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The Misery-Is-Not-Miserly Effect Revisited:
Replication Despite Opportunities for Compensatory Consumption

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21 **Abstract**

22 Sadness increases how much decision makers pay to acquire goods, even when decision
23 makers are unaware of it. This effect is coined the “misery-is-not-miserly effect.” The paper that
24 first established this effect is the second most-cited article appearing in *Psychological Science* in
25 2004. In light of its impact, the present study sought to assess whether the misery-is-not-miserly
26 effect would replicate (a) in a novel context and (b) even when another way of alleviating a sense
27 of loss (i.e., compensatory consumption) was available. Results revealed that the effect replicated
28 in the novel context and, despite a prediction otherwise, even when individuals had an
29 opportunity to engage in compensatory consumption. Moreover, a meta-analysis of the original
30 effect and that observed in the present study yielded a small-to-medium effect (Cohen’s $d =$
31 0.43). As such, the present study lends evidentiary support to the misery-is-not-miserly effect
32 and provides impetus for future research exploring the impact of sadness on consumer decision-
33 making, specifically, and of emotion on decision processes, more generally.

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43 **Introduction**

44 Lerner, Small, and Loewenstein [1] discovered that sad individuals are willing to forego
45 more money in exchange for a commodity than are individuals in a neutral state, a psychological
46 phenomenon dubbed the “misery-is-not-miserly” effect [2]. Drawing on William James’s
47 concept of “the material self,” Cryder et al. [2] predicted that self-oriented salience of loss might
48 be the mechanism via which sadness impacts decision-making. Namely, the authors reasoned
49 that sadness triggers an implicit goal to replace what has been lost, perhaps by purchasing new
50 possessions. In line with this reasoning, Cryder et al. [2] found that self-focus mediated the
51 relationship between sadness and buying price.

52 Despite several demonstrations of the misery-is-not-miserly effect [1, 2] and
53 identification of self-focus as a mediator [2], many questions about the phenomenon remain.
54 Perhaps the most central question about the misery-is-not-miserly effect is whether it is reliable,
55 given that it runs counter to predictions from valence-based and mood-congruent theories of
56 decision-making. According to these theories, negative-valenced states lead people to perceive
57 objects in a globally pessimistic or devalued way (for reviews, see [3, 4, 5]). According to this
58 line of reasoning, sadness – a negatively-valenced emotion – should depress valuations of
59 prospective purchases, not increase them as observed empirically with the misery-is-not-miserly
60 effect [1, 2]. Given that the misery-is-not-miserly effect runs counter to mood-congruent
61 theories, it is important to test whether the effect replicates across contexts (e.g., with slight
62 variations on emotion inductions and the choice price task). The present research aimed to do so.

63 Another key question about the misery-is-not-miserly effect stands in regard to its
64 stability in the face of factors that might attenuate the impact of sadness on decision-making. If
65 the effect of sadness on choice price arises as a form of compensatory consumption (for a

66 review, see 6) then perhaps the opportunity to consume something else (e.g., tasty food) might
67 diminish the impact of sadness on choice price. At least one line of evidence lends support to this
68 idea. Garg and Lerner [7] demonstrated that offering individuals the opportunity to engage in
69 behaviors that increased their sense of control tempered sadness' downstream impact on
70 decision-making. Specifically, Garg and Lerner [7] found that offering participants an active
71 choice alleviated the helplessness associated with sadness (see [8, 9]) and, in turn, attenuated the
72 tendency for people in a sad state to over-consume comfort food. Other research also supports
73 the control-enhancing (thus helplessness-reducing) impact of engaging in choice [10].

74 In the present research, we thus also sought to test whether compensating for the sense of
75 loss (rather than helplessness) associated with sadness might temper the impact of sadness on
76 decision-making. Prior research by Garg and colleagues has shown that sad individuals consume
77 more hedonic food (e.g., buttered popcorn and candy) compared to those in neutral or happy
78 affective states [11]. Tice, Bratslavsky, and Baumeister [12] also found negative affect increased
79 consumption of unhealthful, fatty snack foods. These findings are consistent with a mood repair
80 explanation [13]. We thus hypothesized that the opportunity to engage in compensatory
81 consumption (e.g., eating buttered popcorn and drinking a beverage) would attenuate the misery-
82 is-not-miserly effect.

83 **Materials and methods**

84 **Overview**

85 In the critical conditions of the original study [1], participants first watched either a
86 sadness-inducing clip from *The Champ* or a control video from a National Geographic
87 documentary. Participants then engaged in a choice price task.

88 The present study examined the effects of sadness on choice prices with a different set of
89 emotion induction videos (clips from *Steel Magnolias* and *Blue Planet* to induce sadness relative
90 to a neutral state, respectively) and a different commodity (a water bottle as opposed to a
91 highlighter set). *Steel Magnolias* has been found to be effective in arousing sadness [14, 15, 16,
92 17, 18]. Similarly, water bottles have been used as commodities in prior consumer decision-
93 making research stemming from the misery-is-not-miserly research [2]. In line with broader calls
94 for replications in the field, establishing whether the misery-is-not-miserly effect replicates with
95 these methodological changes represents an important test [19].

96 Key similarities and differences between the original study and the current research are
97 presented in Table 1. Note that aside from the methodological changes described in Table 1 and
98 the addition of a compensatory consumption opportunity in the consumption condition, all
99 efforts were made to follow the paradigm of the original study. We report how we determined
100 our sample size, as well as all data exclusions, manipulations, and measures in the study. Data
101 and analyses scripts can be found on the Open Science Framework (<https://osf.io/wsz2y/>). This
102 research was conducted with the approval of the Institutional Review Board at Carnegie Mellon
103 University and meets the ethics criteria outlined by the American Psychological Association.

