Individual Differences in Motivated Social Cognition: The Case of Self-Serving Information Processing

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Three experiments examined the hypothesis that people show consistency in motivated social cognitive processing across self-serving domains. Consistent with this hypothesis, Experiment 1 revealed that people who rated a task at which they succeeded as more important than a task at which they failed also cheated on a series of math problems, but only when they could rationalize their cheating as unintentional. Experiment 2 replicated this finding and demonstrated that a self-report measure of self-deception did not predict this rationalized cheating. Experiment 3 replicated Experiments 1 and 2 and ruled out several alternative explanations. These experiments suggest that people who show motivated processing in ego-protective domains also show motivated processing in extrinsic domains. These experiments also introduce a new measurement procedure for differentiating between intentional versus rationalized cheating.

Keywords: *motivated social cognition; self-serving bias; cheating; self-deception*

The motivation to see oneself and one's actions in a positive manner leads to a wide variety of biases in information processing (Baumeister, 1998; Dunning, 1999; Kunda, 1990). For example, people have been shown to keep gathering information when they do not like the early returns but to stop quickly when they do (Ditto & Lopez, 1993). Similarly, people doubt the veracity of the evidence when they do not like the conclusions, but they accept the same evidence when they do (Lord, Ross, & Lepper, 1979). These biases in information processing, and many others, have been tied to intrapersonal needs that can be broadly classified as self-enhancing or self-protecting (Tesser, 2000, 2001).

Because there are stable individual differences in the tendency to self-enhance and self-protect (e.g., Beauregard & Dunning, 2001; Campbell, Reeder, Sedikides, & Elliot, 2000), it is possible that there are also stable individual differences in the tendency to process information in a manner that serves these self-motives (see Tesser, Crepaz, Beach, Cornell, & Collins, 2000; von Hippel, Vargas, & Sekaquaptewa, 2003). Consistent with such a possibility, people who have high explicit but low implicit self-esteem show a wide array of self-protective biases, from enhanced ingroup bias to increased efforts at dissonance reduction (Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003). Such data suggest that certain types of people are particularly likely to show biased information processing in an effort to defend the self against perceived threats to its integrity (for a related perspective, see Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950). In the current article, we refer to this pattern of biased information processing that protects or enhances the self as *self-serving processing.*

If certain types of people are particularly likely to show self-serving processing (as in Jordan et al., 2003), then it follows that identification of self-serving processing in one domain may well implicate self-serving processing

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in other domains. That is, individuals who process information with an eye toward self-enhancement or self-protection in one domain may be likely to show such biases in other domains as well (cf. Tesser, 2000, 2001; Tesser et al., 2000). For example, people who engage in self-serving processing about their health (as in Ditto & Lopez, 1993) may also engage in self-serving processing about their relationships (as in Murray, 1999). Such individuals may show greater bias in areas of greater personal importance, but the tendency to show self-serving processing may be limited primarily by the applicability of the biased processing to the current situation. Thus, attentional biases are likely to emerge when people are encoding events (Hilton, Klein, & von Hippel, 1991; Roskos-Ewoldson & Fazio, 1992), attributional biases are likely to emerge when people are interpreting events (Chatman & von Hippel, 2001; Sekaquaptewa, Espinoza, Thompson, Vargas, & von Hippel, 2003), memory biases are likely to emerge when people are recalling events (Rhodewalt & Eddings, 2002; Shepperd, 1993), and linguistic biases are likely to emerge when people are describing events (Karpinski & von Hippel, 1996; Wigboldus, Semin, & Spears, 2000). All of these biases, and many others, have been theorized to play an important role in belief perseverance (von Hippel, Sekaquaptewa, & Vargas, 1995), and thus the specific bias under study is probably important only to the degree that it is relevant to the information processing demands and opportunities provided by the situation at hand.

This logic suggests that how people make self-relevant judgments and decisions and how they behave in circumstances that threaten or enhance the self are determined not only by their beliefs and attitudes but also by the way they interpret and respond to self-relevant information. Because biases in information processing change both the amount and meaning of information that an individual collects from the environment (Ditto & Lopez, 1993; Fazio, 1990; Hilton & von Hippel, 1990), a person who processes information in a self-serving manner may actually live in a different, more congenial world than a person in similar circumstances who processes information in a less biased manner. Although desires and preferences may provide the motivation that spurs self-serving processing, in the absence of biased processing there is no mechanism for desires to influence beliefs (Kunda, 1990). Thus, self-serving processing might represent the first and most important line of defense in protecting the self from the psychological consequences of a threatening or simply imperfect world.

TYPES OF SELF-SERVING COGNITIONS

There are many possible typologies for self-serving information processing. Self-serving processing can be categorized as self-protective versus self-enhancing, for example, depending on whether people are concerned with denial of failure or assertion of success (Tice, 1991). Alternatively, self-serving processing can be categorized as promotion focused versus prevention focused, whereby people either set a particularly low threshold for "hits" or a particularly high threshold for "misses" (Crowe & Higgins, 1997). Yet another dimension for categorization could be based on why a domain is important to the self, either for ego-relevant versus extrinsic reasons (Miller & Hom, 1990). Such a scheme would contrast self-serving processing intended to maintain the integrity of the self with self-serving processing intended to maintain the material comfort or enjoyment of the self.

