differences between comparison conditions. The main effect of own chronic strategy was not significant $F(1, 99) = 2.75, p = .16$. However, the means were in the predicted direction (chronic DP $M = 7.62$; chronic non-DP $M = 8.22$). There were no effects of response condition and no interaction, $p_s > .50$.

However, I did not expect these differences to persist after participants had taken the quiz. At this point, participants should have a fairly accurate estimate of their score. Consistent with this hypothesis, when asked to make predictions at this point, no significant effects emerged, $p_s > .30$.

Quiz Performance. Overall, participants performed well on the quiz, given the short amount of time they had to learn the material. Performance was calculated by summing the number of questions that participants answered correctly, which theoretically could range from 0 to 10. Scores ($M = 6.69, SD = 2.09$) actually ranged from 2 to 10. Twenty-two participants (21 percent) earned the $10 prize by answering at least 9 questions correctly on the quiz. Some questions appeared to be easier than others,
as the percent of participants who answered a given question correctly ranged from 36 percent to 93 percent. See Table 1.

Table 1. Percent of Participants Who Correctly Answered Quiz Questions in Study 1

<table>
<thead>
<tr>
<th>Question Text</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In what year were women first allowed to vote in Presidential and Congressional elections?</td>
<td>78</td>
</tr>
<tr>
<td>2. Who was elected president in 1928?</td>
<td>72</td>
</tr>
<tr>
<td>3. In what year did President Harding die of a heart attack?</td>
<td>79</td>
</tr>
<tr>
<td>4. What position did Herbert Hoover have before becoming president of the United States?</td>
<td>41</td>
</tr>
<tr>
<td>5. Which of the following was NOT a reason that the United States experienced economic growth during the 1920s?</td>
<td>41</td>
</tr>
<tr>
<td>6. What was one reason the Eighteenth Amendment was created?</td>
<td>36</td>
</tr>
<tr>
<td>7. Which statement below is FALSE about the Ku Klux Klan (KKK) of the 1920’s?</td>
<td>68</td>
</tr>
<tr>
<td>8. What state forbade the teaching of evolution in a state-funded educational establishment?</td>
<td>71</td>
</tr>
<tr>
<td>9. What event either started or worsened the Great Depression?</td>
<td>93</td>
</tr>
<tr>
<td>10. What was the unemployment rate during the Great Depression?</td>
<td>91</td>
</tr>
</tbody>
</table>

The relationship between strategy use and performance was left as an open question. Greater use of one’s chronic strategy might increase performance or might be
unrelated to performance. The data were analyzed in two ways to address this question. First, the same situation that leads to greater strategy use, mismatch between own chronic strategy and comparison strategy, might also increase performance. However, when DPs are allowed to choose their own strategy to prepare they tend to engage in a DP strategy more than others but perform equally. Thus, there may be some threshold at which greater use of a DP strategy does not increase performance. Perhaps above the threshold, greater use of the strategy serves some other function (e.g., anxiety reduction). No significant effects emerged for the two-way ANOVA predicting quiz performance from chronic strategy and comparison strategy, all $p$s $> .20$. This suggests that when strategy use increases due to a mismatch between chronic strategy and comparison strategy greater use of one’s own chronic strategy may serve some other function (e.g. anxiety reduction, self-enhancement).

Second, greater use of one’s chronic strategy, regardless of the match or mismatch between own strategy and comparison strategy, might increase performance. Although again, a linear relationship between strategy use and performance may not exist. However, given that preparation time was fixed at 3 minutes, greater use of one strategy necessitated less use of the other strategy, so engagement in each behavior was not independent. To address this issue, I regressed quiz performance on number of practice questions, essay views, and relaxing scenes simultaneously. Because the relationship between strategy use and performance was expected to differ by chronic strategy, I conducted this regression analysis separately for chronic DPs and non-DPs. Analyses revealed that among chronic DPs, only the number of practice questions was a significant
predictor of quiz score, $\beta = .40$, $t = 2.43$, $p = .02$, all other $ps > .70$. Among chronic non-DPs, no significant effects emerged, all $ps > .40$. Thus, among chronic DPs, greater use of a DP strategy was associated with higher performance. Among chronic non-DPs, who do not have a preferred strategy, increased strategy use was unrelated to performance. These results suggest that a linear relationship between strategy use and performance may exist.

Anxiety

Participants’ emotional reactions were measured at two time points: 1) immediately before they began the practice session (pre-preparation), which was just after participants in the experimental conditions read about the previous participants’ preferred strategy; and 2) immediately before they began the quiz (pre-quiz), which for all participants was immediately after they completed the practice session. I predicted that chronic DPs would report greater anxiety than chronic non-DPs at both time points. No effects of comparison condition were predicted.

Pre-Preparation (BMIS). My predictions centered around anxiety, which was measured by two particular items on the BMIS: the extent to which participants felt jittery and nervous. I summed participants’ responses to these two items. I predicted that chronic DPs would feel more anxious than chronic non-DPs, as DPs are generally more anxious than non-DPs. However, results were not consistent with these predictions. Although the means were in the predicted direction (chronic DP $M = 3.87$, chronic non-DP $M = 3.81$), this effect was not significant, $p > .70$. However, a marginal main effect of comparison condition emerged, $F (2, 99) = 2.69$, $p = .07$. See Table 2. Pairwise
comparisons revealed that participants in the no comparison condition \((M = 4.24)\) felt more anxious than participants in the SO target condition \((M = 3.66, p = .05)\) and DP target condition \((M = 3.62, p = .04)\). The anxiety of participants in the DP target condition and SO target condition did not differ. Learning how another person would react in a similar situation may have led participants to feel more comfortable (i.e. less anxious).

Table 2. Pre-Preparation Anxiety in Study 1

<table>
<thead>
<tr>
<th>Comparison Condition</th>
<th>Chronic Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DP</td>
</tr>
<tr>
<td>No Comparison</td>
<td>4.32</td>
</tr>
<tr>
<td>DP Comparison</td>
<td>3.59</td>
</tr>
<tr>
<td>SO Comparison</td>
<td>3.70</td>
</tr>
</tbody>
</table>

*Note. Higher values indicate greater anxiety.*

*Pre-Quiz (STAI).* The STAI is a state anxiety measure. To compute STAI scores, I first reverse coded items so that for all items, higher scores indicated greater anxiety. I then averaged all items. There were no effects of strategy, response condition, or their interaction, all \(ps > .60\).

*Derogation of Comparison Target*

The extent to which participants derogated the comparison target was measured by asking participants to rate the target on a number of dimensions. Seven of the ratings
were made on 7 point bi-polar scales (e.g. likeable/unlikeable, warm/cold). Those ratings were combined into a single rating index, Cronbach’s alpha = .75. Positive numbers indicate a more positive impression of the comparison person while negative numbers indicate a more negative impression of the comparison person. I predicted that participants would rate the comparison target more negatively when a mismatch occurred between own chronic strategy and comparison strategy compared to when a match occurred. Analysis revealed a main effect of comparison strategy, $F(1, 66) = 4.03, p = .05$, which was qualified by a chronic strategy by comparison strategy interaction, $F(1, 66) = 4.67, p = .03$. Participants rated the previous participant more positively if this person preferred a DP strategy ($M = 1.10$) than a SO strategy ($M = 0.59$). However, this effect was driven by chronic DPs. Among chronic DPs, the person preferring a DP strategy ($M = 1.36$) was rated more positively than the person preferring a SO strategy ($M = 0.48$), $F(66) = 10.46, p < .01$. However, among chronic non-DPs, there was no difference in how they rated the person preferring a DP strategy ($M = 0.66$) and the person preferring a SO strategy ($M = .70$), $F(66) < 1, ns$. See Figure 3. Thus, chronic DPs derogated the SO comparison target relative to the DP comparison target. Given that non-DPs as a group do not consistently prefer a single strategy, it is unsurprising that they did not rate the two targets differently.
Figure 3. Effects of Comparison Condition and Chronic Strategy on Ratings of Previous Participant in Study 1

![Bar chart showing comparison condition and chronic strategy effects on ratings of previous participant.]

Note. Rating of Previous Participant is the average of ratings on seven bi-polar traits. Positive scores on Rating of Previous Participant indicate greater endorsement of positive traits. Negative scores on Rating of Previous Participant indicate greater endorsement of negative traits.

Participants were also asked to rate how similar the previous participant was to themselves. A main effect of comparison strategy emerged, $F(1, 66) = 10.74, p < .01$. Participants rated the target who preferred the DP strategy ($M = 2.83$) as being more similar to them than the target who preferred the SO strategy ($M = 2.10$). The chronic strategy by comparison strategy interaction approached marginal significance, $F(1, 66) = 2.60, p = .11$. Planned comparisons revealed that chronic DPs rated the target who preferred the DP strategy ($M = 3.09$) as being more similar to themselves than the target
who preferred the SO strategy \((M = 2.00)\), \(F(1, 66) = 14.39, p < .01\). However, chronic non-DPs did not rate either target as being more similar to themselves than the other target (comparison DP \(M = 2.57\); comparison SO = 2.20), \(F(1, 66) = 1.19, p > .20\). See Figure 4. This provides further evidence that chronic DPs viewed the two comparison targets differently while non DPs did not view the two targets differently, on average.

Figure 4. Perceived Similarity between Comparison Target and Self in Study 1

Note. Higher Similarity scores indicate greater perceived similarity of target to participant.

Conditional Indirect Effects.

I predicted that participants would change their preparation strategy when a mismatch occurred between own chronic strategy and comparison strategy due to
derogation of the comparison other when a mismatch occurred. Although the analyses presented up to this point test portions of these predictions, to test the model itself, tests of conditional indirect effects are needed. I followed the procedures outlined by Preacher and colleagues (Preacher, Rucker, & Hayes, 2007) to test the conditional indirect effect using their SPSS macro. I predicted that derogation of the comparison other would mediate the effect of comparison strategy on preparation behavior, but that this effect would be moderated by participant’s own strategy, such that when a mismatch between comparison strategy and own chronic strategy occurred, participants would derogate the comparison target, and engage more strongly in their own preferred preparation strategy. The ratings of the previous participant were intended as a proxy for increases in the perceived effectiveness of one’s own strategy, but these ratings do not take into account participants’ own strategy. Own chronic strategy will also moderate the relationship between comparison strategy and derogation of comparison other, because derogation of a comparison other will lead one to engage more heavily in one’s own strategy. See Figure 5. In addition, because non-DPs are not characterized by a single chronic strategy, they were not expected on average to experience matches or mismatches between own strategy and comparison target’s strategy. Thus, I expected that DPs in the SO comparison strategy condition would rate the comparison other more negatively (i.e.

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4 There has been some debate in the literature about how best to analyze these types of effects, and even about the appropriate terms for these types of analyses. Many researchers use the term “moderated mediation” but definitions of the term vary considerably. (See Preacher, Rucker, & Hayes, 2007 for a full discussion). Preacher, Rucker, and Hayes (2007) encompass the many definitions of moderated mediation under the umbrella of what they term “conditional indirect effects”, which they define as “the magnitude of an indirect effect at a particular value of a moderator (or at particular values of more than one moderator” (p. 186). In addition to conceptual clarification, Preacher and colleagues have also developed techniques for determining the statistical significance of conditional indirect effects at specific levels of a moderator (similar to the simple slopes analysis developed by Aiken & West, 1991, for multiple linear regression).
derogate the comparison other), which would lead them to engage more strongly in a DP strategy to prepare.