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111 **Table 1. Comparison between the Present Study and Lerner et al. [1]**

	Lerner et al. [1]	The present study
<i>Design and Methodology</i>		
Nature and setting	Lab experiment	Lab experiment
Sample size and type	199 university students (appx. 33/condition)	111 university students (appx. 27/condition)
Overall study design	3 (emotion) x 2 (task)	2 (emotion) x 2 (hedonic consumption) x 1 (task)
	Emotion: sadness vs. disgust vs. neutral	Emotion: sadness vs. neutral
		Consumption opportunity: absent vs. present
	Task: choice price vs. sell price	Task: choice price
Emotion induction	Videos:	Videos:
	<i>The Champ</i> (sadness)	<i>Steel Magnolias</i> (sadness)
	<i>Trainspotting</i> (disgust)	<i>Blue Planet</i> (neutral)
	National Geographic doc. (neutral)	
Commodity	Highlighter set	Water bottle
<i>Results – Sadness vs. Neutral</i>		
Choice price	$d = 0.49$	$d = 0.40$

113 **Participants**

114 One hundred and eleven undergraduate student participants (60 female, 49 male, 2 gender
115 not indicated; $M_{\text{age}} = 21.47$, $SD_{\text{age}} = 3.70$) completed the study in exchange for course credit.
116 Sample size was determined via time constraints on data collection. After providing written
117 informed consent, participants were seated in private cubicles equipped with computers and
118 headsets, allowing no visual access to other participants.

119 **Design and procedure**

120 Participants were randomly assigned to one of four conditions in a 2 (emotion: neutral vs.
121 sad) x 2 (compensatory consumption opportunity: present vs. absent) design. Participants first
122 completed the Positive and Negative Affect Schedule (PANAS; [20]) as a measure of baseline
123 affect. Two things are of note: (1) PANAS items were interspersed with several other items not
124 analyzed for the purposes of this replication, and (2) due to a programming error, the item
125 “inspired” was not included. Responses on the 5-point scale were summed to form an index of
126 baseline affect ($\alpha = .78$). The former was used in an exploratory set of analyses controlling for
127 baseline affect, mirroring Lerner et al. [1] and reported below. Participants next engaged in a
128 video task, during which the manipulations occurred, and then completed measures of the
129 dependent variables.

130 **Manipulations**

131 According to assigned emotion manipulation condition, participants watched either a
132 sadness-inducing clip from the film *Steel Magnolias* or a neutral clip from the nature
133 documentary *Blue Planet*. Both videos were approximately 12 minutes in duration. While
134 watching the videos, participants were either given the opportunity to engage in hedonic

135 consumption or not according to compensatory consumption condition. Specifically, participants
136 in the consumption opportunity conditions were offered buttered popcorn and a beverage under
137 the guise of “better simulating a movie-going experience” (adapted from [11]). Note that in the
138 prior research deploying this compensation opportunity, buttered popcorn was perceived as
139 hedonic [11, see Footnote i]. The amount of popcorn each participant consumed was measured at
140 the end of each session.

141 **Dependent variables**

142 After the video task, participants next engaged in a choice price task. Barring the change
143 in the commodity from a highlighter pen set to a water bottle, the choice protocol exactly
144 replicated that used by Lerner and colleagues [1] with both, the current and the original studies
145 using the Becker, DeGroot, and Marschak [21] price elicitation form. Specifically, participants
146 were shown an insulated, re-usable water bottle and were then asked to indicate on a form
147 whether they preferred the bottle or various cash amounts. The form consisted of 28 lines, each
148 presenting the choice between the water bottle and an increasing cash amount ranging from
149 \$0.50 to \$14.00, in \$0.50 increments. For instance, Line 11 asked participants to indicate
150 whether they preferred the water bottle or \$5.50.

151 Responses on this task typically follow a pattern whereby participants prefer the water
152 bottle over the listed cash amount up to a certain point, after which they flip to consistently
153 indicating a preference for the cash amount. A ‘choice price’ in this case is the point at which the
154 commodity is selected rather than cash; higher choice prices reflect a stronger desire to obtain
155 the commodity. In order to incentivize true valuations and as per Lerner et al. [1], participants
156 understood that, based on a pre-selected ‘price’ for the session, they would ultimately either
157 receive cash or the water bottle at the conclusion of the experiment, according to their indicated

158 choices. For instance, if the previously undisclosed ‘price’ for the water bottle was \$5.50,
159 participants would receive either the water bottle or the cash according to their selection on Line
160 11.

161 Finally, participants completed a suite of self-report questionnaires. One set of questions
162 elicited their preference for activities such as watching a movie and talking to a friend (not
163 analyzed here). They also reported whether they were currently dieting. This question was
164 embedded within a set of questions regarding their eating behaviors before and during the
165 experimental session. Next, participants indicated their current levels of sadness (“gloomy,”
166 “sad,” “downhearted;” $\alpha = .94$) on 9-point scales ranging from 0 (*did not experience the emotion*
167 *at all*) to 8 (*experienced the emotion more strongly than ever before*), interspersed with several
168 filler items assessing other affective states. Note that these items and the scale response were the
169 same as used by Lerner et al. [1], except that “blue” in the original study was replaced with
170 “gloomy” in the present study. One participant did not provide manipulation check data and was
171 hence not included in the analysis of this variable. Participants then provided demographic
172 information before being debriefed.

173 **Results**

174 **Preliminary analyses**

175 A 2 (emotion) x 2 (consumption opportunity) ANOVA on self-reported sadness revealed
176 that the induction was successful with a significant main effect of emotion, $F(1,106) = 211.34$, p
177 $< .001$, $\eta^2 = .67$, 90% CI [.58, .72]. Participants who watched the sadness-inducing video ($M =$
178 4.43 , $SD = 1.80$) reported higher levels of sadness than participants who watched the neutral
179 video ($M = 0.49$, $SD = 0.81$; $d = 2.82$). As expected, this effect was not further qualified by

180 consumption opportunity ($p = .57$), nor was the main effect of consumption opportunity
 181 significant ($p = .08$).

182 **Main analyses**

183 Analysis of choice prices provided the critical test regarding the replication of the misery-
 184 is-not-miserly effect. Descriptive statistics per condition appear in Table 2. A 2 (emotion) x 2
 185 (consumption opportunity) ANOVA revealed a main effect of emotion condition, $F(1,107) =$
 186 4.34 , $p = .04$, $\eta^2 = .04$, 90%CI [.001, .11]. Consistent with Lerner et al. [1], participants who
 187 watched the sadness-inducing video ($M = 6.42$, $SD = 2.74$) indicated higher choice prices on
 188 average compared to participants who watched the neutral video ($M = 5.35$, $SD = 2.72$; $d = 0.40$).
 189 Contrary to the idea that the opportunity for compensatory consumption might diminish the
 190 robustness of the effect, having access to popcorn and a beverage did not impact choice prices (p
 191 $= .89$), nor did it qualify the effect of emotion ($p = .37$). Thus, we found that the misery-is-not-
 192 miserly effect replicated even in the face of an opportunity for compensatory consumption.