Although individual differences in self-serving processing may cluster within these various domains, the evidence that certain types of individuals show a broad array of defensive strategies suggests that biased processing should also cut across these categorization schemes. Thus, a person who engages in motivated reasoning when faced with an ego threat might also show signs of motivated reasoning when faced with a threat to material comfort. The possibility of such a broad band of self-serving processing suggests that motivation might chronically play a larger role in the information processing of some individuals than others.

One implication of this approach to motivated social cognition is that self-serving processing might emerge in a pattern that is reliable across even disparate domains. To provide a test of such a possibility, the current research compares self-serving processing when faced with an ego threat (in this case, failure on a novel task) with self-serving processing when faced with an extrinsic threat (in this case, the requirement to spend time on an onerous activity).

MEASURING SELF-SERVING PROCESSING

Extrinsic threat. To examine self-serving processing in response to an extrinsic threat, we presented people with two series of math problems that were designed to be onerous but solvable (i.e., the problems would take some time to complete and would potentially be frustrating). In both series of problems, people were told that there was a "bug" in the computer software and that they would need to hit the spacebar as soon as each problem appeared on the screen to prevent the answer from being unintentionally displayed. The importance of hitting the spacebar in a timely fashion was stressed to participants as we would ostensibly not know when they saw the answers and when they did not and thus we would have no way of knowing if the experiment was conducted properly. This cover story was designed to highlight the possibility that participants could cheat with impunity should they choose to do so simply by waiting for the answers to appear.

Participants were further told that in the first series of problems it would be easy to hit the spacebar in time, and in fact, they had 10 seconds to do so. For the second series of problems however, participants were warned that it would be difficult to hit the spacebar in time and that they would have to react as fast as they could. In this series of trials, they had only 1 second to hit the spacebar. This is a sufficient amount of time for a task like hitting a computer key (e.g., Meyer & Schvaneveldt, 1971), but the interval is short enough that it gives participants an excuse for not hitting the key in time. It is important to note that this excuse was intended primarily for purposes of self-justification rather than self-presentation as self-presentation issues were addressed by informing participants that the experimenter would not know whether they had hit the key in time and by allowing participants to complete the experiment in private. Thus, the aspect of this task that tapped motivated processing was not whether participants used the answer that was revealed to them, as all participants would presumably know they were relying on a provided answer, but rather whether they were able to convince themselves that they had not intended the answer to be revealed in the first place.

To isolate rationalized cheating in this task, the goal of the analyses was to predict residual cheating on the second task after variance predicted by cheating on the first task (i.e., clearly intentional cheating) was removed. This measure of residual cheating allows us to isolate the tendency to cheat on problems that would be taxing and difficult when one can make an excuse for one's behavior. Thus, residual cheating on the fast but not the slow math task can be taken as evidence of motivated information processing in service of the extrinsic goal of minimizing unpleasant effort. We refer to this residual variance as *rationalized cheating*, by which we mean the process by which people take advantage of the situation to cheat when they can rationalize their own behavior as unintentional.

Ego threat. To examine self-serving processing in response to an ego threat, we relied on a type of self-serving bias whereby people claim that tasks at which they have succeeded are inherently more important than tasks at which they have failed (Tesser & Paulhus, 1983). This measure does not involve claiming to be better than one is but rather involves minimizing one's weaknesses and maximizing one's strengths. To create an individual difference measure that assesses this type of self-serving processing, we presented people with two novel tasks and gave them success feedback on one and failure feedback on the other. The novelty of the tasks was important for two reasons. First, it increased the likelihood that participants would believe the false feedback, and second, it ensured that they would have no basis for knowing whether the tasks were important or trivial. In contrast to Tesser and Paulhus (1983) however, we did not give participants the impression that the tasks were particularly meaningful. Rather, the tasks were described as newly developed, and we explained that we were not exactly sure what they measured. Our goal in changing this aspect of Tesser and Paulhus's procedure was to decrease the overall magnitude of participants' self-serving bias as participants should be less likely to be self-serving on a relatively meaningless task (see Tesser & Paulhus, 1983). With this omission, it thereby seemed more likely that we would create a normally distributed measure of ego-relevant self-serving processing that avoided ceiling effects.

It also seemed likely that the tendency to show self-serving processing in the face of such a relatively unimportant ego threat would be more likely to be related to the tendency to show self-serving processing in the face of a relatively unimportant extrinsic threat (freeing oneself from a relatively short and boring math task). It seemed possible that if we were to emphasize task importance to a degree that led most people to show a self-serving bias, the relationship between self-serving processing across these disparate domains might be obscured. For this reason, the decision was made not to emphasize the importance of the novel tasks. Self-serving processing was measured in this procedure as the degree to which people claimed (or did not claim) that the task at which they had succeeded tapped more important qualities than the task at which they had failed. The goal of the first experiment was to assess whether self-serving processing in response to an ego threat correlated with self-serving processing in response to an extrinsic threat.