As can be seen in Table 3, the hypotheses were supported. The conditional indirect effect was marginally significant for DPs, but was not significant for non-DPs. Own chronic strategy moderated the effect of comparison condition on ratings of the previous participant, $B = -0.45, t = 1.14, p = .03$. Thus, DPs rated the participant who gave the DP response more positively than the DP who gave the SO response, and these ratings predict DPs preparation strategy such that the more positively they rated the previous participant the less likely they were to engage in a DP strategy.
Table 3. Summary of Conditional Indirect Effects for Study 1

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.80</td>
<td>0.10</td>
<td>7.61</td>
<td>.00</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>0.21</td>
<td>0.10</td>
<td>2.01</td>
<td>.05</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>0.12</td>
<td>0.10</td>
<td>1.14</td>
<td>.26</td>
</tr>
<tr>
<td>Comparison Condition X Chronic Strategy</td>
<td>0.23</td>
<td>0.10</td>
<td>2.16</td>
<td>.03</td>
</tr>
</tbody>
</table>

Dependent Variable: Preparation Behavior

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.73</td>
<td>1.53</td>
<td>5.70</td>
<td>.00</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>-0.56</td>
<td>1.17</td>
<td>-0.48</td>
<td>.63</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>4.94</td>
<td>1.53</td>
<td>3.23</td>
<td>.002</td>
</tr>
<tr>
<td>Comparison Condition X Chronic Strategy</td>
<td>-1.49</td>
<td>1.17</td>
<td>-1.27</td>
<td>.21</td>
</tr>
<tr>
<td>Rating of Previous Participant</td>
<td>-2.17</td>
<td>1.30</td>
<td>-1.68</td>
<td>.10</td>
</tr>
<tr>
<td>Chronic Strategy X Rating of Previous Participant</td>
<td>-2.17</td>
<td>1.30</td>
<td>-1.68</td>
<td>.10</td>
</tr>
</tbody>
</table>

Indirect

<table>
<thead>
<tr>
<th>Value of Moderator</th>
<th>Effect</th>
<th>SE</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditional Indirect effect at values of Chronic Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-DPs</td>
<td>0.00</td>
<td>0.27</td>
<td>0.0001</td>
<td>1.00</td>
</tr>
<tr>
<td>DPs</td>
<td>-1.90</td>
<td>1.09</td>
<td>-1.76</td>
<td>.08</td>
</tr>
</tbody>
</table>

Note. Preparation Behavior is computed by summing the number of practice questions and portions of the essay that participants viewed and subtracted from this the number of relaxing scenes that participants viewed, such that positive numbers indicate greater use of a DP strategy and negative numbers indicate greater use of a SO strategy.
Discussion

In sum, Study 1 provided some support for my hypotheses. When a mismatch occurred between own chronic strategy and comparison target’s strategy, participants derogated the comparison target relative to when a match occurred between own strategy and comparison target’s strategy. Furthermore, when a mismatch occurred between own chronic strategy and comparison target’s strategy, derogation of the comparison target mediated the effect of own strategy and comparison target’s strategy on preparation behavior. DPs who were exposed to a comparison target who preferred a SO strategy rated that person less positively than DPs who were exposed to a comparison target who preferred a DP strategy. Furthermore, DPs’ ratings of the comparison target mediated the effect of comparison condition on preparation, such that the more positively DPs rated the comparison target, the less likely they were to engage in a DP strategy. Although DPs altered their preparation strategy when a mismatch occurred compared to when a match occurred and when no comparison information was available, changing their strategy had no effect on their anxiety, suggesting that altering their strategy was not an effective anxiety reduction technique.

A clear indication of DPs’ purpose in altering their strategy is not available from this study. There were no measures that directly implicate the process. DPs may have believed that engaging more strongly in their own preferred strategy would reduce their anxiety, even though no evidence of an actual reduction in anxiety emerged. I hypothesize that participants compared the strategy that the previous participant suggested to the response that they believed they would give or the way that they
generally prepare for quizzes. Perhaps upon reading that another person preferred a different strategy participants recognized that their own strategy was a superior strategy for them, thereby justifying their own preferred strategy and leading them to use that strategy even more. This will be explored more fully in Study 2.

Although a mismatch between own chronic strategy and comparison strategy did not increase performance, greater use of a DP strategy was associated with higher performance for DPs, suggesting that a linear relationship may exist between strategy use and performance. Previous research has not investigated the nature of the relationship between strategy use and performance. The present study supports the idea that the relationship is a linear function, rather than a step function, at least within the academic domain.

When a mismatch occurred between own chronic strategy and comparison strategy, individuals derogated the comparison other, which led them to engage more heavily in their own preferred strategy during the preparation period. This effect was found among defensive pessimists who experienced a mismatch when the comparison strategy was a strategic optimism strategy. An open question is whether the effect described above would also occur among strategic optimists. Given that they also must experience past success in order to be classified as a strategic optimist, it seems reasonable to assume that they would also perceive their own strategy as superior to an alternate strategy. However, the present study included non-defensive pessimists, rather than strategic optimists. Non-defensive pessimists are difficult to characterize in terms of strategy. They represent a heterogeneous group. Some may be characterized by one
strategy or another, while others likely do not have strong strategy preferences. Thus, social comparison of strategy use is less likely to affect their performance as a group as these comparisons are likely not consistently perceived as upward or downward social comparisons among non-defensive pessimists. In the present study, this idea was supported by the findings that non-defensive pessimists did not derogate either comparison target, nor did they perceive either target as particularly similar to or different from themselves.

In this study, participants were given the opportunity to prepare initially by reading the essay, and then were given the opportunity to use a strategic optimism or defensive pessimism strategy to continue preparing during the preparation period. Time for the preparation period was fixed at three minutes. This would seem to capture the real-world action of dividing one’s limited time and resources among several tasks. For example, students generally take multiple classes at once and often have several exams in one week. They must decide, given a fixed amount of time that they could spend preparing for the exam, how to divide their time among each class, and among other activities they want to pursue (i.e. intramural sports). However, another possibility is that defensive pessimists would choose to spend a greater amount of time preparing than strategic optimists. In addition to preparing in different ways, the two groups might spend remarkably different amounts of time preparing. An open question is how this might play out in the procedure used in Study 1 if preparation time was not fixed.

An alternate explanation for the current findings is that comparison strategy affected participants’ impressions of the comparison person. In other words, rather than
comparing the strategy they would prefer to use to the strategy that the participant suggested, participants may have assumed that the person preferring an alternate strategy was lazy or incompetent,\(^5\) and participants did not want to be perceived similarly, so they engaged in a strategy other than the one the previous participant suggested. The present results cannot speak to this alternate explanation, but this will be addressed more fully in Study 2.

On a related note, comparison strategy may have affected participants’ impressions of the quiz. In particular, participants may have assumed that the strategy that the previous participant preferred implied how easy or difficult the quiz was. For example, a defensive pessimist in the SO comparison condition may have assumed that if the person wanted to prepare in this way, the quiz must be easy. This may have made the possibility of earning the ten dollar prize for correctly answering 90 percent of quiz questions seem more likely. Thus, defensive pessimists would try harder to earn the cash prize, thereby engaging in their own preferred strategy to a greater extent than when they were provided with no comparison information. Again, the present results cannot speak to this alternate explanation but it will be addressed more fully in Study 2.

Finally, having participants rate the “previous participant” on several bi-polar dimensions is not an ideal measure of the conceptual mediator: changes in perceived effectiveness of one’s own strategy. Because the primary goal of the present study was to investigate changes in preparation behavior, I did not want to interfere with the

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\(^5\) These impressions apply to defensive pessimists’ impressions of a person preferring a strategic optimism strategy. It is unlikely that strategic optimists would make the same negative impressions of a person preferring a defensive pessimism strategy, given that the defensive pessimist would exert considerable energy to prepare. A strategic optimist might assume, however, that a person preferring a defensive pessimism strategy is neurotic or a perfectionist.
psychological processes by measuring perceived effectiveness of one’s own strategy before participants had the opportunity to prepare. Thus, I chose to measure the mediator in a more indirect manner to provide the best chance to observe the predicted changes in behavior. A more direct measure of the conceptual mediator is the primary contribution of Study 2.
Chapter 2: Perceived Effectiveness of Own Strategy as a Moderator of the Effect of Own Strategy and Comparison Strategy on Preparation

Study 2

Overview

The purpose of Study 2 was to build upon and expand the findings from Study 1, while following a similar procedure. In particular, the operationalization of the mediator (perceived effectiveness of one’s own strategy) was changed in order to more closely capture the conceptual variable of interest. Study 2 also provided an opportunity to examine whether the meditational path that emerged in Study 1 for defensive pessimists would also occur among strategic optimists. Finally, the time limit imposed on the preparation period was removed for Study 2.

As in Study 1, own chronic strategy was measured before the experimental session, and comparison strategy was manipulated during the session. Again, I predicted that when a match occurred between own chronic strategy and comparison target’s strategy, participants’ preparation behavior would be unaffected compared to the appropriate no comparison control condition. When, however, a mismatch occurred between own chronic strategy and comparison target’s strategy, I predicted that individuals would engage in their own preferred preparation strategy more than
individuals in the appropriate no comparison control condition. A key contribution of Study 2 is that strategic optimists were included in this study, meaning that matches and mismatches should occur among both levels of own chronic strategy.

I propose that comparison strategy affects preparation behavior through a social comparison process. One’s own strategy, given that it has served one well in the past, will be perceived as superior to an alternative strategy. Thus, when a mismatch occurs, a downward social comparison will occur in which one perceives one’s own strategy as better than the comparison target’s strategy. In Study 1, this process was assessed by measuring the extent to which participants derogated the comparison target. However, in Study 2, this process was assessed by asking participants to rate how the strategy they believed they would use compared to the comparison target’s strategy. I expected that when a mismatch occurred between own chronic strategy and comparison strategy, individuals would rate their own strategy as more effective than the comparison strategy to a greater extent than when a match occurred between own chronic strategy and comparison strategy. Furthermore, participants’ rating of the effectiveness of their own strategy was expected to mediate the relationship between comparison target’s strategy and preparation behavior, and this mediated effect was expected to be moderated by own chronic strategy.

Finally, in Study 2 I sought to rule out two possible alternate explanations for how comparison strategy had affected preparation behavior in Study 1. In particular, defensive pessimists may have assumed that the SO comparison target did not perform well on the quiz, and attempted to outperform this person by preparing more. Thus,
participants were asked to predict the number of questions that the previous participant answered correctly. In addition, comparison target’s strategy may have changed participants’ perceptions about the difficulty of the quiz, with a SO comparison target strategy leading defensive pessimists to believe that the quiz was less difficult, thereby increasing the likelihood that they could earn the ten dollar prize. In the present study, participants were asked to rate how difficult they believed the quiz would be.

**Method**

**Participants**

One hundred forty-five introductory psychology students participated in exchange for partial course credit. Seven participants had incomplete data due to a computer programming error, and were excluded from analyses. Thus, one hundred thirty-eight participants were included in analyses.