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194 **Table 2. Descriptive statistics for choice prices by condition**

	<i>Consumption Opportunity</i>	
	Absent	Present
<i>Emotion</i>		
Neutral	5.61 (2.52)	5.06 (2.96)
Sadness	6.22 (2.81)	6.62 (2.71)

195 Note. Standard deviation values appear in parentheses following mean values.

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197 One reason why we did not observe a moderating effect of consumption opportunity
198 might be due to the fact that not all participants, given the opportunity, actually consumed
199 popcorn. Another reason for the null effect of the consumption condition could be that the dieters
200 experienced the opportunity differently relative to non-dieters. In order to test these alternative
201 explanations, two independent, exploratory ANOVAs excluding participants in the consumption
202 conditions who reported that they were currently dieting ($n = 6$) or participants in the
203 consumption conditions who did not consume any popcorn ($n = 7$), were run on choice prices.
204 The exclusions based on these two criteria were non-overlapping. These analyses revealed
205 findings similar to those reported above. In both, significant main effects of emotion condition
206 ($ps < .03$) on choice prices emerged. These main effects were not further qualified by
207 interactions between emotion and consumption condition ($ps > .23$), nor did a main effect of
208 consumption condition emerge ($ps > .79$). Effect sizes for the emotion effects on choice prices (d
209 = 0.44, 0.41, respectively) in these exploratory analyses were comparable to the main analyses.
210 As a further check, we ran the planned analyses (full sample) with baseline affect as a covariate,
211 following Lerner et al. [1], Footnote 3. All reported results regarding the impact of emotion
212 condition and consumption condition remained unchanged in terms of statistical significance.
213 Thus, we conclude that the effect replicates and is consistent, even after accounting for
214 participants who might not have engaged in compensatory consumption or might not have
215 reacted to the consumption opportunity as people from the general population (non-dieters)
216 would.

217 **Meta-analysis**

218 In order to assess the overall robustness of the misery-is-not-miserly-effect, we carried
219 out a meta-analysis of the effect size of sadness versus neutral on choice prices from Lerner et al.

220 [1] and the present study. Following current recommendations [22], we meta-analyzed the two
221 effects using a fixed effects approach, in which the mean effect size (in r) was weighted by
222 sample size. Raw means were used to calculate relevant effect sizes. Overall, the meta-analyzed
223 effect was significant and non-zero ($M_r = .21$, 95% CI [.06, .36], $Z = 2.80$, $p_{\text{two-tailed}} = .005$), such
224 that sadness led to higher choice prices compared to a neutral state. Conversion to Cohen's d
225 resulted in a meta-analyzed effect size estimate of 0.43 with a 95% confidence interval ranging
226 from 0.12 to 0.77. We note that a fully random effects test of the meta-analyzed effect produced
227 a nearly identical estimate of the effect that was marginally significant ($M_r = .22$, $t(1) = 8.60$,
228 $p_{\text{two-tailed}} = .07$). However, as noted by Goh et al. [22], the fully random effects approach is highly
229 conservative with small numbers of studies, as is the case here.

230 **Discussion**

231 The close conceptual replication and extension study reported here sought to examine the
232 misery-is-not-miserly effect documented by Lerner et al. [1]. Overall, results replicated the
233 effect: sadness increased choice prices. These results were obtained with variations in
234 methodology, affording confidence in the underlying reliability of the effect [19]. Moreover, a
235 meta-analysis of the original effect and that observed in the present study resulted in an effect
236 size estimate with a confidence interval not including zero, further lending evidentiary support
237 for the misery-is-not-miserly effect.

238 The current study also tested whether the opportunity for compensatory consumption
239 would attenuate or negate the impact of sadness on choice prices. Results did not support this
240 possibility: the misery-is-not-miserly effect emerged even among participants who had the
241 opportunity to engage in hedonic consumption. This finding provides theoretical insight into the
242 nature of sadness and its impact on decision-making. Prior literature has found consistent support

243 for sadness' appraisal theme of loss and helplessness [8; 9]. In line with such appraisals, sadness
244 results in compensatory consumption (e.g., hedonic food consumption), in a bid to regulate the
245 negative state [12, 14]. Prior research that has shown that addressing the sense of helplessness
246 innate to sadness via engaging in choice such as in shopping [23] decouples the sadness-choice
247 price link [7]. Leveraging such findings, we predicted that hedonic consumption, by addressing
248 the sense of loss, would similarly moderate the misery-is-not-miserly effect. This prediction was
249 not supported, raising the possibility that sadness' impact on decision-making is driven by its
250 characteristic sense of helplessness, and not loss. Future research might test this hypothesis via
251 studies that both measure and manipulate the proposed mechanisms [24].

252 Of course, a single study enabled testing the effect under only selected parameters,
253 further constrained by our aim to conduct a close conceptual replication. We acknowledge that
254 given the limited inferences that can be drawn from a single study, the null effects obtained for
255 the moderating effect of compensatory consumption should be put to further empirical test.
256 Future research on the misery-is-not-miserly effect might also consider the impact of other
257 operationalizations of sadness, hedonic consumption, and choice price. Further, it will certainly
258 be important for future work to undertake highly-powered replications [25] that recruit more
259 diverse samples than undergraduate students from North America [26]. One promising route for
260 such efforts would be to adopt a multi-lab approach [27; 28].

261 Moreover, in line with a broader goal to establish both commonalities and differences
262 among discrete emotions, it is pivotal that future research include comparisons to other negative
263 emotions (e.g., anger, [23]; disgust, [1]) as well as positive emotions (e.g., pride and gratitude).
264 Another fruitful avenue for future research will be to explore the conditions under which

265 sadness, and indeed other emotions, impact other types of consumer decision-making (e.g.,
266 attitudes and brand preferences [29; 30]).

267 Overall, this work underscores the importance of investigating the role of discrete
268 emotions, corroborating past research across a variety of sub-disciplines of psychology [3, 31,
269 32]. In conclusion, it appears that misery is indeed *not* miserly, and robustly so.