EXPERIMENT 1

Method

Participants. In Experiment 1, 108 students participated in partial fulfillment of course requirements for introductory psychology. Each participant completed the experiment in a private cubicle.

Procedure. Participants were told that we were in the process of developing several computerized tasks that were previously paper-and-pencil measures. The first task was a Mental Math Task,[1] which consisted of two sets of 10 equations, with the two sets separated by a brief break. Each equation in each set contained 10 numbers (ranging from 1 to 20) that participants were to add or subtract. Participants were told that if they answered a problem incorrectly, it would reappear on the screen until they provided the correct answer. Thus, all participants had to provide a correct answer to all 20 questions to complete the Mental Math Task.

Participants were directed to hit the spacebar immediately upon presentation of each equation so that a response box would appear on the screen and were told that as soon as the response box appeared they would be given as much time as they needed to solve the equation. They were specifically told that they should not try to solve the problem prior to hitting the spacebar, but rather they were to hit the spacebar first, thereby causing the response box to appear, and then they were to solve the problem. They were also informed that in this early stage of program development there was still a bug in the software whereby if they took too long to hit the spacebar, the correct answer would appear on the screen. This "bug" was purportedly a feature of the program that our programmer had inserted while testing the program to facilitate rapid progression through the experimental procedures but had forgotten to remove. Participants were told that for the first set of equations (which we refer to as the "slow math set"), this software bug was not a major problem as they had plenty of time to hit the spacebar before the solution would appear (the actual delay was 10 seconds). For the second set of equations (which we refer to as the "fast math set") however, participants were warned that the software bug was more difficult to avoid as the solution would appear if the spacebar was not hit within 1 second after the equation appeared. The experimenter emphasized that such a small amount of time may make it difficult for some people to hit the spacebar quickly enough. The experimenter also noted that it was important to try to hit the spacebar as rapidly as possible as we would have no way of knowing whether the software bug disrupted the experimental procedure, thereby invalidating their data.

After completing the Mental Math Task, participants were told that the next tasks were being conducted in conjunction with a local mental hospital trying to understand how accurate diagnoses are made. In a counterbalanced order, participants were presented with a Suicide Note Task and a Schizophrenic Definitions Task. Each task was described in very abstract terms—the qualities and traits measured by each task were not delineated, neither was the importance of doing well on either task emphasized. For the Suicide Note Task, participants read a series of 26 suicide notes, some of which were real and some of which were fake (Ross, Lepper, & Hubbard, 1975). After reading each note, participants were asked to indicate whether the note was real or fake. For the Schizophrenic Definitions Task, participants read a series of 26 word definitions that displayed moderately disordered thinking (Manis & Paskewitz, 1984). After reading each definition, participants were asked to indicate whether it was provided by a patient who was schizophrenic or not. Upon completion of these tasks, participants received false feedback about their performance such that in a counterbalanced fashion, they were told they did well on one task (top 17%) and poorly on the other (bottom 28%). After participants received this feedback, they were asked to rate how important the skills are that are necessary to complete each task successfully. Responses to these two questions were made on a 7-point scale, ranging from *very unimportant* (1) to *very important* (7).

Participants were then thoroughly probed for suspicion following a funnel debriefing procedure. First, they were asked whether anything seemed strange or unusual in the experiment. Next, they were asked what they thought the experiment was attempting to demonstrate. Last, they were told that the experiment was not really concerned with validating computerized tasks and were asked to guess what the true goal might have been. Although some participants in all three experiments voiced suspicions at this third stage, none raised the issue of the math tasks and the unintentional display of answers (indeed, several participants complained to the experimenter about the difficulty of hitting the spacebar within 1 second). The only systematic suspicions that were raised focused on the accuracy of the feedback on the two novel tasks as some participants wondered if perhaps we were trying to make them feel bad or good via the feedback. Inclusion or elimination of the data of participants who voiced suspicions about the nature of the feedback did not impact any of the findings reported next, so all participants' data were included.

Results

The first question was whether participants cheated on the slow and fast math tasks. Consistent with the onerous nature of the tasks and with the verisimilitude of our claim that we would not be able to ascertain whether participants had seen the correct answers, substantial cheating occurred on both math tasks. Of the 10 problems in each series, participants waited for the answer to appear prior to hitting the spacebar on an average of 3.97 problems in the slow math set (SD = 3.54, range = 0 [18% of sample] to 10 [12% of sample]) and 4.93 problems in the fast math set (SD = 3.52, range = 0 [9%] to 10 [18%]), indicating significant cheating in both conditions, ps < .001, and greater cheating in the fast math set than the slow math set, $F(1, 107) = 14.78$, $p < .001$.