**Materials and Procedure**

The materials and procedure mirrored those from Study 1, with some modifications, described below. One key change in this study was to allow participants to spend as much or as little time as they wished on the extra practice and relaxation task. The other changes were intended to better measure participants’ anxiety during the session and to more closely examine how comparison strategy affects preparation behavior.

The DPI was administered in the same manner as in Study 1, but was used differently to recruit participants. The reliability of the SO subscale was higher in this
sample (Cronbach’s alpha = .64) than in Study 1, both the DP and SO subscales were used to recruit participants. DPI scores were calculated by summing the SO and DP subscales, respectively, and then subtracting the DP subscale from the SO subscale. Individuals who scored in the top (SOs) and bottom (DPs) quartiles of the distributions were invited to participate in this study.⁶

One goal of this study was to see whether a mismatch between own chronic strategy and comparison strategy would still cause individuals to use their own preferred strategy more compared to the appropriate no comparison control condition when time spent preparing was allowed to vary. In the previous study, participants were given 3 minutes and chose how to divide their time between the extra practice and relaxing scenes tasks. In this study, participants were told that they could spend as much or as little time as they liked working on each task. As in the previous studies, they were told they could work on just one task, or switch between the two as often as they liked. In the current study, participants were also told that they could choose not to work on either task. During these tasks, a new response option of “Begin the quiz” was added to each screen that participants saw.

A second goal of this study was to more closely examine why comparison strategy influenced preparation behavior. Comparison strategy is expected to influence preparation behavior through comparison of strategies, which increases the perceived effectiveness of one’s own strategy. In this study, beliefs about one’s own strategy and

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⁶ The top and bottom quartiles of the distribution consisted of individuals who could be objectively identified as DPs or SOs. Individuals recruited at SOs all had DPI scores above 0, indicating that their endorsement of strategic optimism was greater than their endorsement of defensive pessimism. Similarly, individuals recruited as DPs all had DPI scores below 0, indicating that their endorsement of defensive pessimism was greater than their endorsement of strategic optimism.
the comparison strategy were directly measured. Several questions were added immediately after participants read the previous person’s response. Participants in the experimental conditions were asked to think about what they would like to do before taking the quiz, and rate whether that task would be better or worse than the one the previous participant selected. Participants responded using a 7-point scale ranging from -3 (much worse) to 3 (much better). They also rated whether their preferred behavior would be more or less effective than the one the previous participant suggested. Participants responded using a 5-point scale ranging from 1 (much less effective) to 5 (much more effective). At this point, all participants were asked how certain they were that they know how to prepare themselves for quizzes. They responded using a 5-point scale ranging from 1 (not at all certain) to 5 (extremely certain).

A third goal was rule out two alternative explanations for how comparison strategy affected preparation in Study 1. I wanted to rule out the alternative explanation that reading about another person’s preferred practice strategy affected participant’s beliefs about that person’s performance or about the difficulty of the quiz. After participants rated whether knew how to prepare themselves for quizzes (i.e. immediately before completing the pre-practice emotion measures) participants rated how difficult they believed that the quiz would be using a 5 point scale ranging from 1 (not at all difficult) to 5 (extremely difficult). In addition, at the end of the study, participants were asked how many quiz questions they believed the previous participant had answered correctly.
Finally, several minor changes were made to the procedure in order to better examine participants' anxiety during the session. First, a pre-measure of mood was included. Immediately after learning that they would be reading an essay and taking a quiz, participants reported how good or bad they felt using a 9 point scale ranging from -3 (very bad) to 3 (very good). At this point, participants also predicted their score on the quiz. Second, to reduce redundancy and eliminate irrelevant items, several items from the BMIS and STAI were removed. In the BMIS, 2 adjectives are used to measure each of 8 mood states. The purpose of this measure was to disguise the focus on anxiety. In this study, some mood states (e.g. loving, measured by the adjectives “loving” and “caring”) were removed. The mood states loving, tired, and sad were not relevant to participants’ experience during the session and these items measuring these states were removed. Some items from the STAI were also removed. For example, the items “I feel steady” and “I feel indecisive” from the STAI are not particularly relevant to participants’ experiences immediately before they take the quiz. 10 items of these items were removed. Third, mood was again measured immediately after the practice session. The item wording was identical to the pre-measure of mood.

Results

Following procedures used in previous research (Norem & Cantor, 1986) participants were classified as DPs (N = 67) or SOs (N = 71) based on their DPI scores. This represents participants’ own chronic strategy. Participants were randomly assigned to a comparison target condition (DP target, N = 49; SO target, N = 44; No comparison control, N = 45). All dependent variables, except where otherwise noted, were submitted
to a 2 (Own Strategy: DP or SO) X 3 (Comparison Condition: DP target, SO target or No comparison) Analysis of Variance (ANOVA).

Behavior

*Practice Strategy.* Before taking the quiz, participants could engage in a DP strategy by viewing practice questions and reviewing a portion of the essay, engage in a SO strategy by viewing relaxing scenes, or use neither strategy by proceeding to the essay. The practice index was computed in the same manner as in Study 1, by summing the number of practice questions and portions of the essay that participants viewed and subtracting from this the number of relaxing scenes that participants viewed. Again, on this practice index positive numbers indicate a greater engagement in a DP strategy and negative numbers indicate a greater engagement in a SO strategy. I predicted that comparison condition would affect the extent to which participants engaged in each strategy. Specifically, among participants in the no comparison control condition, I expected that chronic DPs would use a DP strategy to a greater extent that would chronic SOs. When comparison strategy matched participants’ own chronic strategy, I expected comparison condition to have no effect on strategy use during the preparation period compared to the appropriate no comparison control condition. When, however, a mismatch occurred between chronic strategy and comparison strategy, I predicted that participants would use their own chronic strategy to a greater extent than in the appropriate control condition. Thus, DPs in the SO comparison condition should use a DP strategy more than DPs in the no comparison condition.
Unlike in Study 1, in the current study there were no effects of chronic strategy, comparison condition, or their interaction on preparation strategy, all $ps > .15$. However, among DPs the means across the three response conditions appeared in the same pattern as in Study 1, although this effect was not significant, $p > .6$. See Table 4. Measuring the mediating process before the preparation period may have changed the psychological process that led participants to use their preferred strategy to a greater extent under mismatch than match or no comparison in Study 1.

Table 4. Preparation Behavior in Study 2

<table>
<thead>
<tr>
<th>Comparison Condition</th>
<th>Chronic Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DP</td>
</tr>
<tr>
<td>No Comparison</td>
<td>6.26</td>
</tr>
<tr>
<td>DP Comparison</td>
<td>5.74</td>
</tr>
<tr>
<td>SO Comparison</td>
<td>7.53</td>
</tr>
</tbody>
</table>

Note. Higher numbers indicate greater use of DP strategy.

Predictions of Quiz Scores. Defensive pessimists tend to set low expectations for an upcoming performance. Thus, I predicted that before taking the quiz, DPs would predict that they would answer fewer questions right than non-DPs. The main effect of strategy was not significant at either point at which predictions were taken (pre-essay and pre-preparation), $ps > .10$. However, means were in the predicted direction for both pre-essay predictions (DP: $M = 7.53$, SO: $M = 7.72$) and pre-preparation predictions (DP: $M = 7.44$, SO: $M = 7.85$).
One of the alternative explanations to explain why comparison strategy affects preparation is that a mismatch between own chronic strategy and comparison strategy affects participants’ perceptions of quiz difficulty and their likelihood of earning the $10 prize. According to this explanation, participants’ predictions would change after reading the previous participants’ response. This explanation was not supported in the present study. There were no effect of own strategy, comparison strategy or their interaction on pre-preparation predictions, which were made immediately after the comparison strategy manipulation, all $p$s > .10. To further explore the possibility that comparison strategy caused participants to change their predictions, a difference score was computed by subtracting pre-essay predictions from pre-preparation prediction. No significant effects emerged, all $p$s > .40

Again, I did not expect strategy differences in predictions after participants had taken the quiz. At this point, participants should have a fairly accurate estimate of their score. When asked to make predictions at this point, no significant effects emerged, $p$s > .40

**Quiz Performance.** Overall, participants performed well on the quiz, given the short amount of time they had to learn the material. Performance was calculated by summing the number of questions that participants answered correctly, which theoretically could range from 0 to 10. Scores ($M = 7.07, SD = 1.79$) actually ranged from 1 to 10. Twenty-six participants (19 percent) earned the $10 prize by answering at least 9 questions correctly on the quiz. Some questions appeared to be easier than others,
as the percent of participants who answered a given question correctly ranged from 40 percent to 92 percent. See Table 5.

Table 5. Percent of Participants Who Correctly Answered Quiz Questions in Study 2

<table>
<thead>
<tr>
<th>Question Text</th>
<th>Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In what year were women first allowed to vote in Presidential and Congressional elections?</td>
<td>79</td>
</tr>
<tr>
<td>2. Who was elected president in 1928?</td>
<td>78</td>
</tr>
<tr>
<td>3. In what year did President Harding die of a heart attack?</td>
<td>79</td>
</tr>
<tr>
<td>4. What position did Herbert Hoover have before becoming president of the United States?</td>
<td>49</td>
</tr>
<tr>
<td>5. Which of the following was NOT a reason that the United States experienced economic growth during the 1920s?</td>
<td>40</td>
</tr>
<tr>
<td>6. What was one reason the Eighteenth Amendment was created?</td>
<td>44</td>
</tr>
<tr>
<td>7. Which statement below is FALSE about the Ku Klux Klan (KKK) of the 1920’s?</td>
<td>86</td>
</tr>
<tr>
<td>8. What state forbade the teaching of evolution in a state-funded educational establishment?</td>
<td>73</td>
</tr>
<tr>
<td>9. What event either started or worsened the Great Depression?</td>
<td>90</td>
</tr>
<tr>
<td>10. What was the unemployment rate during the Great Depression?</td>
<td>92</td>
</tr>
</tbody>
</table>
The relationship between strategy use and performance was left as an open question. Greater use of one’s chronic strategy might increase performance or might be unrelated to performance. As in Study 1, data were analyzed in two ways to address this question. First, mismatch between own chronic strategy and comparison strategy, might increase performance. No significant effects emerged for the two-way ANOVA predicting quiz performance from chronic strategy and comparison strategy, all ps > .20. Given that mismatch did not lead to greater use of one’s preferred strategy in this study, it is unsurprising that mismatch did not increase performance.

As in Study 1, greater use of one’s chronic strategy, regardless of the match or mismatch between own strategy and comparison strategy, might increase performance. A linear relationship between strategy use and performance was found for defensive pessimists in Study 1. I regressed quiz performance on number of practice questions, essay views, and relaxing scenes simultaneously. Because the relationship between strategy use and performance was expected to differ by chronic strategy, I conducted this regression analysis separately for chronic DPs and chronic SOs. Analyses revealed that among chronic DPs, only the number of practice questions was a significant predictor of quiz score, \( \beta = .43, t = 2.11, p = .04 \), all other ps > .40. Thus, among chronic DPs, greater use of a DP strategy was associated with higher performance. Among chronic SOs, the number of practice questions marginally predicted quiz score, \( \beta = .28, t = 1.68, p = .10 \), all other ps > .70. Thus, among chronic SOs, greater use of a DP strategy was associated with slightly higher performance. However, given that use of a DP strategy allowed
participants to gain information that could help them answer questions correctly on the quiz, this relationship may not be all that surprising.