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The Misery-Is-Not-Miserly Effect Revisited:
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21 Abstract

22 Sadness increases how much decision makers pay to acquire goods, even when decision
23 makers are unaware of it, ~~an~~. This effect is coined the “misery-is-not-miserly effect”. The paper
24 that first established this effect is the second most-cited article appearing in *Psychological*
25 *Science* in 2004. In light of its impact, the present study sought to assess whether the misery-is-
26 not-miserly effect would replicate (a) in a novel context and (b) even when another way of
27 alleviating a sense of loss (i.e., compensatory consumption) was ~~offered to sad decision~~
28 ~~makers available~~. Results revealed that the effect replicated in the novel context and, despite a
29 prediction otherwise, even when individuals had an opportunity to engage in compensatory
30 consumption. Moreover, a meta-analysis ~~on~~of the original effect and that observed in the present
31 study yielded a small-to-medium effect ~~of~~ (Cohen’s $d = 0.43$). As such, the present study lends
32 evidentiary support to the misery-is-not-miserly effect and provides impetus for future research
33 exploring the impact of sadness on consumer decision-making, specifically, and of emotion on
34 decision processes, more generally.

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44 Introduction

45 Lerner, Small, and Loewenstein [1] discovered that sad individuals are willing to forego
 46 more money in exchange for a commodity than are individuals in a neutral state, a psychological
 47 phenomenon ~~replicated by Cryder et al. [2] and~~ dubbed the “misery-is-not-miserly” effect [2]. ~~In~~
 48 ~~order to explain the effects, Cryder et al.,~~ Drawing on William James’s concept of “the material
 49 self,” Cryder et al. [2] predicted that ~~the more one dwells on one’s self while self-oriented~~
 50 salience of loss might be the mechanism via which sadness impacts decision-making. Namely,
 51 the authors reasoned that sadness in a sad state, the more salient it becomes that one has suffered
 52 a loss. Moreover, the salience of self-relevant loss should trigger triggers an implicit goal to
 53 replace what has been lost, perhaps, to acquire new possessions. by purchasing new possessions.
 54 In ~~partial support of these predictions~~ line with this reasoning, they Cryder et al. [2] found that
 55 self-focus mediated ~~s~~ the relationship between sadness and buying price.

56 Despite several demonstrations of the misery-is-not-miserly effect [1, 2] and
 57 identification of self-focus as a mediator, [2], many questions about the phenomenon remain.
 58 Perhaps the most central question about the misery-is-not-miserly effect is whether it is reliable,
 59 given that it runs counter to predictions from valence-based and mood-congruent theories of
 60 decision-making. According to these ~~well-established (valence-based and mood-congruent)~~
 61 theories, negative ~~mood-valenced~~ states lead people to perceive objects in a globally pessimistic
 62 or devalued way (for reviews, see [3, 4, 5]). According to this line of reasoning, sadness – a
 63 negatively-valenced emotion – ~~should therefore~~ depress valuations of prospective purchases,
 64 not increase them. ~~Empirically, however, as observed empirically with~~ the misery-is-not-miserly
 65 effect ~~contradicts mood-congruence. Even though sadness is negatively valenced, it leads people~~
 66 ~~to increase their valuation of commodities they might obtain~~ [1, 2]. In large part because Given

67 ~~that~~ the misery-is-not-miserly effect runs counter to ~~the well-established body of~~ mood-
 68 congruent theories, it is important to test whether the effect replicates ~~in a different across~~
 69 ~~contexts (e.g., with slight variations on emotion inductions and the~~ choice ~~context and with~~
 70 ~~different methodology. price task). The present research aimed to do so.~~

71 Another key question about the misery-is-not-miserly effect ~~concerns~~~~stands in regard to~~
 72 its stability in the face of factors that might attenuate ~~sadness's~~~~the~~ impact ~~of sadness on decision-~~
 73 ~~making~~. If the effect of sadness on choice price arises as a form of compensatory consumption
 74 (for a review, see 6) then perhaps the opportunity to consume something else (e.g., tasty food)
 75 ~~while sad would~~~~might~~ diminish the ~~carryover effect~~~~impact~~ of sadness on ~~choice~~ price. At least
 76 one line of ~~evidence~~~~evidence~~ lends support to this idea. Garg and Lerner [7] ~~hypothesized and~~
 77 ~~found~~~~demonstrated~~ that offering individuals the opportunity to engage in behaviors that ~~mitigate~~
 78 ~~the~~~~increased their~~ sense of ~~helplessness or external locus of~~ control ~~associated with sadness (see~~
 79 ~~8; 9)~~ tempered ~~its~~ ~~otherwis~~~~sadness'~~ downstream impact on decision-making. Specifically, Garg
 80 and Lerner [7] found that offering participants an active choice, ~~even one that was trivial,~~
 81 alleviated the helplessness associated with sadness, ~~(see [8, 9])~~ and, in turn, attenuated the
 82 tendency for people in a sad state to over-consume comfort food. Other research also supports
 83 the control-enhancing (thus helplessness-reducing) impact of engaging in choice [10].

84 In the present research, we ~~thus also~~ sought to test whether compensating for the sense of
 85 loss (rather than helplessness) associated with sadness might temper the impact of sadness on
 86 decision-making. Prior research ~~by~~ Garg and colleagues has shown that sad individuals consume
 87 more hedonic food (e.g., buttered popcorn and ~~M&M candies~~~~candy~~) compared to those in neutral
 88 or happy affective states [11]. Tice, Bratslavsky, and Baumeister [12] also found negative affect
 89 increased consumption of unhealthful, fatty snack foods. These findings are consistent with a

90 mood repair explanation [13]. We thus hypothesized that ~~having~~ the opportunity to engage in
91 compensatory consumption (e.g., eating ~~while watching a sad movie~~ buttered popcorn and
92 drinking a beverage) would ~~diminish~~ attenuate the misery-is-not-miserly effect.

93 **Materials and methods**

94 **Overview**

95 In the critical conditions of the original ~~(2004)~~ study, [1], participants first watched either
96 a sadness-inducing clip from *The Champ* or a control video from a National Geographic
97 documentary. Participants then engaged in a choice price task.

98 The present study examined the effects of sadness on choice prices with a different set of
99 emotion induction videos (clips from *Steel Magnolias* and *Blue Planet* to induce sadness relative
100 to a neutral state, respectively) and a different commodity (a water bottle as opposed to a
101 highlighter set). *Steel Magnolias* has been found to be effective in arousing sadness [14, 15, 16,
102 17, 18]. Similarly, water bottles have been used as commodities in prior consumer decision-
103 making research stemming from the misery-is-not-miserly research [2]. In line with broader calls
104 for replications in the field, establishing whether the misery-is-not-miserly effect replicates with
105 these methodological changes represents an important test [19].