The next question was whether participants on average displayed a self-serving bias when rating the importance of the tasks at which they had succeeded and failed. Because we did not emphasize the importance of the two tasks, it was unclear whether most participants would be self-serving. Ratings of the importance of the two tasks were subjected to a 2 (task) × 2 (feedback) within-subjects ANOVA. This analysis did not reveal an interaction between task and feedback, $F < 1$, *ns*, suggesting that no overall self-serving bias emerged on this measure. To create an idiographic measure of self-serving processing, a difference score was then computed whereby the rated importance of the task at which participants had ostensibly failed was subtracted from the rated importance of the task at which they had ostensibly succeeded. Consistent with the absence of a significant interaction, this difference score had a mean of –.03 (suicide notes task, $M = 4.51$, $SD = 1.68$; word definitions task, $M = 4.61$, $SD = 1.39$). Thus, it appears that although people rated both tasks as being of moderate importance, there was certainly no ceiling effect on the self-serving processing measure, and neither did most of the participants show a self-serving pattern of importance ratings.

The final and central question in the analysis was whether the extent to which participants showed self-serving processing predicted residual cheating on the fast but not the slow math task. To address this question, a regression analysis was conducted in which cheating on the fast math task was the dependent variable and cheating on the slow math task was entered as the first predictor, followed by the differential importance score (i.e., the self-serving processing measure) as the second predictor. The goal of this analysis was to partial out the degree to which participants were intentionally cheating (which they could obviously do on both the slow and fast math tasks but presumably accounted for nearly 100% of the cheating on the slow math task) and assess whether differential importance predicted residual variance in cheating on the fast math task beyond that predicted by the slow math task. Thus, this analysis was intended to remove the intentional cheating component from the fast math task, leaving only error variance and rationalization as the basis for the residual variance in cheating. Consistent with predictions, differential importance added significant variance to the prediction of cheating on the fast math task ($\beta = .14$, $R^2 \Delta = .02$, $p < .04$) beyond that predicted by cheating on the slow math task ($\beta = .71$, $R^2 \Delta = .49$, $p < .001$).[2] Furthermore and importantly, this regression equation was not reversible. That is, when cheating on the fast math task and differential importance were used to predict cheating on the slow math task, differential importance did not predict residual variance in cheating on the slow math task ($\beta = -.03$, $p > .65$) beyond that predicted by cheating on the fast math task ($\beta = .74$, $p < .001$).

Although this analytic strategy of focusing on residual cheating demonstrates most clearly the relationship between self-serving processing and rationalized cheating, it has the disadvantage of not indicating whether differences in cheating emerge between those who show a self-serving bias and those who do not. Thus, as a secondary analytic strategy, we also compared levels of cheating in both the slow and fast math tasks between those who were self-serving (difference score > 0; $n = 32$) and those who were not (difference score ≤ 0; $n = 76$). Despite the rather imprecise nature of this analysis, it revealed that self-serving participants showed greater cheating on the fast math task ($M = 6.31$, $SD = 3.32$) than non-self-serving participants ($M = 4.34$, $SD = 3.46$), $t(106) = 2.74$, $p < .01$. No reliable differences emerged in cheating on the slow math task between self-serving ($M = 4.62$, $SD = 3.43$) and non-self-serving participants ($M = 3.70$, $SD = 3.58$), $t(106) = 1.24$, $p > .20$. This analysis is rather imprecise as not all cheating on the fast math task represents rationalized cheating, but it nonetheless provides additional evidence that people who show ego-relevant self-serving processing are also likely to display self-serving cheating when this behavior can be rationalized.

Discussion

The results of Experiment 1 suggest that self-serving processing in response to an ego threat predicts self-serving processing in response to an extrinsic threat. In particular, the tendency to evaluate a task at which one succeeded as more important than a task at which one failed predicted the tendency to cheat on a math task when that cheating could be justified as accidental but not when that cheating was obviously purposeful. Although this relationship was quite small, given the large discrepancy between the two tasks (cheating on a math task vs. aggrandizing success/minimizing failure on the suicide notes/word definitions tasks), the emergence of such a relationship seems noteworthy nonetheless.

A major advantage of the approach of analyzing residual scores in cheating on the fast math task after partialling out cheating on the slow math task is that it allows an assessment of cheating in a context that is conducive to rationalization while simultaneously removing variance accounted for by intentional cheating. This analytic strategy has an added advantage in that it also diminishes the likelihood that cheating and self-serving processing are related because the former is somehow causing the latter. That is, one could argue that cheating might have made people feel guilt or other negative affect and that those who cheated resolved these negative feelings by being self-serving in their attributions about the task that followed. This explanation might be possible if cheating were operationalized as the amount of cheating on either task, but it seems untenable when considering residual cheating on the fast math task. Indeed, such an explanation would be most likely to account for a relationship (which did not emerge) between cheating on the slow math task, which is very difficult to justify, and the self-serving processing measure.