Anxiety

Participants’ emotional reactions were measured at three time points: 1) immediately before they read the essay (pre-essay), which was just after participants learned they would be taking a quiz; 2) immediately before they began the practice session (pre-practice), which was just after participants in the experimental conditions read about the previous participants’ preferred strategy; and 3) immediately before they began the quiz (pre-quiz), which for all participants was immediately after they completed the practice session. I predicted that chronic DPs would report greater anxiety than chronic non-DPs at all three time points. No effects of comparison condition were predicted.

Pre-essay mood rating. Previous research has shown that DPs tend to feel worse than SOs prior to a performance, particularly when they have not yet had a chance to utilize their DP strategy to prepare themselves for the performance (Norem, 2001b). Consistent with this, I predicted that DPs would feel worse than SOs immediately after learning they would be taking a quiz. The main effect of own chronic strategy was significant, $F (1,132), = 7.16, p < .01$. DPs ($M = 0.94$) felt less good than SOs ($M = 1.51$). It should be noted, however, that means of both groups fell on the positive side of the scale indicating they felt good, rather than bad. Surprisingly, a main effect of comparison condition also emerged, $F (1,132), = 4.18, p = .02$. Participants in the SO comparison condition ($M = 0.79$) felt less good than participants in the DP comparison
condition (M = 1.48) and the no comparison control condition (M = 1.40), p < .01 and p = .02, respectively. Because this question appeared before the manipulation of response condition, it is clear that these differences are not due to the manipulation itself.

**Pre-Practice (BMIS).** My predictions involved two particular items on the BMIS: the extent to which participants felt jittery and nervous. As in Study 1, I summed participants’ responses to these two items. I predicted that chronic DPs would feel more anxious than chronic SOs, as this is a key component of the DP strategy. Consistent with this prediction, a main effect of own chronic strategy emerged, $F(1, 132) = 17.58, p < .001$, indicating that DPs (M = 4.47) felt more anxious than SOs (M = 3.50). The main effect of comparison condition and the comparison condition by own chronic strategy interaction were not significant, $ps > .10$.

**Pre-Quiz (STAI).** Responses to STAI items were reverse coded such that higher numbers indicated greater anxiety, and then were averaged across all 10 items. I predicted that chronic DPs would report higher anxiety than chronic SOs. I predicted no effects of comparison condition. As predicted, only a main effect of chronic strategy emerged, $F(1, 132) = 20.08, p < .001$, all other $ps > .10$. Chronic DPs (M = 2.05) felt more anxious than chronic SOs (M = 1.66).

**Derogation of Comparison Target**

The extent to which participants derogated the comparison target was measured by asking participants to rate the target on a number of dimensions. Seven of the ratings were made on 7 point bi-polar scales (i.e. likeable/unlikeable, warm/cold). Those were ratings were combined into a single rating index, cronbach’s alpha = .67. Positive
numbers indicate a more positive impression of the comparison person while negative numbers indicate a more negative impression of the comparison person. I predicted that participants would rate the comparison target more negatively when a mismatch occurred between own chronic strategy and comparison strategy compared to when a match occurred. The interaction of own chronic strategy and comparison strategy only approached marginal significance, $F(1, 89) = 2.62, p = .11$. See Figure 7. Among chronic DPs means (DP comparison $M = 1.16$; SO comparison $M = .81$) fell into the same pattern as in Study 1 but were not significantly different from one another, $p > .10$. However, the comparison other who preferred a DP strategy was rated marginally more positively by chronic DPs than by chronic SOs ($M = .73$), $F(1, 89), = 3.46, p = .07$. 
Figure 6. Effects of Comparison Condition and Chronic Strategy on Ratings of Previous Participant in Study 2

![Bar chart showing the comparison condition and chronic strategy on ratings of previous participant.]

**Comparison Condition**
- DP Comparison
- SO Comparison

**Own Chronic Strategy**

<table>
<thead>
<tr>
<th>Rating of Previous Participant</th>
<th>DP Participants</th>
<th>SO Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>DP = 2.68</td>
<td>SO = 1.54</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Rating of Previous Participant is the average of ratings on seven bi-polar traits. Positive scores on Rating of Previous Participant indicate greater endorsement of positive traits. Negative scores on Rating of Previous Participant indicate greater endorsement of negative traits.

Participants were also asked to rate how similar the previous participant was to themselves. A main effect of comparison strategy emerged, \( F(1, 89) = 38.56, p < .001\), Participants rated the target who preferred the DP strategy (M = 2.68) as being more similar to them than the target who preferred the SO strategy (M = 1.54). Neither the main effect of chronic strategy nor the chronic strategy by comparison condition interaction were significant, ps > .50. This suggests that the comparison SO condition may not have represented a match between own strategy and comparison strategy for...
chronic SOs. Chronic SOs actually rated the DP comparison target ($M = 2.58$) as more similar to themselves than the SO comparison target ($M = 1.56$).

Ratings of Own Strategy and Comparison Strategy

New in this study, participants rated the previous participant’s strategy and their own strategy immediately after they read about this strategy and immediately before the preparation period. I expected that when a mismatch occurred between own chronic strategy and comparison strategy, individuals would rate their own strategy as more effective than the comparison strategy to a greater extent than when a match occurred between own chronic strategy and comparison strategy.

First, participants were asked whether their strategy was “better or worse” than the previous participant’s strategy. Overall, participants felt that the strategy they used to prepare for quizzes was better than both the DP comparison response and the SO comparison response, as the overall mean response was above the midpoint of the scale, $t(92) = 7.54$, $p < .001$. But participants felt that their strategy compared more favorably to the SO response ($M = 1.22$) than the DP response ($M = 0.65$), $F(1, 89) = 5.24$, $p = .02$. Neither the main effect of chronic strategy nor the chronic strategy by comparison condition interaction were significant, $ps > .30$. However, planned comparisons revealed that the main effect of comparison condition was significant among chronic SOs, $F(1, 89) = 5.95$, $p = .02$ but not among chronic DPs, $p > .30$. See Figure 8. As will be discussed more fully in the discussion, this suggests that chronic SOs may not have perceived the SO comparison condition as a match. They felt their own preferred strategy was much better than the SO comparison strategy. However, it is also unclear
what participants’ felt “better” indicated. While a better strategy might indicate they believed it would lead to a better score on the quiz, a better strategy might also indicate they believed their own strategy was more enjoyable.

Figure 7. Effects of Comparison Condition and Chronic Strategy on Beliefs about Own Strategy in Study 2

Note. Positive values indicate that own strategy was better than comparison strategy. Negative numbers indicate the own strategy was worse than comparison strategy.

Participants also rated whether their own strategy was more or less effective than the previous participants’ strategy. Participants believed that their preferred strategy was more effective than the strategy that the previous participant suggested as means were again above the midpoint of the scale, but participants felt that their strategy compared
more favorably to the SO comparison response ($M = 3.99$) than the DP comparison response ($M = 3.49$), $F (1, 89) = 8.59, p = .01$. Neither the main effect of chronic strategy nor the chronic strategy by comparison condition interaction were significant, $ps > .60$.

The variables discussed above specifically asked participants to rate or compare the previous participant’s strategy to their own, but I also believed that reading the previous participant’s response might change DPs’ beliefs about their own strategy, even if their strategy did not affect their ratings of the previous participant’s response. Thus, all participants were asked to rate how certain they were that they knew how to prepare themselves for quizzes. There were no effects of response condition, strategy, or their interaction, all $ps > .75$.

*Alternative Explanations*

One might explain the preparation strategy effects in Study 1—that reading a previous participant’s response changed the extent to which participants engaged in their preferred preparation strategy—as due to differences in perceptions of the difficulty of the quiz or differences in perceptions of the previous participant’s performance. For example, a DP response by a previous participant might indicate that the quiz was quite difficult, while an SO response might indicate that the quiz was quite easy. Similarly, a DP response by a previous participant might indicate that the person performed quite well, while an SO response might indicate that the person performed quite poorly. If DPs believed that the person providing the SO response performed poorly, this could have motivated them to increase their use of a DP strategy. I, however, predict that participants compare the previous participant’s response with the response they believe
they would give in a similar situation, and that the SO response affirms a DP’s strategy without a necessary change in perceptions of difficulty of the quiz or previous participant’s performance.

I predicted that there would be no effects of comparison condition or strategy on predictions of how difficult the quiz would be. However, a main effect of comparison condition emerged, $F(2, 132) = 4.33, p = .02$. Pairwise comparisons revealed that participants in the DP comparison condition ($M = 2.28$) predicted that the quiz would be easier than participants in the No comparison condition ($M = 2.74$), $p < .01$. Neither of these conditions were significantly different from the SO comparison condition ($M = 2.48$), $p > .10$. Although unexpected, these data do not explain the results of Study 1. In addition, a marginal main effect of chronic strategy emerged, $F(1, 132) = 3.09, p = .08$, indicating that chronic DPs ($M = 2.62$) predicted the quiz would be more difficult than chronic SOs ($M = 2.38$). This is likely relevant to a key component of the DP strategy: setting low expectations. DPs believe that things will go wrong. In this situation, that means they will answer questions incorrectly, likely because the quiz is difficult. The interaction of own strategy and comparison condition was not significant, $p > .20$.

I predicted that there would be no effects of response condition or strategy on predictions of the previous participant’s score. However, a main effect of chronic strategy emerged, $F(1, 89) = 4.47, p = .04$, indicating that chronic DPs ($M = 6.80$) predicted that the previous participant answered more questions correctly than did chronic SOs ($M = 6.10$). The main effect of response condition and response condition by strategy interaction were not significant, $ps > .10$. Although unexpected, this effect
cannot explain the preparation results from Study 1. This finding may reflect the fact that DPs tend to set low expectations for themselves. Although they believe that they will perform poorly, they do not necessarily believe that others will, and based on these data, may set higher expectations for others.

*Conditional Indirect Effect.*

I predicted that participants would change their preparation strategy when a mismatch occurred between own chronic strategy and comparison strategy due to an increase in the perceived effectiveness of one’s own preferred strategy when a mismatch occurred. Although the analyses presented up to this point test portions of these predictions, to test the model itself, tests of conditional indirect effects are needed. I predicted that perceived effectiveness of one’s own strategy would mediate the effect of comparison strategy on preparation behavior, but that this effect would be moderated by participant’s own strategy, such that when a mismatch between comparison strategy and own chronic strategy occurred, participants would derogate the comparison target, and engage more strongly in their own preferred preparation strategy. See Figure 9. Because the question about which strategy was better could be interpreted in multiple ways, the question about which strategy was more effective seemed to be the better measure of the

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7 Derogation of the previous participant, indexed by the same seven bi-polar scale ratings as in study 1, could also be used as the mediator in this study, as it was in study 1. I chose to focus on perceived effectiveness because it more closely captures the conceptual variable of interest. Regardless, a conditional indirect effect in which chronic strategy moderates the mediated effect of comparison strategy (mediated by rating of previous participant) on preparation behavior is significant, B = 2.05, t = 2.05, p = .04. However, the conditional indirect effect is not significant among chronic DPs, p = .39, or among chronic SOs, p = .49.
conceptual mediator and will be used in the following analyses. Given that the data indicate that chronic SO participants did not perceive the SO comparison condition as a match and did not perceive the DP comparison condition as a mismatch, the conditional indirect effect was only expected to emerge among chronic DPs.