106 Key similarities and differences between the original study and the current research are
107 presented in Table 1. Note that aside from the methodological changes described in Table 1 and
108 the addition of a compensatory consumption opportunity in the consumption condition, all
109 efforts were made to follow the paradigm of the original study. We report how we determined
110 our sample size, as well as all data exclusions, ~~all~~ manipulations, and ~~all~~ measures in the study.
111 Data and analyses scripts can be found on the Open Science Framework (<https://osf.io/wsz2y/>).

112 This research was conducted with the approval of the ~~human subjects committee~~ Institutional

113 Review Board at Carnegie Mellon University and meets the ethics criteria outlined by the
114 American Psychological Association.

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122 **Table 1. Comparison between the Present Study and Lerner et al. [1]**

	Lerner et al. [1]	The present study
<i>Design and Methodology</i>		
Nature and setting	Lab experiment	Lab experiment
Sample size and type	199 university students (appx. 33/condition)	111 university students (appx. 27/condition)
Overall study design	3 (emotion) x 2 (task)	2 (emotion) x 2 (hedonic consumption) x 1 (task)
	Emotion: sadness vs. disgust vs. neutral	Emotion: sadness vs. neutral
	Task: choice price vs. sell price	Hedonic consumption: yes vs. no <u>Consumption opportunity: absent vs. present</u> Task: choice price
Emotion induction	Videos:	Videos:
	<i>The Champ</i> (sadness)	<i>Steel Magnolias</i> (sadness)
	<i>Trainspotting</i> (disgust)	<i>Blue Planet</i> (neutral)
	National Geographic doc. (neutral)	
Commodity	Highlighter set	Water bottle
<i>Results – Sadness vs. Neutral</i>		

Choice price

$$d = 0.49$$

$$d = 0.40$$

124 **Participants**

125 One hundred and eleven undergraduate student participants (60 female, 49 male, 2 gender
126 not indicated; $M_{\text{age}} = 21.47$, $SD_{\text{age}} = 3.70$) completed the study in exchange for course credit.
127 Sample size was determined via time constraints on data collection. After providing written
128 informed consent, participants were seated in private cubicles equipped with computers and
129 headsets, allowing no visual access to other participants.

130 **Design and procedure**

131 Participants were randomly assigned to one of four conditions in a 2 (emotion: neutral vs.
132 sad) x 2 (compensatory consumption opportunity: present vs. absent) design. Participants first
133 completed the Positive and Negative Affect Schedule (PANAS; [20]) as a measure of baseline
134 affect. Two things are of note: (1) PANAS items were interspersed with several other items not
135 analyzed for the purposes of this replication, and (2) due to a programming error, the item
136 “inspired” was not included. Responses on the 5-point scale were summed to form an index of
137 baseline affect ($\alpha = .78$). The former was used in an exploratory set of analyses controlling for
138 baseline affect, mirroring Lerner et al. [1] and reported below. Participants next engaged in a
139 video task, during which the manipulations occurred, and then completed measures of the
140 dependent variables.

141

142 **Experimental Manipulations**

143 ~~Next,~~ according to assigned emotion manipulation condition, participants watched
144 either a sadness-inducing clip from the film *Steel Magnolias* or a neutral clip from the nature
145 documentary *Blue Planet* (~~emotion manipulation~~). Both videos were approximately 12 minutes

146 in duration. While watching the videos, participants were either given the opportunity to engage
 147 in hedonic consumption or not (according to compensatory consumption
 148 manipulation)-condition. Specifically, participants in the consumption opportunity conditions
 149 were offered ~~butter~~battered popcorn and a beverage under the guise of “better simulating a
 150 movie-going experience” (adapted from [11]). Note that in the prior research deploying this
 151 compensation opportunity, battered popcorn was perceived as hedonic [11, see Footnote i]. The
 152 amount of popcorn each participant consumed was measured at the end of each session.

153

154

155 **Dependent variables**

156 After the video task, pParticipants next engaged in a choice price task. Barring the change
 157 in the commodity from a highlighter pen set to a water bottle, the choice protocol exactly
 158 replicated that used by Lerner and colleagues [1], ~~both~~ with both, the current and the original
 159 studies using the Becker, DeGroot, and Marschak [21] price elicitation form. Specifically,
 160 participants were shown an insulated, re-usable water bottle and were then asked to indicate on
 161 ~~each of 28 lines~~ a form whether they preferred the bottle or various cash amounts. ~~The prices~~
 162 ~~ranged~~ The form consisted of 28 lines, each presenting the choice between the water bottle and an
 163 increasing cash amount ranging from \$0.50 to \$14.00, in \$0.50 increments. For instance, Line 11
 164 asked participants to indicate whether they preferred the water bottle or \$5.50.

165 Responses on this task typically follow a pattern whereby participants prefer the water
 166 bottle over the listed cash amount up to a certain point, after which they flip to consistently
 167 indicating ~~they would prefer~~ a preference for the cash amount. A ‘choice price’ in this case is the

168 point at which the commodity is selected rather than cash; higher choice prices reflect a stronger
169 desire to obtain the commodity. In order to incentivize true valuations and as per Lerner et al.
170 [1], participants understood that, based on a pre-selected ‘price’ for the session, they would
171 ultimately either receive cash or the water bottle at the conclusion of the experiment, according
172 to their indicated choices. For instance, if the previously undisclosed ‘price’ for the water bottle
173 was \$5.50, participants would receive either the water bottle or the cash according to their
174 selection on Line 11.

175 Finally, participants completed a suite of self-report questionnaires. One set of questions
176 elicited their preference for activities such as watching a movie and talking to a friend, ~~(not~~
177 ~~analyzed here-).~~ They also reported whether they were currently dieting; This question was
178 embedded within a set of questions regarding their eating behaviors before and during the
179 experimental session. Next, participants indicated their current levels of sadness (“gloomy,”
180 “sad,” “downhearted;” $\alpha = .94$) on 9-point scales ranging from 0 (*did not experience the emotion*
181 *at all*) to 8 (*experienced the emotion more strongly than ever before*), interspersed with several
182 filler items assessing other affective states. Note that these items and the scale response were the
183 same as used by Lerner et al. [1], except that “blue” in the original study was replaced with
184 “gloomy” in the present study. One participant did not provide manipulation check data and was
185 hence not included in the analysis of this variable. Participants then provided demographic
186 information before being debriefed.