Finally, it is worth pointing out that the current experiment did not reveal any evidence for an overall self-serving bias across participants. As mentioned earlier, it seems likely that a robust self-serving bias did not emerge on the differential importance measure because the meaningfulness of the two novel tasks was never emphasized to participants, and thus many of them probably felt little need to stress the importance of their success over their failure. For the purposes of the current research, however, the absence of a strong self-serving bias may be beneficial as it increases the variance and thus the utility of the idiographic measure of self-serving processing. Perhaps more important, because the cheating measure involved a task that was not terribly important (i.e., the cheating simply enabled participants to save a little time and effort), it may be the case that the relatively equivalent (in this case, rather low) importance of each task increases the probability that a relationship between them will emerge. If the self-serving processing task were designed to be of high importance and yet the rationalized cheating task was of low importance, then their incommensurate importance levels might reduce the likelihood that a relationship would emerge between them. For this reason, no effort was made in subsequent experiments to increase the perceived meaningfulness of the two novel tasks and the consequent likelihood that most participants would show a self-serving bias.

EXPERIMENT 2

The findings from Experiment 1 were as predicted, but one issue that was not addressed was whether self-serving processing predicts variance in rationalized cheating beyond that predicted by a relevant self-report measure. Because the rationalized cheating measure seemed like it might involve self-deceptive processes, it was deemed worthwhile to assess whether the measure of self-serving processing would predict variance in rationalized cheating beyond that predicted by a self-report measure of self-deception. Thus, the goals of Experiment 2 were to assess whether a self-report measure of self-deception also predicts unique variance in our measure of rationalized cheating and to assess whether self-serving processing predicts unique variance in rationalized cheating beyond that predicted by such a self-report scale.

Method

Participants. In this experiment, 52 students participated in partial fulfillment of course requirements for introductory psychology.

Procedure. The materials and procedure of Experiment 2 were identical to that of Experiment 1 with the exception that after completing the math tasks and the self-serving processing tasks, participants completed the 20-item Self-Deception subscale of the Balanced Inventory of Desirable Responding (BIDR-SD; Paulhus, 1991).

Results

Analyses again revealed significant cheating on both the slow and fast math tasks ($ps < .001$) and again greater cheating on the fast task ($M = 4.14$, $SD = 3.55$, range = 0 [15% of sample] to 10 [17% of sample]) than the slow task ($M = 3.10$, $SD = 3.15$, range = 0 [21%] to 10 [10%]), $F(1, 51) = 12.33$, $p < .001$.

Consistent with Experiment 1, participants in this experiment did not show evidence of a self-serving bias (interaction between task and feedback, $F < 1$, *ns*). A differential importance score was computed as in Experiment 1, with a mean of .06 (suicide notes task, $M = 4.27$, $SD = 1.69$; word definitions task, $M = 4.56$, $SD = 1.09$).

The central question of this experiment was whether self-serving processing predicted independent variance in rationalized cheating beyond that predicted by the BIDR-SD. To address this question, a regression analysis was conducted in which cheating on the fast math task was the dependent variable and cheating on the slow math task was entered as the first predictor, followed by the Self-Deception subscale, followed by the differential importance measure. Consistent with predictions, differential importance added significant variance to the prediction of cheating on the fast math task ($\beta = .19$, $R^2\Delta = .03$, $p < .03$) beyond that predicted by cheating on the slow math task ($\beta = .76$, $R^2 = .65$, $p < .001$) and the BIDR-SD ($\beta = .11$, $R^2\Delta = .02$, $p > .10$).[3] As in Experiment 1, this regression equation was not reversible. When cheating on the fast math task and differential importance were used to predict cheating on the slow math task, differential importance did not predict residual variance in cheating on the slow math task ($\beta = -.09$, $p > .30$) beyond that predicted by cheating on the fast math task ($\beta = .85$, $p < .001$) and the BIDR-SD ($\beta = -.07$, $p > .40$). Correlational analyses further revealed that scores on the BIDR-SD were not correlated with cheating on either task or with the differential importance score ($rs \leq .21$, $ps > .10$).

Finally, as in Experiment 1, we also compared levels of cheating in both the slow and fast math tasks between those who were self-serving ($n = 18$) and those who were not ($n = 34$). Consistent with Experiment 1, this analysis revealed that self-serving participants showed greater cheating on the fast math task ($M = 5.61$, $SD = 3.28$) than non-self-serving participants ($M = 3.35$, $SD = 3.58$), $t(50) = 2.27$, $p < .03$. A marginally significant difference also emerged in cheating on the slow math task between self-serving ($M = 4.11$, $SD = 3.61$) and non-self-serving participants ($M = 2.56$, $SD = 2.79$), $t(50) = 1.72$, $p < .10$.

Discussion

The results of Experiment 2 replicate and extend those of Experiment 1 in that self-serving processing predicted rationalized cheating beyond the degree to which it was predicted by a widely used self-report measure of self-deception, the BIDR-SD. Indeed, the BIDR-SD failed to predict rationalized cheating in this experiment. The fact that the BIDR-SD has been shown to predict other behaviors that appear self-deceptive (e.g., positive reappraisal, illusion of control, and overconfidence; Paulhus, 1991) suggests either that rationalized cheating does not involve self-deception or that the BIDR-SD may predict ego-relevant self-deception more readily than it predicts the type of rationalization involved in the cheating task (which only provides an extrinsic benefit to the self).