Figure 8. Predicted Conditional Indirect Effect in Study 2

I again followed the procedures outlined by Preacher and colleagues (2007) using their SPSS macro. When the preparation index score, computed by summing the number of practice questions viewed and essay portions viewed and subtracting from this the number of screens viewed, was used as the measure of preparation behavior, no significant effects emerged, all ps > .05. However, given that chronic SOs did not perceive either comparison condition as a match or mismatch, the hypothesized

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8 Indeed, models using the question asking participants to rate whether their strategy was better or worse than the previous participant’s strategy as the mediator for the relationship between comparison strategy and preparation behavior (using preparation index, number of practice questions, and number of essay portions) were not significant, all ps > .30.

9 The only marginally significant effect that emerged was that comparison condition predicted perceived effectiveness such that individuals in the SO comparison condition rated their own strategy as more effective than did individuals in the DP comparison condition. No other effects reached marginal significance, all ps > .10
conditional indirect effect was only expected to emerge among DPs. In addition, proceeding directly to the quiz may have also served as a SO strategy in this study, as that would also prevent one from becoming nervous about the quiz. Thus, examining the two DP preparation behaviors separately is more appropriate in this situation. I predicted that DPs in the SO comparison condition, as compared to the DP comparison condition, would perceive their own strategy as more effective and that this increase in perceived effectiveness would lead them to engage in their own strategy more (i.e. view more practice questions and view more portions of the essay).

The results for number of practice questions viewed are summarized in Table 6. I predicted that participants’ own chronic strategy would moderate the effect of comparison condition on perceived effectiveness of one’s own strategy. As discussed earlier, that effect was not significant, \( p > .10 \), although the main effect of comparison condition was marginally significant, indicating that participants in the SO comparison condition rated their own strategy as comparing slightly more favorably to the comparison condition than did participants in the DP comparison condition. Furthermore, I predicted that participants’ own chronic strategy would moderate the effect of perceived effectiveness of own strategy on number of practice questions viewed. This effect was significant, \( B = -1.32, t = -1.96, p = .05 \). However, the conditional indirect effect was not significant for DPs, \( p = .17 \), or for SOs, \( p = .52 \). Thus, it appeared that no effects emerged among SOs, but there was a non-significant trend such that DPs rated their own strategy as being more effective than that of the participant who gave the SO response, and these ratings predict DPs preparation strategy such that the more
positively they rated their own strategy the greater the number of practice questions they viewed.

Table 6. Summary of Conditional Indirect Effect of Comparison Condition, Chronic Strategy, and Perceived Effectiveness on Number Practice Questions Viewed in Study 2

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mediator: Perceived Effectiveness of One’s Own Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.74</td>
<td>.09</td>
<td>43.57</td>
<td>.00</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>-0.25</td>
<td>.09</td>
<td>-2.93</td>
<td>.004</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>.03</td>
<td>.09</td>
<td>0.32</td>
<td>.75</td>
</tr>
<tr>
<td>Comparison Condition X Chronic Strategy</td>
<td>-.04</td>
<td>.09</td>
<td>-0.45</td>
<td>.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent Variable: Number of Practice Questions Viewed</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>9.06</td>
<td>2.58</td>
<td>3.51</td>
<td>.0007</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>-0.44</td>
<td>0.57</td>
<td>-0.78</td>
<td>.44</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>5.45</td>
<td>2.58</td>
<td>2.11</td>
<td>.04</td>
</tr>
<tr>
<td>Comparison Condition X Strategy</td>
<td>-0.80</td>
<td>0.57</td>
<td>-1.40</td>
<td>.16</td>
</tr>
<tr>
<td>Perceived Effectiveness</td>
<td>-0.64</td>
<td>.67</td>
<td>-0.95</td>
<td>.34</td>
</tr>
<tr>
<td>Chronic Strategy X Perceived Effectiveness</td>
<td>-1.32</td>
<td>.67</td>
<td>-1.96</td>
<td>.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indirect</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Moderator</td>
<td>Effect</td>
<td>SE</td>
<td>Z</td>
<td>p</td>
</tr>
<tr>
<td>Conditional Indirect effect at values of Chronic Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOs</td>
<td>-0.14</td>
<td>0.22</td>
<td>-0.65</td>
<td>.52</td>
</tr>
<tr>
<td>DPs</td>
<td>0.57</td>
<td>0.41</td>
<td>1.37</td>
<td>.17</td>
</tr>
</tbody>
</table>

The results for number of essay sections viewed are summarized in Table 7 and follow a similar pattern to the number of practice questions viewed. I predicted that participants’ own chronic strategy would moderate the effect of comparison condition on
perceived effectiveness of one’s own strategy. As discussed earlier, that effect was not significant, $p > .10$, although the main effect of comparison condition was marginally significant, indicating that participants in the SO comparison condition rated their own strategy as comparing slightly more favorably to the comparison condition than did participants in the DP comparison condition. Furthermore, I predicted that participants’ own chronic strategy would moderate the effect of perceived effectiveness of own strategy on number of essay sections viewed. This effect was significant, $B = -1.34$, $t = -1.84$, $p = .07$. However, the conditional indirect effect was not significant for DPs, $p = .14$, or for SOs, $p = .80$. Thus, it appeared that no effects emerged among SOs, but there was a non-significant trend such that DPs rated their own strategy as being more effective than that of the participant who gave the SO response, and these ratings predict DPs preparation strategy such that the more positively they rated their own strategy the greater the number of essay portions they viewed.
Table 7. Summary of Conditional Indirect Effect of Comparison Condition, Chronic Strategy, and Perceived Effectiveness on Number of Essay Sections Viewed in Study 2

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mediator: Perceived Effectiveness of One’s Own Strategy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.74</td>
<td>.09</td>
<td>43.57</td>
<td>.00</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>-0.25</td>
<td>.09</td>
<td>-2.93</td>
<td>.004</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>.03</td>
<td>.09</td>
<td>0.32</td>
<td>.75</td>
</tr>
<tr>
<td>Comparison Condition X Chronic Strategy</td>
<td>-0.04</td>
<td>.09</td>
<td>-0.45</td>
<td>.65</td>
</tr>
<tr>
<td><strong>Dependent Variable: Number of Essay Sections Viewed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>4.72</td>
<td>1.39</td>
<td>3.39</td>
<td>.001</td>
</tr>
<tr>
<td>Comparison Condition</td>
<td>-0.44</td>
<td>0.31</td>
<td>-1.44</td>
<td>.15</td>
</tr>
<tr>
<td>Chronic Strategy</td>
<td>3.00</td>
<td>1.39</td>
<td>2.15</td>
<td>.04</td>
</tr>
<tr>
<td>Comparison Condition X Strategy</td>
<td>-0.58</td>
<td>0.31</td>
<td>-1.92</td>
<td>.06</td>
</tr>
<tr>
<td>Perceived Effectiveness</td>
<td>-0.053</td>
<td>0.36</td>
<td>-1.46</td>
<td>.15</td>
</tr>
<tr>
<td>Chronic Strategy X Perceived Effectiveness</td>
<td>-0.67</td>
<td>0.36</td>
<td>-1.84</td>
<td>.07</td>
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</table>

<table>
<thead>
<tr>
<th>Indirect Effect</th>
<th>SE</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conditional Indirect effect at values of Chronic Strategy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOs</td>
<td>-0.02</td>
<td>0.11</td>
<td>-0.26</td>
</tr>
<tr>
<td>DPs</td>
<td>.34</td>
<td>.24</td>
<td>1.48</td>
</tr>
</tbody>
</table>

**Discussion**

One focal goal of Study 2 was to more directly measure the conceptual mediator: perceived effectiveness of one’s own strategy. This was measured by two items asking participants to compare their own strategy to the strategy that the comparison other preferred. Results suggested that the strategy that the SO comparison other suggested
may not have accurately captured the SO strategy. Specifically, I predicted that chronic SOs would perceive the SO comparison response a match to their own strategy. However, chronic SOs responded to the two comparison questions as if the SO comparison strategy was a mismatch to their own strategy. Across both measures, chronic SOs indicated that their own preferred strategy compared more favorably to the SO comparison strategy than the DP comparison strategy. Further support for this idea can be found in participants’ ratings of similarity to the comparison other. Chronic SOs perceived the DP comparison other to be more similar to themselves than the SO comparison other. Together, these results suggest that chronic SOs in the SO response condition did not experience a match between own chronic strategy and comparison strategy and that chronic SOs in the DP response condition did not experience a mismatch between own chronic strategy and comparison strategy. Thus, it is unsurprising that no effects emerged among SOs on preparation strategy.

In addition, because participants were allowed to prepare as much or as little as they liked, the index of SO strategy engagement, viewing relaxing scenes, may not have been an accurate measure of the SO strategy. SOs goal is to avoid thinking about the upcoming performance in order to prevent themselves from becoming nervous. Although viewing relaxing scenes might help them to achieve this goal, particularly when they must wait a fixed amount of time before proceeding to the quiz, as was the case in Study 1, when they can end the preparation period at any time that is likely the easiest way to avoid thinking about how the performance will go. Thus, the measure of SO strategy use may not have been an ideal measure in the present study. Unfortunately, I believe this
made it more difficult to achieve significant effects on the measure of preparation
behavior, and significant results were not observed, although the pattern among chronic
DPs was consistent between the two studies.

Finally, in Study 2 I sought to rule out several possible alternate explanations of
the results of Study 1. In particular, comparison condition may have affected
participants’ perceptions of the difficulty of the quiz or may have led them to make
different conclusions about the previous participant’s performance. Neither of these
explanations was supported in the present study. Participants in the DP comparison
condition believed the quiz would be less difficult than participants in the SO comparison
condition or no comparison condition. However, in order for difficulty to explain why the
SO comparison condition led chronic DPs to engage more strongly in a DP strategy, the
SO comparison condition would have had to have led participants to believe that the quiz
was less difficult, meaning that participants believed they were more likely to earn the
$10 prize if they only tried (i.e. used their preferred strategy). Furthermore, participants’
predictions of their quiz score did not change from before the comparison strategy
manipulation to after. This also suggests that impressions of the difficulty of the quiz
cannot explain why chronic DPs in the SO comparison condition engaged more strongly
in a DP strategy in Study 1.

There was also no support for the possible explanation that comparison condition
led participants to make different conclusions about the previous participant’s
performance. In particular, chronic DPs in the SO comparison condition may have
assumed that the previous participant scored poorly on the quiz, and engaged in their
strategy more strongly in order to avoid a similar poor performance. However, this explanation was not supported in the present study. Chronic DPs predicted that the previous participant scored higher on the quiz than chronic SOs, regardless of whether the previous participant indicated that they preferred a DP or SO strategy.

Given that no differences emerged in this study in participants’ preparation behavior, the alternative explanations cannot be ruled out for Study 1. However, results in the present study are not consistent with the alternative explanations, and the lack of significant preparation effects are likely due to other changes made between Studies 1 and 2. In particular, in Study 2, several questions were added immediately after participants in the experimental conditions were exposed to the comparison target’s strategy. Thus, answering these questions may have changed how they behaved afterwards, when they had the opportunity to prepare.