187

188 **Results**

189 **Preliminary analyses**

190 A 2 (emotion) x 2 (consumption opportunity) ANOVA on self-reported sadness revealed
 191 that the induction was successful with a significant main effect of emotion, $F(1,106) = 211.34$, p
 192 $< .001$, $\eta^2 = .67$, 90% CI [.58, .72]. Participants who watched the sadness-inducing video ($M =$
 193 4.43, $SD = 1.80$) reported higher levels of sadness than participants who watched the neutral
 194 video ($M = 0.49$, $SD = 0.81$; $d = 2.82$). This As expected, this effect was not further qualified by
 195 consumption opportunity ($p = .57$), nor was the main effect of consumption opportunity
 196 significant ($p = .08$).

197

198 **Inferential Main analyses**

199 Analysis of choice prices provided the critical test regarding the replication of the misery-
 200 is-not-miserly effect. Descriptive statistics per condition appear in Table 2. A 2 (emotion) x 2
 201 (consumption opportunity) ANOVA revealed a main effect of emotion condition, $F(1,107) =$
 202 4.34, $p = .04$, $\eta^2 = .04$, 90%CI [.001, .11]. Consistent with Lerner et al. [1], participants who
 203 watched the sadness-inducing video ($M = 6.42$, $SD = 2.74$) indicated higher choice prices on
 204 average compared to participants who watched the neutral video ($M = 5.35$, $SD = 2.72$; $d = 0.40$).
 205 Contrary to the idea that the opportunity for compensatory consumption might diminish the
 206 robustness of the effect, having access to popcorn and a beverage did not impact choice prices (p
 207 $= .89$), nor did it qualify the effect of emotion ($p = .37$). Thus, we found that the misery-is-not-
 208 miserly effect replicated even in the face of an opportunity for compensatory consumption.

209

210 **Table 2. Descriptive statistics for choice prices by condition**

Consumption Opportunity

Absent

Present

Emotion

<u>Neutral</u>	<u>5.61 (2.52)</u>	<u>5.06 (2.96)</u>
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<u>Sadness</u>	<u>6.22 (2.81)</u>	<u>6.62 (2.71)</u>
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211 Note. Standard deviation values appear in parentheses following mean values.

212

213 One reason why we did not observe a moderating effect of consumption opportunity

214 might be due to the fact that not all participants, given the opportunity, actually consumed

215 popcorn. Another reason for the null effect of the consumption condition could be that the dieters

216 experienced the opportunity differently relative to non-dieters. In order to test ~~this~~these

217 alternative explanations, two independent, exploratory ANOVAs excluding participants in the

218 consumption conditions who reported that they were currently dieting ($n = 6$) or participants in

219 the consumption conditions who did not consume any popcorn ($n = 7$), were run on choice

220 prices. The exclusions based on these two criteria were non-overlapping. These analyses

221 revealed findings similar to those reported above. In both, significant main effects of emotion

222 condition ($ps < .03$) on choice prices emerged. These main effects were not further qualified by

223 interactions between emotion and consumption condition ($ps > .23$), nor did a main effect of

224 consumption condition emerge ($ps > .79$). Effect sizes for the emotion effects on choice prices (d

225 = 0.44, 0.41, respectively) in these exploratory analyses were comparable to the main analyses.

226 As a further check, we ran the planned analyses (full sample) with baseline affect as a covariate,

227 following Lerner et al. [1], Footnote 3. All reported results regarding the impact of emotion

228 condition and consumption condition remained unchanged in terms of statistical significance.

229 Thus, we conclude that the effect replicates and is consistent, even after accounting for

230 participants who might not have engaged in compensatory consumption or might not have

231 reacted to the consumption opportunity as people from the general population (non-dieters)
232 would.

234 **Meta-analysis**

235 In order to assess the overall robustness of the misery-is-not-miserly-effect, we carried
236 out a meta-analysis of the effect size of sadness versus neutral on choice prices from Lerner et al.
237 [1] and the present study. Following current recommendations [22], we meta-analyzed the two
238 effects using a fixed effects approach, in which the mean effect size (in r) was weighted by
239 sample size. Raw means were used to calculate relevant effect sizes. Overall, the meta-analyzed
240 effect was significant and non-zero ($M_r = .21$, 95% CI [.06, .36], $Z = 2.80$, $p_{\text{two-tailed}} = .005$), such
241 that sadness led to higher choice prices compared to a neutral state. Conversion to Cohen's d
242 resulted in a meta-analyzed effect size estimate of 0.43 with a 95% confidence interval ranging
243 from 0.12 to 0.77. We note that a A-fully random effects test of the meta-analyzed effect
244 produced a nearly identical estimate of the effect that was marginally significant ($M_r = .22$, $t(1) =$
245 8.60 , $p_{\text{two-tailed}} = .07$), ~~though~~. However, as noted by Goh et al. [22], the fully random effects
246 approach is highly conservative with small numbers of studies, as is the case here.

248 **Discussion**

249 The close conceptual replication and extension study reported here sought to examine the
250 misery-is-not-miserly effect documented by Lerner et al. [1]. Overall, results replicated the
251 effect: sadness increased choice prices. These results were obtained with variations in
252 methodology, affording confidence in the underlying reliability of the effect [19]. Moreover, a

253 meta-analysis of ~~fn~~ the original effect and that observed in the present study resulted in ~~a meta-~~
254 ~~analyzed~~ an effect size estimate with a confidence interval not including zero, further lending
255 evidentiary support for the misery-is-not-miserly effect.

256 The current study also tested whether the opportunity for compensatory consumption
257 would attenuate or negate the impact of sadness on choice prices. Results did not support this
258 possibility: the misery-is-not-miserly effect emerged even among participants who had the
259 opportunity to engage in hedonic consumption. This finding provides theoretical insight into the
260 nature of sadness and its impact on decision-making. Prior literature has found consistent
261 support for sadness' appraisal theme of loss and helplessness [8; 9]. In line with such appraisals,
262 sadness results in compensatory consumption (e.g., hedonic food consumption), in a bid to
263 regulate the negative state [12, 14]. ~~P~~Leveraging prior research that has shown that addressing
264 the sense of helplessness innate to sadness via engaging in choice such as in shopping [23]
265 decouples the sadness-choice price link [7]. Leveraging such findings, we predicted that hedonic
266 consumption, by addressing the sense of loss, would similarly moderate the misery-is-not-
267 miserly effect. This prediction was not supported, raising the possibility that sadness' impact on
268 decision-making is driven by ~~theirs~~ their characteristic sense of helplessness, and not loss. Future
269 research might test this hypothesis via studies that both measure and manipulate the proposed
270 mechanisms [24].