An alternative possibility is that the lack of a relationship between the BIDR-SD and our cheating measure suggests that the residual cheating measure is a poor measure of rationalization. Thus, it seems worthwhile to address concerns about the validity of the rationalized cheating measure. According to the logic presented earlier, we are suggesting that in addition to intentional cheating, some rationalized cheating was also occurring on the fast Mental Math Task, which explains why cheating rates were higher in the fast set than in the slow set. Recall that participants completed the experiment alone in a cubicle and thought that the experimenter would have no idea how many of the answers were actually seen. Thus, it makes sense that some of the increase in cheating from the slow task to the fast task represents rationalization: People cheated more because they misled themselves into believing that they were unable to hit the spacebar within the 1-second time frame that would have prevented the answer from appearing. The untested crux of this argument however is that people actually have the ability to hit the spacebar within the 1-second time frame in the context of this experiment. Although ample research demonstrates that people are capable of making such a contingent motor response within 1 second, a demonstration of this ability within the present paradigm is also important. In addition, demonstrating that people are able to hit the spacebar within 1 second when it is advantageous to them to do so would strengthen the claim that the cheating measure really does assess rationalization.

To accomplish this goal, Experiment 3 contained an additional series of math tasks in which participants were required to hit the key quickly to prevent the math problems from becoming more difficult. According to our predictions, the measure of self-serving processing should predict inability to respond within 1 second when the answer is thereby caused to appear but not inability to respond within 1 second when the problem is thereby made more difficult.

Inclusion of this measure also addresses an alternative explanation for the findings of Experiments 1 and 2. It could be argued that there is something unique about the people who showed self-serving processing that prevents them from hitting the spacebar within 1 second. That is, maybe the reason that self-serving processing was correlated with cheating on the second task had nothing to do with rationalization but was just driven by the inability of self-serving participants to respond quickly enough. The inclusion of this new measure can rule out this possibility.

Another alternative explanation for the results of Experiments 1 and 2 is that the relationship between self-serving processing and rationalized cheating is actually a spurious correlation driven by some participants thinking too much. That is, it is possible that participants who appear to be self-serving are simply high in need for cognition, and thus they thoughtfully compared their current success and failure to their past performance and determined that the tasks at which they succeed tend to be more important than the tasks at which they fail. These same thoughtful individuals might then forget to hit the spacebar when confronted with the math problems in the fast set because they get absorbed in solving the problem and forget to hit the spacebar to prevent the answer from appearing. To rule out this possibility, the Need for Cognition Scale (Cacioppo & Petty, 1982) was included in Experiment 3. According to our predictions, need for cognition should be unrelated to the idiographic measure of self-serving processing, and if any relationship emerges between need for cognition and cheating it should be a negative one (i.e., people high in need for cognition should avoid cheating as they enjoy solving problems).

EXPERIMENT 3

Method

Participants. In this experiment, 143 students participated in partial fulfillment of course requirements for introductory psychology.

Procedure. The materials and procedure of Experiment 3 were identical to that of Experiment 2 up through the administration of the BIDR-SD. Following this scale, participants completed the Need for Cognition Scale and then a second series of math equations. For this second series of math equations, participants were told that the task would combine mental and physical prowess by requiring them to hit a key very quickly and then solve an equation. Participants were told that they would encounter a series of equations that consist of 4 numbers each, but if they took too long to hit the spacebar to initiate the response box, this equation would be replaced by an equation that contained 10 numbers. As with the first math tasks, these equations were split into two sets of 10 equations. In Set 1, participants were allowed 10 seconds to hit the spacebar without consequence, whereas in Set 2 they were allowed only 1 second to hit the spacebar. Because it might have seemed odd to give participants such a long time to respond in an ostensible measure of physical prowess, participants were told that Set 1 of this task would be easy and was intended as a warm-up for Set 2, where they would only have 1 second to hit the spacebar before their 4-number equation was replaced by a 10-number equation. They were also told that after hitting the key they would have as much time as they needed to calculate the solution.

Results and Discussion

Consistent with Experiments 1 and 2, no evidence emerged for a self-serving bias (interaction between task and feedback, $F < 1$, *ns*). Differential importance was computed as in Experiments 1 and 2, with a mean of .06 (suicide notes task, $M = 4.63$, $SD = 1.54$; word definitions task, $M = 4.64$, $SD = 1.29$).