Thus, Study 2 provided new insights on the SO strategy, more directly implicated social comparison processes as the mediating force driving the effect of comparison strategy on preparedness, and ruled out several alternative explanations for the results of Study 1.
Chapter 4: General Discussion

In summary, predictions were supported among defensive pessimists, but not among non-defensive pessimists (Study 1) or strategic optimists (Study 2). Among defensive pessimists, social comparison processes led participants to bolster beliefs in their own preferred strategy, which led them to engage in that strategy more. However, the same meditational pathway was not significant among non-defensive pessimists or strategic optimists. As discussed earlier, given that non-defensive pessimists on average do not prefer a single strategy, it is unsurprising that the meditational path was not significant among these participants. However, it was somewhat surprising that the meditational path was not significant among strategic optimists in Study 2.

Social Comparison

One might argue that rather than pursue a self-evaluation goal as was proposed, individuals in the present studies were pursuing a self-enhancement goal when they compared themselves to the comparison target. If this were the case, then defensive pessimists who derogating the strategic optimist comparison target in Study 1 may have served to boost defensive pessimists’ self-esteem and increase their sense of self-efficacy. However, defensive pessimism research suggests that self-enhancement would impair performance for defensive pessimists. For defensive pessimists, who are generally quite anxious, positive mood indicates that they have prepared sufficiently and can stop
exerting so much effort to prepare. When defensive pessimists are given a positive mood induction, performance suffers relative to when they are given a negative mood induction (Norem & Illingworth, 2004). Thus, boosting the self-esteem of defensive pessimists would likely to cause a decrease in performance, which was not observed in the present studies, indicating that self-enhancement was not the goal defensive pessimists were pursuing when comparing themselves to the comparison target.

Although it appears that self-enhancement was not defensive pessimists’ goal, self-enhancement may have been the goal that non-defensive pessimists (Study 1) and strategic optimists (Study 2) were pursuing. However, given that neither of these groups derogated either comparison target, this seems unlikely.

**Strategic Optimism**

As mentioned earlier, one possible explanation for why perceived effectiveness of one’s preferred strategy did not mediate the effect of other’s preferred strategy on preparation for strategic optimists is that the response given by the comparison other may not have accurately captured the strategic optimism strategy. It was quite difficult to write such a response without making the person sound lazy or unmotivated. Although strategic optimists do not think through worst case scenarios, like defensive pessimists do, they are also not *unrealistic* optimists. That is, strategic optimists are optimistic because they have a history of past success, and they are generally prepared for performances. However, that sentiment is difficult to express in a short response supposedly given by a previous participant. Thus, the idea that the previous participant was expressing a preference for strategic optimism may not have been clear. Participants
may have believed the previous participant preferred some other strategy (i.e. self-handicapping) or was simply lazy.

Furthermore, I intended for all participants to feel at least somewhat prepared after reading the essay. Thus, the preparation period was intended to be an opportunity for participants to do something extra to prepare. However, if participants did not feel prepared after reading the essay, then strategic optimists would not be expected to distract themselves from the performance by viewing relaxing scenes. Rather, they would continue to study by engaging in the extra practice task. Indeed, data from another study using a similar paradigm supports this explanation. After completing the quiz, participants were asked an open-ended question concerning how much time, if any, they felt they needed during the preparation period to be prepared. (In this study, as in Study 1, participants had been given 3 minutes to prepare.) Participants’ responses ranged from 0 to 20 minutes. The mean response was 5.10 minutes. This study included chronic defensive pessimists and chronic strategic optimists, but the two groups’ responses did not differ, \( p > .10 \), suggesting that both groups felt that 3 minutes was an insufficient amount of time to prepare, but that neither group preferred more time than the other (Hardy, 2011). Strategic optimists would not be expected to use their preferred strategy until they felt prepared. Thus, they were probably less likely than defensive pessimists to engage in their preferred strategy. In addition, this may relate back to participants’ perceptions of the previous participant. If strategic optimist participants did not feel

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\(^{10}\) It should be noted however, that although Hardy (2011) found that participants claimed they wanted five minutes to prepare, participants in study 2, who were allowed to spend as much time as they liked preparing only spent 2.15 minutes on average. Again, there were no differences between the amount of time defensive pessimists and strategic optimists spent preparing.
prepared for the quiz, then they may have assumed that the previous participant did not feel prepared either, meaning that the previous participant was not a strategic optimist.

In addition, strategic optimists may have found a way to use their strategy other than the relaxing scenes. In particular, in Study 2, participants could proceed directly to the quiz at any point. This may actually be a better strategy for strategic optimists to prevent anxiety than viewing the relaxing scenes. Strategic optimists’ goal is to prevent themselves from becoming anxious. When performance is not immediate, they do this by distracting themselves. If, however, they could simply make the performance occur more quickly, then they do not need to distract themselves. They have prevented themselves from becoming anxious by eliminating the chance to become anxious.

The issues just raised beg the question: how are strategic optimists perceived by others? Do others recognize the strategy that strategic optimists use? To the extent that defensive pessimists perceive strategic optimists as lazy, one might expect that the social comparison processes proposed to mediate the effect of others’ strategy use on own behavior might be even stronger than if defensive pessimists recognized that strategic optimists were using a strategy that functions well for them, in terms of performance. For example, if a defensive pessimist observes someone using a strategic optimism strategy and recognizes it as such, the defensive pessimist may realize that the strategy is functional for the optimist, even as the pessimist recognizes that his or her own strategy is better for him or her. If, however, a defensive pessimist observed someone using a strategic optimism strategy and does not recognize it, the defensive pessimist might make a remarkably negative impression of the other person. A person with no strategy at all
seems worse than someone with a strategy that, although different from one’s own, is functional. I would hypothesize that social comparison with another who has no strategy or plan for good performance would affirm one’s own strategy even more than social comparison with another who uses a different strategy. It would seem certain that one’s own preferred strategy is better than laziness or no strategy at all.

**Defensive Pessimism**

Defensive pessimists’ strategy use does not seem to hinge upon feeling prepared in the same way that strategic optimists’ strategy use does. It is probably rare that defensive pessimists do feel prepared. They are highly anxious, and intuitively, it seems they face an impossible task trying to think of and plan for every possible event that might occur to prevent poor performance. Thus, it seems that defensive pessimists constantly use their preferred strategy, whereas strategic optimists only use their strategy in certain situations.

Rather, it seems defensive pessimists’ use of their strategy might be more related to the expected value of the outcome. Defensive pessimism is an extremely high effort strategy. It would seem that if defensive pessimists tried to use their preferred strategy in all situations in a given domain, they would be so consumed with trying to identify and prevent possible negative events that they would not be able to function. Thus, it would seem that defensive pessimists would have to limit their strategy use to situations that exceed a specified expected value or that defensive pessimists might use their strategy to a greater extent as the expected value increased. In the present study, participants could receive $10 for performing well on the quiz, which would have likely made the expected
value high. In real-world settings, this would mean that defensive pessimists would be more likely to use their preferred strategy on an exam worth 30 percent of their final grade than on a quiz worth 5 percent of the final grade.

Furthermore, although defensive pessimists use their strategy to manage their anxiety, anxiety reduction does not seem to be their goal. Defensive pessimists’ anxiety is high before a performance and tends to remain high until the performance is over. The purpose of the defensive pessimism strategy then does not appear to be reducing anxiety before a performance. Rather, defensive pessimists seem to view anxiety as a motivating factor, rather than a negative state they try to avoid. Anxiety may be a qualitatively different entity for defensive pessimists than for others.

Other Possible Mediators of the Observed Effect

Social comparison is but one of many ways in which others may influence people. One may wonder why conformity was not predicted or observed in the present research. In particular, classic social psychological research demonstrates that people will conform to the behavior of others, even when it is clear that others are not behaving in an optimal way (Asch, 1956). In his line judging studies, Asch (1956) demonstrated that when others, who were confederates, gave a response that was clearly incorrect, 75 percent of participants conformed and gave the same incorrect response on at least one trial. Thus, one might have predicted that participants in the present research would conform to the response that the previous participant gave. However, it should be noted that in Asch’s (1956) studies, conformity was more likely when the participant reported his answers out loud (i.e. reported his answers in a way that others would know whether he conformed or
not) than when he wrote his answers privately on a piece of paper. The present research likely more closely resembles the later of the Asch conditions. Participants in the present studies did not interact with the person whose response they read. In fact, participants were told that they were reading the response of a previous participant, so there was no reason for them to expect that the person would know which strategy they used. Thus, social pressure to conform should have been quite low in the present studies.

Despite the low likelihood of conformity in the present research, conformity certainly operates to influence defensive pessimists’ and strategic optimists’ behavior in real-world settings. One context in which this might be examined in the domain of academics is among group projects in which the entire group is given a single grade on a project. One could imagine a group in which the majority of students preferred a strategic optimism strategy, but a minority of the students preferred defensive pessimism. The defensive pessimists might conform and go along with the strategic optimism strategy that the others prefer. It seems, however, that this would likely cause the performance of the defensive pessimist to suffer, just as it does when they are forced to use a strategic optimism strategy (e.g. Spencer & Norem, 1996). If the group is given one grade, then the optimal strategy for group performance would be for strategic optimists to prepare in their preferred way, and for defensive pessimists to prepare in their preferred way.

One might also predict that participants in the present studies would conform to the previous participant’s behavior based on demand characteristics. Specifically, one could predict that individuals would conform to the previous participant’s behavior
because they would assume that the experimenters expected or wanted them to do that. However, steps were taken to reduce the likelihood that this would occur. Specifically, participants were led to believe that they had a role in choosing which participant’s response they read. They selected whose response they wanted to view from a list of 10 participants. They were unaware that the response they read was unrelated to the participant number they selected. In addition, neither of the tasks suggested by the previous participant exactly matched the tasks that participants could engage in. Thus, demand characteristics should have been low in the present studies.

But again, demand characteristics may still operate in real-world contexts. Teachers might intentionally or unintentionally communicate their strategy preferences to students. When teachers ask their students to make a presentation, they might tell students that they must be prepared to answer questions from the audience. This would seem to be an intentional communication of a defensive pessimism preference. In order to answer questions, one must anticipate which questions the audience might ask and know how one wants to answer the question. Teachers might also unintentionally communicate a strategy preference, possibly even for a strategy they do not prefer. For example, a teacher who is a defensive pessimist might anticipate problems that students may have with an assignment, such as forgetting to staple their assignment before turning it in. In order to prevent the negative consequences for the teacher (e.g. pages of one student’s assignment being mixed in with another student’s assignment), the teacher might find a solution to the problem, such as bringing a stapler to class on the day that assignments are due. This might unintentionally communicate to students that it is
unnecessary for them to identify problems that might arise and ways to prevent those problems. Thus, it seems that demand characteristics might influence defensive pessimists’ and strategic optimists’ preparation in real-world settings.