271 Of course, a single study enabled testing the effect under only selected parameters,
272 further constrained by our aim to conduct a close conceptual replication. We acknowledge that
273 given the limited inferences that can be drawn from a single study, the null effects obtained for
274 the moderating effect of compensatory consumption should be put to further empirical test.
275 Future research on the misery-is-not-miserly effect might also consider the impact of other

276 operationalizations of sadness, hedonic consumption, and choice price. Further, it will certainly
277 be important for future work to undertake highly-powered replications [25] that recruit more
278 diverse samples than undergraduate students from North America [26]. One promising route for
279 such efforts would be to adopt a multi-lab approach [27; 28].

280 _____ Moreover, in line with a broader goal to establish both commonalities and differences
281 among discrete emotions, it is pivotal that future research include comparisons to other negative
282 emotions (e.g., anger, [23]; disgust, [1]) as well as positive emotions ~~such as pride and gratitude.~~
283 ~~It will also certainly be important for future work to undertake highly-powered replications [25]~~
284 ~~that recruit more diverse samples than undergraduate students from North America [26]. (e.g.,~~
285 ~~pride and gratitude). Another fruitful avenue for future research will be to explore the conditions~~
286 ~~under which sadness, and indeed other emotions, impact other types of consumer decision-~~
287 ~~making (e.g., attitudes and brand preferences [29; 30]).~~

288 In sumOverall, this work underscores the importance of investigating the role of discrete
289 emotions, corroborating past research across a variety of sub-disciplines of psychology [3, ~~27,~~
290 ~~2831, 32~~]. In conclusion, it appears that misery is indeed *not* miserly, and robustly so.

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The Misery-Is-Not-Miserly Effect Revisited: Replication Despite Opportunities for Compensatory Consumption

Responses to Associate Editor and Reviewers' Comments

Editor -

Comment: Two reviewers found this paper interesting and recommended minor revision. A third (whose review is attached) was less positive. Still -- my feeling is that there is no issue, even for the third reviewer, with the quality of the paper's analysis methods and results. I thus ask you to address the minor comments of Reviewer 1 and 2. Definitely, a graph of the results in the different conditions, as requested by reviewer 1, would be helpful. Reviewer 3's comments can perhaps be addressed by raising these issues in the discussion section.

Response: Thank you for your comments and for giving us the opportunity to revise and resubmit our paper! We have added a table of results by condition (pg. 10 in the revision) as per Reviewer 1's recommendation. We have also worked on the write-up of the paper to improve its readability and better articulate our reasoning throughout, per Reviewer 2's request. Finally, in line with your suggestion, we discuss some of the limitations highlighted by Reviewer 3 in the discussion section in the paper and also address them in detail in our response to the reviewer, in this document.

Please note that the page numbers in these notes refer to the page numbers in the revised manuscript (without track changes).

Below, we respond to each point raised by the three reviewers and, where relevant, point out how we have addressed them in the revised manuscript.

Reviewer 1 -

Comment: The authors report a conceptual replication of the Neutral/Choice and Sad/Choice conditions from Lerner et al. (2004). The relationship between sadness and spending is of interest to several fields (e.g., psychology, economics, and marketing), and it is important to learn more about the strength of this relationship. Evidence of a relationship between sadness and spending is still limited. The original evidence was modest: Lerner et al. (2004, p. 339) found that "compared with neutral emotion, sadness...increased choice prices, $t(65) = -1.98$, $p = .05$." Cryder et al. (2008) found a stronger effect, but that study used buying prices and, more importantly, only had a total sample of 31 participants. If there are other studies that measure spending after inducing sadness or a neutral state, it would be great to summarize those in a table.

Response: We are glad to see Reviewer 1's agreement that the misery-is-not-miserly effect is an effect worthy of replication. In response to Reviewer 1's query regarding potential additional research, we undertook a thorough review of published literature to locate any additional studies that measure choice price following a sadness induction relative to a neutral condition. We found none.

We did locate one set of studies (Lin et al., 2006) that are broadly relevant, given that they compare spending decisions following a negative mood induction. However, they are not directly

relevant, for two reasons. First, the comparison condition was a positive mood condition rather than a neutral condition. Second, spending decisions were operationalized in terms of the endowment effect (willingness to sell a possessed object) vs. willingness to pay (willingness to buy an object with possessed money). In Lerner et al. (2004) and our study, spending decisions were operationalized as choice price – the point at which money would be preferred over obtaining an object. For this reason, we opted not to incorporate a review of Lin et al. (2006) in the revised manuscript.

Similar lack of alignment arises between Cryder et al. (2008) and the task used by Lerner et al. (2004) and the present study, as highlighted by Reviewer 1 and mentioned in the manuscript (i.e., use of buying price rather than choice price). Given this, we left the summary table as per the initial submission. At the Editor's request, we are happy to undertake further revision on this point.

The replication reported here is not totally ideal. I would have loved to see a pre-registered direct replication, perhaps involving more than one lab. I would have liked to see a larger sample than $N=111$, though I recognize that these aren't the easiest experiments to run. I would have liked to see a different population of participants: Lerner et al. 2004 primarily used participants from Carnegie Mellon. The current paper does not specify where participants are from, but p. 8 notes that the current experiment was approved by "the human ethics committee at Carnegie Mellon." However, the current replication does provide some information about the strength of a potentially important relationship, and I would like to see it documented in the literature.

Response: We agree entirely with regard to the need for future replications that are high-powered and draw from diverse samples. Indeed, we called for this in the initial submission (pg. 13). In the revision, we have added a note regarding multi-lab approaches, citing the successful model adopted by ManyLabs (pg. 13). We also now clarify that the recruited sample comprised undergraduate students (pg. 7).

Comment: I would also like to see what the results look like specifically in the conditions where participants do NOT have the opportunity for "hedonic consumption." Those "hedonic opportunity: absent" conditions are the closest to the Neutral/Choice and Sad/Choice conditions from Lerner et al. (2004), and so those conditions are even more relevant to the previous results. (Really, it would be good to have a graph or table showing the means and SDs from each condition.)

Response: Thank you for raising this issue! In the revised manuscript, we have added a table of the results per condition, as you suggest (Table 2, pg. 11). We do believe that it helps in highlighting the differences across the conditions. We opted for a table over a graph given that the table provides precise numerical details whereas a graph only allows visual depiction.