Analyses again revealed significant cheating on both the slow and fast math tests ($ps < .001$) and again greater cheating on the fast test ($M = 3.59$, $SD = 3.28$, range = 0 [20% of sample] to 10 [8% of sample]) than the slow test ($M = 2.39$, $SD = 2.79$, range = 0 [29%] to 10 [4%]), $F(1, 142) = 40.29$, $p < .001$. Despite this relative inability to hit the spacebar in a timely fashion during the first two math series, participants nevertheless responded more quickly during the second two math series when failure to hit the spacebar caused the problems to become more difficult. In the second series, participants only failed to hit the spacebar an average of .11 times in the slow test ($SD = .40$, range = 0 [91% of sample] to 3 [1% of sample]) and .84 times in the fast test ($SD = 1.66$, range = 0 [58%] to 10 [2%]). Despite their small size, these means were significantly different from zero ($ps < .01$) and also different from each other, $F(1, 132) = 26.51$, $p < .001$.[4] This finding suggests that although it was at least somewhat difficult for participants to always hit the spacebar quickly enough, 1 second is adequate time to make this response for most people almost all of the time.

Because failure to hit the spacebar in a timely fashion in the second series of math equations made the problems more difficult, this failure rate can be interpreted as each participant's baseline error rate, or inability to hit the spacebar within the necessary time parameters. By subtracting each participant's error rates from their cheating rates, this measure allows a test of the hypothesis that the increase in cheating from the slow to the fast math task represents the addition of rationalized cheating and not just the addition of error. To test this possibility, failures to hit the spacebar in the second slow and fast math tasks were subtracted from failures to hit the spacebar in the first slow and fast math tasks, respectively (with a minimum value for these difference scores set at zero). These difference scores were then compared and found to differ significantly from one another, $t(132) = 2.61$, $p = .01$. This finding suggests that the fast math task is indeed tapping differential cheating rates and not simply an inability to hit the spacebar within the 1-second time constraints.

As in Experiment 2, the BIDR-SD was not correlated with differential importance or with cheating on either the slow or fast math task, and neither did it predict allowing the problems to become more difficult in either the slow or fast math task ($rs \leq .14$, $ps > .10$). Need for cognition was not associated with the differential importance score ($r = -.01$, *ns*), but it was correlated positively with the Self-Deception subscale ($r = .20$, $p < .03$). As predicted, need for cognition was correlated negatively with cheating on both the slow ($r = -.22$, $p < .01$) and fast ($r = -.23$, $p < .01$) math tasks and was unrelated to allowing the problems to become more difficult in both the slow ($r = -.13$, $p > .10$) and fast math tasks ($r = -.01$, *ns*).

Most important, regression analyses again revealed that differential importance predicted significant variance in cheating on the fast math task ($\beta = .12$, $R^2\Delta = .02$, $p < .05$) beyond that predicted by cheating on the slow math task ($\beta = .75$, $R^2 = .55$, $p < .001$), the Self-Deception subscale ($\beta = .00$, $R^2\Delta = .00$, *ns*), and need for cognition ($\beta = -.06$, $R^2\Delta = .00$, $p > .30$).[5] In addition, when the variables of allowing the problems to become more difficult in the slow and fast tasks were added to this equation as predictor variables, neither accounted for significant variance in cheating on the fast math task, and differential importance remained a significant predictor ($\beta = .12$, $p = .05$). These results emerged despite reliable bivariate correlations between failure to hit the spacebar in time on the fast math task and failure to hit it in time on the slow ($r = .22$, $p < .05$) and fast ($r = .26$, $p < .01$) tasks in which the problems became more difficult. These findings again suggest that the fast math task taps differential cheating rates rather than an inability to hit the spacebar rapidly enough.

As in Experiments 1 and 2, these regression equations were not reversible. When cheating on the fast math task and differential importance were used to predict cheating on the slow math task, differential importance actually predicted a significant decrease in residual cheating on the slow math task ($\beta = -.17$, $p < .01$) beyond that predicted by cheating on the fast math task (β = .73, p < .001), the Self-Deception subscale (β = –.01, p > .85), and need for cognition (β = –.06, p > .30). When this regression analysis was conducted with the dependent variable of allowing the problem to become more difficult in the fast math task, the only significant predictor was allowing the problem to become more difficult in the slow math task (β = .19, R^2 = .04, p < .04).

Finally, as in Experiments 1 and 2, we also compared levels of cheating in both the slow and fast math tasks between those who were self-serving (n = 48) and those who were not (n = 95). Inconsistent with Experiments 1 and 2, this analysis failed to reveal differences in cheating on the fast math task between self-serving participants (M = 3.44, SD = 3.23) and non-self-serving participants (M = 3.67, SD = 3.32), t(141) = .40, p > .65. Similarly, no differences emerged in cheating on the slow math task between self-serving participants (M = 2.04, SD = 2.65) and non-self-serving participants (M = 2.56, SD = 2.85), t(141) = 1.05, p > .25. This failure to replicate the prior experiments despite the consistency in the prediction of residual cheating may reflect the insensitive nature of this test. Alternatively, this failure to replicate may implicate a suppression effect, which is suggested by the presence of a partial correlation between differential importance and cheating on the fast task in the absence of a bivariate relationship between these variables.