_Extensions and Future Directions_

_Long-term negative consequences._

Although defensive pessimism is a useful strategy in the short-term, in that defensive pessimists perform well, there are some negative long-term consequences. There are some indications that long-term use of a defensive pessimism strategy can lead to lower well-being. One study followed defensive pessimists over their college years. This study found that although defensive pessimists and strategic optimists performed equally well at the beginning of college, defensive pessimism had begun to take its toll by the third year of college. Specifically, defensive pessimists reported more psychological and physical symptoms, reported less satisfaction with their academic performance, and had lower GPAs than strategic optimists (Norem, 1989). However, despite pessimists’ lower standing in relation to strategic optimists, objectively, their academic performance was still high (mean GPA = 3.35). Given that defensive pessimism has some long term negative consequences, one might wonder about the wisdom of engaging in such a strategy. Certainly, defensive pessimism seems to be an effective strategy in the short-term, because it allows defensive pessimists to perform just as well as others and when defensive pessimists are unable to use their preferred strategy their performance decreases (Norem & Cantor, 1986b; Norem & Illingworth 1993; Seery et al., 2008;
Spencer & Norem, 1996). Thus defensive pessimists may only focus on short-term consequences and not consider long-term consequences.

An open question concerns the effects of social comparison with someone using a strategic optimism strategy on long-term effects for defensive pessimists. The present research shows that comparison with another using a strategic optimism strategy causes defensive pessimists to engage more extensively in a defensive pessimism strategy than they would without such social comparison information. This leads one to wonder how social comparison might affect the extent of the negative consequences that defensive pessimists experience. However, the feature(s) of the defensive pessimism strategy that lead to these negative consequences have not been identified. As discussed previously, there are three key features to the defensive pessimism strategy: 1) setting low expectations, 2) reviewing and rehearsing possible outcomes, and 3) preparing for possible outcomes. Defensive pessimism is also characterized by high anxiety. Any of these features might lead to the long-term negative consequences, but only some of them were affected by social comparison processes in the present research; thus, it is unclear how social comparison processes might influence the long-term consequences of engagement in a defensive pessimism strategy.

If setting low expectations leads to long-term negative consequences, then social comparison processes would not be expected to affect long-term negative consequences, as there were no effects of social comparison in the present research on expectations.

If reviewing, rehearsing, and preparing for possible outcomes leads to negative consequences, then chronic social comparison with a strategic optimist would likely lead
to greater negative consequences than chronic social comparison with a defensive pessimist or no social comparison. In the present research, the event most likely to prevent a good performance was that participants would not know the answer to a question. The easiest way to prevent that problem was to view practice questions and, if necessary, review the essay. Results demonstrated that social comparison with a strategic optimist led to greater preparation for possible outcomes among defensive pessimists. Presumably, this occurred because defensive pessimists who compared with a strategic optimist were also more likely to identify not knowing the answer to a question as a possible outcome, although this was not directly tested. Thus, one would expect that if this is the factor that leads to negative consequences for defensive pessimists, defensive pessimists who chronically engage in social comparison with strategic optimists would be expected to experience more negative consequences than defensive pessimists who did not engage in such social comparison processes.

Anxiety could also lead to negative consequences for defensive pessimists, and if this is the case, then based on the present studies, chronic social comparison with strategic optimists may increase the long-term negative consequences of using a defensive pessimism strategy. Results were not consistent across all measures of anxiety, but when significant or marginal effects emerged, defensive pessimists who compared with a strategic optimist felt more anxious than defensive pessimists who did not compare with a strategic optimist, suggesting that chronic social comparison with strategic optimists would lead to greater chronic anxiety and therefore greater negative consequences.
Obviously, it is also possible that some combination of defensive pessimism features leads to the long-term negative consequences. In this case, it is more difficult to predict how chronic social comparison with strategic optimists would affect the long-term negative consequences of engaging in a defensive pessimism strategy. Given that each individual feature suggests no effect or increased negative consequences, it seems most likely that chronic comparison with strategic optimists would lead to slightly greater negative consequences for defensive pessimists.

*Social Comparison with Individuals Using a Self-Handicapping Strategy.*

Self-handicapping is defined as “any action or choice of performance setting that enhances the opportunity to externalize (or excuse) failure and to internalize (reasonably accept credit for) success” (Berglas & Jones, 1978, p. 406). A classic example is that of a student who chooses to consume alcohol at a party rather than study the night before an exam. Self-handicapping capitalizes on the augmenting and discounting principles proposed by Kelley (1972). A self-handicapper who succeeds does so despite numerous obstacles, thereby augmenting the likelihood that one will attribute his or her behavior to outstanding internal characteristics (i.e. high intelligence). A self-handicapper who fails, on the other hand, has a ready-made excuse for failure. He or she did not fail due to any personal deficiencies; rather factors in the situation caused the failure (i.e. consuming alcohol rather than studying).

Thus, like defensive pessimism, self-handicapping is an anticipatory strategy, but like strategic optimism, self-handicapping involves the denial of responsibility for failure. Like the defensive pessimist, the self-handicapper has considered the possibility that
something could prevent positive performance. However, rather than thinking through problems and rehearsing how to alleviate the negative consequences of these problems, the self-handicapper avoids these thoughts and attempts to prevent the negative attribution that he or she was the cause of the poor performance. Thus, like the strategic optimist, the self-handicapper relies on self-esteem repair strategies to deny responsibility for failure. However, unlike the strategic optimist, the self-handicapper has exerted effort to ensure failure.

A possible extension of the present research would be to examine the effects of social comparison with a self-handicapper for defensive pessimists and strategic optimists. Given the similarities between aspects of the self-handicapper’s strategy and aspects of both defensive pessimism and strategic optimism, it would be important to consider how the self-handicapping strategy would be presented in order to determine what effect social comparison with that strategy would have on defensive pessimists and strategic optimists. Specifically, just as social comparison with a defensive pessimist had little effect on defensive pessimists’ behavior, one might predict that to the extent that similarities between one’s own preferred strategy (defensive pessimism or strategic optimism) and a self-handicapping strategy were highlighted, social comparison with a self-handicapper would have little effect on defensive pessimists’ or strategic optimists' strategy use. However, to the extent that differences between one’s own preferred strategy and a self-handicapping strategy were highlighted, one might predict that comparison to a self-handicapper would increase perceived effectiveness of one’s own preferred strategy, causing one to engage more heavily in one’s preferred strategy. An
interesting question would be to examine whether the effect of comparison with a self-handicapper is larger or smaller than comparison with a strategic optimist for defensive pessimists. Previous research has demonstrated that self-handicappers are perceived negatively by others, and may even be characterized as lazy, particularly when the self-handicapper initiates the handicap (i.e. asks a friend to go to the movies) (Hirt, McCrea, & Boris, 2003). Thus, regardless of which features of the self-handicapper’s strategy are highlighted, if it is clear that the person has self-handicapped, both defensive pessimists and strategic optimists may perceive it as a downward social comparison, thereby increasing the perceived effectiveness of their own strategy and causing them to engage more heavily in their preferred strategy.

*Strategic Optimism and Defensive Pessimism in Other Domains.*

Although defensive pessimism is most commonly examined within the domain of academics, individuals can use a defensive pessimism strategy in any number of domains. One extension of the present research would be to see whether social comparison processes operate similarly in the social domain. Picture two roommates preparing for first dates. Debbie uses a defensive pessimism strategy and thinks about what might go wrong during the date. Perhaps she worries about awkward silences, so before the date she thinks of questions to ask her date or funny stories to tell during such times. Stacie uses a strategic optimism strategy and assumes the date will go well. Stacie does not do anything she would not do for a dinner out with friends. As these two roommates are preparing for their dates together, how would social comparison process operate? Would
Debbie perceive a downward social comparison with Stacie? And would this lead Debbie to engage even more in a defensive pessimism strategy?

It is reasonable to predict that the social comparison processes would be the same between the social and academic domains. One difference, however, might emerge. Specifically, the positive association between preparation and performance is not as strong for the social domain as it is for the academic domain (Norem, 1989). In the present research, more studying was strongly correlated with greater performance. As was previously discussed, the nature of the relationship between strategy use and performance is somewhat unclear in the academic domain, but this is especially true in the social domain, in which greater strategy use is often associated with lower performance. Picture again the two roommates preparing for their dates. Although Debbie has put considerable effort into preparing, this does not necessarily indicate that her date will go well. In fact, Debbie might be perceived as unsociable to the extent that she sticks to her script and seems unwilling to go-with-the-flow. She might be perceived as high-maintenance if she worries a lot about how she looks during the date. Thus, it seems that social comparison processes might have the same effect on preparation in the social and academic domains, but the effect on performance would likely be different across the two domains.

Another domain in which defensive pessimism and strategic optimism are likely to operate is emergency preparedness. One aspect that makes this domain so interesting is the link in this domain between effort exerted to prepare and positive, or at least fewer negative, outcomes. Often, there is no relationship between effort exerted to prepare and
positive outcomes, because the likelihood of an emergency occurring is so low that many
times people prepare for these events and then they do not occur. When, however, a
disaster does occur, greater effort exerted to prepare generally leads to a better outcome.
Performance would be defined somewhat differently in this domain than in academics.
Performance might be saving one’s life or could be recovering more easily for a disaster
because one purchased better insurance. Regardless, it seems that defensive pessimists’
tendency to think through worst case scenarios would serve them well in this domain
when an emergency actually occurred. However, it also seems that defensive pessimists
would waste considerable time and effort preparing for emergencies that do not actually
occur. Thus, while strategic optimists generally perform as well as defensive pessimists
in the academic domain, one might predict that defensive pessimists would outperform
strategic optimists when an actual emergency occurs. One might also predict that
defensive pessimists’ performance in other areas might suffer to the extent that they focus
so much on preparing for emergencies that they have less time and effort to devote to
other tasks. To date, this domain is unexamined by defensive pessimism researchers,
although Norem (1989) seems to agree with these predictions. She states “One might
hope, for example, that defensive pessimists, as opposed to [strategic optimists],… are
overrepresented among individuals designing and operating nuclear power plants.”
(Norem, 1989, p. 56). Again, to the extent that disasters do not occur, these defensive
pessimists would have wasted considerable effort preparing. But when disasters do
occur, defensive pessimists would likely be much better equipped to handle them.
Conclusions

To date, the empirical study of defensive pessimism and strategic optimism has primarily taken an individual differences approach, identifying people who use each strategy and identifying the consequences of preventing individuals from using their preferred strategy. The present research brings a classic social psychological approach to the study of defensive pessimism and strategic optimism, recognizing the role that social comparison with others may have in shaping defensive pessimists’ and strategic optimists’ behavior. Further research is needed, but there is the potential to apply this research to situations in which greater use of a defensive pessimism strategy might be preferred (e.g. emergency preparedness), in order to increase individuals’ performance (e.g. chances of survival or ability to recover). Furthermore, the present research provides the first empirical demonstration of a process that likely occurs routinely in everyday life. Specifically, social comparison processes can boost individuals’ beliefs in the effectiveness of their preferred strategy to prepare for performance. This, in turn, causes them to engage in their preferred strategy more, and at least in some cases, increases performance. These findings are the first to demonstrate that situational factors may influence the extent to which individuals choose to engage in their own preferred strategy. Humans are social creatures, and a full understanding of how defensive pessimism operates in real-world contexts requires an understanding of how others’ strategy use influences defensive pessimists’ strategy use. The present research is the first to investigate the social nature of defensive pessimism.


Appendix A: Essay Text

**Life in the United States in the 1920s**

The 1920s were a time of political, economic, and cultural change in the United States. The decade began with the end of World War I and ended with the beginning of the Great Depression. These events, as well as other events that occurred during the decade had a great impact on the lives of U.S. citizens. Briefly summarized below are some of the major events that occurred between 1920 and 1929.