Reviewer 2-

Comment: The paper demonstrates a conceptual replication of a classic finding in the decision making literature. The methods are sound and the replication is valid. My only concern is that the paper is VERY hard to read. As in, the prose used do not flow well nor do they lend themselves to easy comprehension. I strongly encourage the authors to re-write their manuscript with an ear to readability. A copy editor can help a lot with that. Other than this, the paper is worth publishing in PLOS ONE.

Response: We have carefully reviewed the manuscript top-to-bottom with an eye towards improving the flow and overall readability. We believe these efforts have significantly improved the quality of the writing.

Reviewer 3-

Comment: This paper presents original research that replicates and extends Lerner et al.'s (2004) effects of sadness on buying behavior, specifically, on willingness of individuals who are sad to give up more money to acquire a new object, a phenomenon labeled "misery-is-not-miserly."

The new data replicate the effect of sadness on decision-making in a different context, and claim to extend it by testing the robustness of this effect in the presence of an opportunity for mood repair through compensatory consumption (eating while being sad). The new findings are interesting.

Response: We are glad to see Reviewer 3's positive response to the interest and originality of the research.

Comment: The replication is an extension of the previous (2004) study in the stimuli used for the IV, and the commodity being priced (a water bottle in this study instead of a highlighter set in the previous study). It is not an extension in the type of participants (still university students). I am not fully content with this population as a valid source of information, especially about an emotion such as sadness, which can vary by age and social experience. College students are uniform in this sense.

Response: We agree that college students are fairly homogeneous in their age and somewhat limited in their social experience which might impact their response to emotion stimuli. While several findings in the emotion literature have replicated across diverse samples (e.g., Lerner et al., 2003; Wansink et al., 2003), we acknowledge that the student nature of the sample in the current research is a potential limitation. Indeed, in the initial submission and as noted above, we called for further replications with more diverse samples, citing the seminal paper in the field highlighting concerns with 'WEIRD' samples (pg. 13).

Comment: The prediction was that if the effect of sadness on requested price is a form of compensatory consumption, then an option to consume something else (e.g., tasty food) while sad will diminish the effect of sadness on price. Given the sample of students, I am not sure that offering students the opportunity for consumption of popcorn and a beverage can be viewed as potential compensation for the sadness induced by the video clip.

What we see is that this option did not have a significant effect, meaning the findings do not rule out the null hypothesis. An insignificant result should not be viewed as a novel finding. The lack of an effect in this study cannot rule out the possibility that consumption can attenuate the effect of sadness on price. Do we know this manipulation did anything to participants? Did they even notice it?

We have the general issue of college students as a biased sample, and USA college students may easily trivialize popcorn and a beverage. The manipulation may have been totally lost on them. Hence, its lack of a main or interaction effect might be testing and showing something totally different from what the authors attempted to test.

In other words, I do not accept the claim that this study shows that the misery-is-not-miserly effect occurs even in the face of an opportunity for compensatory consumption. The study shows this did not happen

with the current sample, but we cannot and should not generalize a lack of effect based on this sample. I note that the authors claim they account that their participants might not have reacted to the stimuli as people from the general population, but the foundation for this claim is unclear.

Response: We acknowledge the concern regarding the potential that this sample did not see popcorn and beverage opportunities as compensation, but here point to past work which attenuates the concern. The hedonic nature of buttered popcorn has been supported with a sample drawn from the same population as that used in this study (i.e., undergraduate students), as reported in Garg et al. (2007, Footnote i). In that same study, induced sadness increased consumption. This pattern mirrors broader research suggesting that negative emotion states can prompt consumption of hedonic foods among student samples (e.g., Andrade, 2005; Garg & Lerner, 2013; Tice et al., 2001). We opted not to detail this point in the revised manuscript, but are happy to do so at the Editor's request. Instead, we simply noted the previous finding regarding perceptions of buttered popcorn as hedonic on pg. 8.

In the study itself, we believe that the consumption opportunity was not lost on participants as 87% of those given the opportunity did consume popcorn. We did not measure beverage consumption, but would note that, as reported in both the initial manuscript and the revision submitted here, we ran the analyses without those who did not eat popcorn in the hedonic consumption conditions ($n = 7$) and our results did not vary significantly (pg. 11).

More broadly, it is not our intention to make it seem as if we are ruling out entirely the possibility that hedonic consumption might attenuate the misery-is-not-miserly effect. Indeed, we note that future research might consider other "operationalizations of ... hedonic consumption" (pg. 13). Moreover, we wholeheartedly agree with the need for further replications utilizing different populations (pg. 13), as noted also above in response to Reviewer 1.

Comment: The mini-meta analysis the authors present makes creative (and extreme, potentially questionable) use of the ideas of Goh et al. (2016). They literally test it on only 2 studies, which is an absolute minimum. I ponder the meaning, reliability or validity of this analysis. The results show marginal significance, which certainly leaves one wanting. Goh et al. talk about the option of an analysis with small numbers of studies as highly conservative. In this case, we have a test that includes two studies that are so similar, that we can assume reliability of the findings. What does this tell us about the validity of the theory or the analyses? This is still up in the air.

Response: Goh et al. explicitly argue for the appropriateness of running 'mini-metas' on a small number of studies – even two: "Mini metas can be and have been conducted on an even smaller scale with two studies alone" (pg. 538; Goh et al. 2016). Admittedly, the framing of Goh et al.'s procedure is in terms of internal meta-analysis (i.e., meta-analysis of studies reported within one paper), though there is no reason that the analysis would need to be computationally different in the case that the two studies were run for the purposes of different papers (as is the case here).

To the question of conservativeness, Goh et al.'s argument is that the random effects model is conservative with a small number of studies (pg. 539; Goh et al., 2016, and as we note in the original and revised manuscript). This is why we opted to report the results of a fixed effects model first, emphasizing its findings over the random-effects version.

As noted above in our response to Reviewer 1, we could not locate other studies that could be included in this meta-analysis. What we cannot resolve with the current information at hand is the potential for unpublished 'file-drawer' studies to exist. Given that the meta-analysis was an

ancillary component of this manuscript, we deemed that an open call for unpublished research was out of scope given the revision timeline offered by the Editor.

It is in fact our hope that this study (and the results of the albeit limited meta-analysis) will prompt future research that will address the questions raised here by Reviewer 3 regarding theory advancement. Indeed, we call for this in the Discussion.