In sum, the results of Experiment 3 are consistent with the findings from Experiments 1 and 2 in that self-serving processing again predicted residual cheating on the fast math task. Because need for cognition was not correlated with our self-serving processing measure and was negatively correlated with cheating, these findings suggest that the "thoughtful" reinterpretation of people's responses on the self-serving processing measure is unlikely. This study also provides an important addition to the earlier findings by demonstrating that when failure to respond quickly hurt rather than helped participants, the relationship between self-serving processing and task performance melted away. In so doing, these results suggest that the earlier findings were not an artifact of an inability on the part of some participants to respond quickly enough. Indeed, the results of Experiment 3 indicate that when baseline error rates were removed from responses, participants still showed an increase in cheating in the task that allowed rationalization, in a particularly conservative test of the hypothesis. In this procedure, participants who were able to rationalize failing to respond in a timely fashion in the first math task were then confronted with an almost identical math task in which self-interest now pushed them into quick responding. It is possible that the similarity in circumstances may have forced at least some participants to maintain their rationalization, requiring them to show internal consistency in their response patterns and thereby necessitating an occasional error to sustain the fiction that they were unable to react quickly enough in the earlier task.

GENERAL DISCUSSION

The results of three experiments are consistent with the prediction that self-serving information processing emerges in a manner that is consistent across disparate domains. Across three studies, people who rated a verbal task at which they succeeded as more important than a verbal task at which they failed tended to cheat on a series of math problems. Because this relationship between self-serving processing and cheating only emerged when people could rationalize the cheating to themselves, these findings highlight the importance of individual differences in motivated information processing. Thus, the current results suggest that motivation may play a more substantial role in the information processing of some individuals than others, at least with regard to the self. Because biased processes have also been shown to be interrelated with regard to evaluations of members of other groups (von Hippel, Sekaquaptewa, & Vargas, 1997), these findings suggest that there may be reliable individual differences in the tendency to engage in motivated social cognitive processes. Whether such motivated processes in one domain (e.g., evaluating the self) predict motivated processes in an entirely different domain (e.g., evaluating members of other groups) remains to be seen.

In addition to the theoretical aspects of these results, the current findings also provide evidence concerning the empirical tractability of a procedure designed to tap rationalization processes. Given the private nature of the Mental Math Task in the current studies, there was no reason for participants not to cheat to a similar degree on the slow math task as they did on the fast math task. After all, participants worked independently in private rooms, and they were told that the experimenter would not know whether they had seen any of the answers. Testifying to their belief in this claim is the substantial cheating that emerged in both the slow and fast math tasks. Had participants been truly concerned that the experimenter would check whether they were cheating, they are highly unlikely to have cheated to such a degree on the slow math task, which is almost impossible to construe as unintended.

Thus, the most plausible explanation for the differential cheating is that participants justified waiting for the answers in the fast condition by telling themselves that they simply could not hit the spacebar in time to avoid seeing the answer. The results from the task in which the problems became more difficult indicate that this is a fiction, as these same participants were quite capable of rapidly hitting the spacebar when it facilitated rather than interfered with their goals. The fact that they were quicker in hitting the spacebar when it helped them to do so rather than hurt them also provides additional evidence that they were engaged in rationalization rather than self-presentation in the original Mental Math Task, as a strategy of self-presentation would lead them to maintain the fiction that they simply cannot respond quickly enough.

In combination, these results suggest that the rationalized cheating task may provide a state measure of self-deception (as in Gur & Sackeim, 1979; Sackeim & Gur, 1978), although it seems to be unrelated to trait-level indicators of self-deception (Paulhus, 1991). Participants in the current experiments did not want to complete the onerous math problems, and their "inability" to hit the spacebar in a timely fashion allowed them to avoid the difficult task without feeling negative affect such as guilt. Whether the rationalization involved in this task represents true self-deception is a question that requires additional research and may indeed be unanswerable, but all the evidence suggests that participants' inability to hit the spacebar quickly enough was at the very least a convenient fiction that probably received little scrutiny on their part.

NOTES

1. The program for running the Mental Math Task and the associated instructions are available for downloading at http://www.psy.unsw.edu.au/Users/BHippel/. Any questions about the program should be directed to shakarchi.1@osu.edu.

2. Differential importance showed a marginally significant correlation with cheating on the slow task, $r = .16$, $p < .10$, and a significant correlation with cheating on the fast task, $r = .26$, $p < .01$. Cheating rates on the slow and fast tasks were correlated, $r = .73$, $p < .001$.

3. Differential importance was not significantly correlated with cheating on the slow task, $r = .19$, $p > .15$, but was correlated with cheating on the fast task, $r = .35$, $p < .02$. Cheating rates on the slow and fast tasks were correlated, $r = .80$, $p < .001$.

4. For assorted reasons, 10 participants failed to complete this final task (e.g., they arrived late and the session was over by this point, they reported being late for class, or they took more than an hour to complete the experiment).

5. Surprisingly, differential importance was negatively correlated with cheating on the slow task, $r = -.17$, $p < .05$, and uncorrelated with cheating on the fast task, $r = .00$, $p > .95$. Cheating rates on the slow and fast tasks were correlated, $r = .73$, $p < .001$.

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