Politics

After a long period of agitation, U.S. women were able to obtain the necessary votes from a majority of men to obtain the right to vote in all state and federal elections. Women participated in the 1920 Presidential and Congressional elections. Politicians adjusted themselves, crafting issues such as world disarmament, child labor laws, mothers' pensions, and, especially, prohibition, that seemed to appeal to women. Women did respond to these issues, but in terms of general voting they shared the same outlook and the same voting behavior as men. Roman Catholic women were reluctant to vote in

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11 * denotes how the essay was divided when participants viewed the essay on the computer. Each time * appears, the subsequent text appeared on a different screen than the preceding text. When participants chose to view a portion of the essay during the preparation period, they viewed an entire screen of the essay (i.e. all text appearing between a set of *s).
the early 1920s, but they registered in very large numbers for the 1928 election in which Catholicism was an issue. A few women were elected to office, but none became especially prominent during this time period. Overall, the women's rights movement was dormant in the 1920s.

In the U.S. presidential election of 1920, the Republican Party returned to the White House with the election of Warren G. Harding, who promised a "return to normalcy" after the years of war and Wilsonian progressivism. Harding, from Ohio, easily defeated the Democrat James Cox, whose chief campaign issue was support of the League of Nations.

The Harding Administration was rocked by the Teapot Dome scandal, the most famous of a number of episodes involving Harding's cabinet members. The president, exhausted and ill from the news of the scandals, died of an apparent heart attack in August 1923 during a cruise to Alaska. His vice-president, Calvin Coolidge, succeeded him.

Coolidge could not have been a more different personality than his predecessor. Dour, puritanical, and spotlessly honest, his White House stood in sharp contrast to the drinking, gambling, and womanizing that went on under Harding. In 1924, he was easily elected in his own right with the slogan "Keep Cool With Coolidge". Overall, the Harding and Coolidge administrations marked a return to the hands-off style of 19th-century presidents in contrast to the activism of Roosevelt and Wilson. Coolidge, who spent the entire summer on vacation during his years in office, famously said "The business of the American people is business."
When Coolidge declined to run again in the 1928 election, the Republican Party nominated engineer and Secretary of Commerce Herbert Hoover, who was elected by a wide margin over Al Smith, the first Catholic nominee. Hoover had said, "We in America today are nearer to the final triumph over poverty than ever before in the history of any land." Within months of his election, however, the stock market crashed, and the nation's economy spiraled downward into what became known as the Great Depression.

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**Economy**

Except for a recession in 1920-1921, the United States enjoyed a period of unbalanced prosperity in comparison to war-ravaged Europe: prices for agricultural commodities and wages fell at the end of the war while new industries (radio, movies, automobiles, and chemicals) flourished. Following a wave of oil discoveries that started with the Pennsylvanian oil rush of the 1800s and culminated with the oil booms in Texas, Oklahoma, California, and other areas, the United States was emerging as the world leader in petroleum production contributing to an increasingly frenzied pace of industrialization.

Union activity had been tolerated during World War I as the government could ill-afford strikes then, but all that ended in 1919. Incomes stagnated during the ’20s as there was no minimum wage and employers were not motivated to pay more than they absolutely had to. American industry was more efficient and productive than it had ever been before, creating a surfeit of consumer goods, often more than there were buyers for. A series of mergers during the decade resulted in a hundred or so companies controlling
half the nation's industrial base. Farmers increasingly began to feel the pinch of falling crop prices. World War I had created a short-lived boom due to the government setting artificially high prices for agricultural products, but it did not last long. Not until World War II and more artificially high prices would American agriculture prosper again. The unevenness was also geographic: the standard of living in rural areas fell increasingly behind that of urban and suburban areas which saw dramatic improvements in housing and urban planning. Rural areas lost population to nearby towns and cities, made nearer by the rapid growth in automobile usage. African-Americans began leaving the South in droves to escape segregation and the sharecropping system. They formed large communities in the northern industrial belt.

While, in retrospect, the 1920s are sometimes seen as the last gasp of unregulated Robber Baron capitalism, there was actually an increasing role for the federal government. In addition to Prohibition, the government took on new powers and duties such as funding and overseeing the new U.S. Highway system. Federal expansion of the money supply led to an unprecedented expansion of credit which contributed to both the boom and subsequent bust.

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**Important Issues during the Decade:** Prohibition, Ku Klux Klan, Scopes Monkey Trial

**Trial**

In 1920, the manufacture, sale, import and export of alcohol were prohibited by the Eighteenth Amendment to the United States Constitution in an attempt to alleviate high rates of alcoholism and, especially, political corruption led by saloon-based
politicians. It was enforced at the federal level by the Volstead Act. Most states let the
federals do the enforcing. Drinking or owning liquor was not illegal, only the
manufacture or sale. National Prohibition ended in 1933, although it continued for a
while in some states. Prohibition is considered by most (but not all) historians to have
been a failure because organized crime was strengthened. The 18th Amendment also
represented the growing strength of the state in the early 20th century.

Ku Klux Klan (KKK) is the name of three entirely different organizations (1860s,
1920s, post 1960) that used the same nomenclature and costumes but had no direct
connection. The KKK of the 1920s was a purification movement that rallied against
crime, especially violation of prohibition, and decried the growing "influence" of "big-
city" Catholics and Jews. Its membership reached as many as 4 million, but no prominent
national figure claimed membership; no daily newspaper endorsed it, and indeed most
actively opposed the Klan. Membership was evenly spread across the nation's white
Protestant population, North and South, urban and rural.

Historians in recent years have explored the Klan in depth. The KKK of the 1860s
and the current KKK were indeed violent. However, historians discount lurid tales of a
murderous group in the 1920s. Some crimes were probably committed in Deep South
states but were quite uncommon elsewhere. The local Klans seem to have been poorly
organized and were exploited as money-making devices by organizers more than
anything else. (Organizers charged a $10 application fee and up to $50 for costumes.)
Nonetheless, the KKK had become prominent enough that it staged a huge rally in
Washington DC in 1925. Soon afterwards, the national headlines reported rape and
murder by the KKK leader in Indiana, the group quickly lost its mystique and nearly all its members.

The Scopes Trial of 1925 pitted lawyers William Jennings Bryan and Clarence Darrow (the latter with the American Civil Liberties Union representing teacher John T. Scopes) in a Tennessee court case that tested a law passed on March 13, 1925, which forbade the teaching, in any state-funded educational establishment in Tennessee, of "any theory that denies the story of the Divine Creation of man as taught in the Bible, and to teach instead that man has descended from a lower order of animals." This is often interpreted as meaning that the law forbade the teaching of any aspect of evolution. By teaching from a state-mandated biology textbook that discussed evolution, Scopes believed he had broken the anti-evolution law. Scopes was convicted of teaching evolution, but the verdict was overturned on appeal. The case was a major setback to the fundamentalist churches and the opponents of evolution.

The Beginning of the Great Depression

Historians and economists still have not agreed on the causes of the Great Depression, but there is general agreement that it began in the United States in late 1929, and was either started or worsened by "Black Thursday", the stock market crash of Thursday, October 24, 1929. Sectors of the U.S. economy had been showing some signs of distress for months before October 1929. Business inventories of all types were three times as large as they had been a year before (an indication that the public was not buying
products as rapidly as in the past); and other signposts of economic health—freight carloads, industrial production, wholesale prices—were slipping downward.

The events in the United States triggered a world-wide depression, which led to deflation and a great increase in unemployment. In the United States between 1929 and 1933, unemployment soared from 3% of the workforce to 25%, while manufacturing output collapsed by one-third.
Appendix B: List of Practice Questions from Preparation Task

1. Which issues did politicians begin to focus upon ONLY after women were given the right to vote?

2. Which group of women was reluctant to vote in the first election in which women were allowed to vote?

3. In what year did President Harding die of a heart attack?\textsuperscript{12}

4. Who became president when Harding died?

5. Which areas saw increases in standard of living during the 1920s?

6. During what years was there national Prohibition?

7. What was the application fee to join the Ku Klux Klan (KKK) in the 1920s?

8. In what year did the Ku Klux Klan (KKK) have a huge rally in Washington, D.C.?

9. In what year did The Great Depression begin?

10. During the Great Depression what was the unemployment rate?\textsuperscript{13}

\textsuperscript{12} This question appeared in the quiz participants completed later in the session.
\textsuperscript{13} This question appeared in the quiz participants completed later in the session.
Appendix C: List of Relaxing Scenes from Preparation Task

1. You settle down in a comfortable chair to read your favorite book or magazine.

2. You hold hands with your significant other.

3. You settle in front of the TV to watch your favorite show.

4. You slowly savor your favorite dessert.

5. You stroll through the park on a warm autumn day, watching the leaves fall from the trees.


7. You go for a long walk on the beach. At the end of your walk you sit down and watch the sunset on the water.

8. You sit alone in your room, close your eyes, and listen to your favorite music.

9. You take the day off to go to the spa and get a massage.

10. You make yourself a cup of tea and sit outside on the porch.
Appendix D: Quiz Questions and Responses with Correct Answers Noted

1. In what year were women first allowed to vote in Presidential and Congressional elections?
   a. 1920*
   b. 1922
   c. 1924
   d. 1926
   e. 1928

2. Who was elected president in 1928?
   a. James Cox
   b. Herbert Hoover*
   c. Calvin Coolidge
   d. Franklin Roosevelt
   e. Warren G. Harding
3. In what year did President Harding die of a heart attack?
   a. 1920
   b. 1921
   c. 1922
   d. 1923*
   e. 1924

4. What position did Herbert Hoover have before becoming president of the United States?
   a. Vice-President
   b. Secretary of Labor
   c. Defense Secretary
   d. Secretary of Commerce*
   e. Senator
5. Which of the following was NOT a reason that the United States experienced economic growth during the 1920s?
   a. Prices for agricultural commodities and wages fell at the end of the war
   b. New industries (radio, movies, automobiles, and chemicals) flourished
   c. The United States was emerging as the world leader in petroleum production
   d. Union activity increased during this time period, resulting in increased wages for workers*
   e. Federal expansion of the money supply, which created an expansion of credit

6. What was one reason the Eighteenth Amendment was created?
   a. To make the consumption of liquor illegal
   b. To stop political corruption*
   c. To allow women the right to vote
   d. To allow African-American’s the right to vote
   e. None of the above

7. Which statement below is FALSE about the Ku Klux Klan (KKK) of the 1920’s?
   a. It was an entirely different organization than the KKK of the 1860’s
   b. It was a purification movement
   c. It rallied against crime, particularly the violation of prohibition
   d. It was the same KKK organization as that of the 1960’s*
   e. It had around 4 million members
8. What state forbade the teaching of evolution in a state-funded educational establishment?
   a. Kentucky
   b. Maryland
   c. Tennessee*
   d. Mississippi
   f. Louisiana

9. What event either started or worsened the Great Depression?
   a. “Black Thursday”*
   b. “Black Friday”
   c. “Brown Tuesday”
   d. “Red Monday”
   e. The end of WWI

10. What was the unemployment rate during the Great Depression?
    a. 3%
    b. 10%
    c. 25%*
    d. 50%
    e. 62%