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Reappraising a First Date Partner Biases Memories of Emotion: Evidence from Two Experiments

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This is an open data and materials set of experiments: https://osf.io/9p5jg/
Supplementary online materials (SOM): https://mfr.osf.io/render?url=https%3A%2F%2Fosf.io%2Fdownload%2F69eb63dceba0dbbca1f4e86a%2F%3Fdirect%26mode%3Drender

Abstract

Previous research has found memories of emotions are malleable, and that extended to autobiographically important memories of emotions. It was unclear whether this would generalize to memories of emotions towards former date partners. After finding significant results in Experiment 1, we then conducted the larger Experiment 2 examining whether memories of emotion towards a first date partner can be biased with changing cognitive appraisals. Participants were 93 UK students or young adults of average age 22 in Experiment 1. In Experiment 2, 201 UK participants from the general public of average age 37 were recruited online (Prolific). After randomly assigning participants to different writing prompt conditions to nudge their current appraisals of their first date partner, we found subsequent recall of emotion was biased accordingly. Those reappraising their partner in a downward direction remembered more negative emotions, including distress, compared to comparison conditions. Reappraising downwards biased memories of how unsafe they felt on their first date, and of feeling forced to do something. These biases might be important to consider when people reappraise past dating experiences, especially if the original memories have faded with time, or were not encoded well initially.

Keywords: memory of emotion, memory bias, memory distortion, cognitive appraisal, #MeToo, reappraisal

Introduction

It is an important open question as to whether people can reappraise past dating events in such a way such that memories of the events become distorted. If they were to occur, such reappraisals and memory distortions would affect relationships and could possibly have legal consequences in some rare cases. It is an open and controversial question as to whether reappraisals of past dating experiences have been a factor in some #MeToo cases (Mendes et al., 2018) that involve re-evaluations over time. If it is the case that memories of distress, for example, can be malleable, this may be of interest in understanding severe reappraisals—especially ones also involving many years of time between dating experience and the subsequent reappraisal or recall. This raises the question of whether memories of important emotions, such as distress or anger, are malleable as appraisals of the dating experience (or of the person) change. Past research has suggested that memories of emotion appear to be distorted via cognitive reappraisals (Patihis et al., 2019; Patihis & Herrera, 2024; Levine, 1997). More specifically Herrera (2020) found mixed evidence that reappraisals may affect memory of emotions for individuals' first sexual experiences. No past experiments have extended this research into the realm of a study on first dates. In this study, we experimentally investigate whether changing appraisals of participants' first date partners would have an effect on memories of emotion.

The present research makes three contributions: (a) it provides the first experimental test of appraisal-based bias in memories of emotion for first dates; (b) it replicates these effects across two independent samples differing substantially in age and recruitment method; and (c) it identifies boundary-relevant relational judgments (e.g., safety, force, boundaries) as especially sensitive to negative reappraisal.

The controversial claim that memories of emotions towards past romantic partners, or about past dating experiences, might be linked to a subset of #MeToo cases requires explaining step by step. How a person remembers their feelings during dating or sexual encounters can become an important part of their social and legal decision making. Details are known to be potentially malleable elements, as covered by the misinformation effect literature (Loftus, 2005), but memories of how distressed one felt years ago can become powerful motivators for decisions to socially shame, press criminal legal charges, or commence a civil suit for damages. These decisions will be affected by whether the claimant is accurately remembering memories of distress (for example). If accurate, the claims may be fair and necessarily corrective; if distorted, they may be prejudicial.

The specific subset of #MeToo cases that might carefully consider such memory distortions would include: 1. Those occurring a long time ago such that memories have had time to fade, 2. Those with no physical or documented evidence soon after the events, 3. Those in which the claimant has reappraised the alleged perpetrator (perhaps in light of negative stories in the media), and/or 4. Those that rely on memory evidence alone.

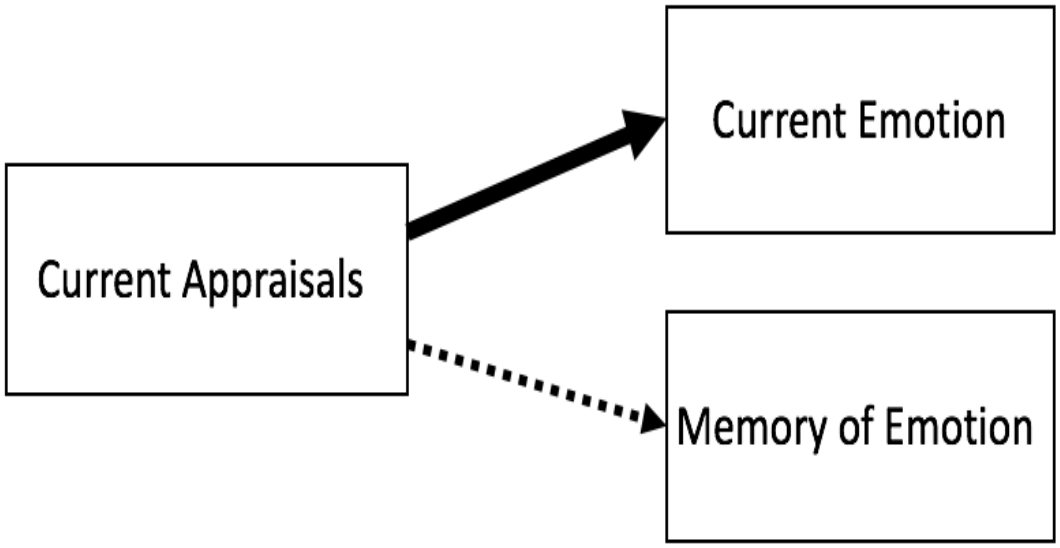
In matters of such practical importance in life and law, one might wonder whether citing the previous extensive memory of emotion research (e.g., Levine, 1997; Levine et al., 2001; Safer et al., 2001; Patihis et al., 2019; Patihis & Herrera, 2024) might be already sufficient to present to legal professionals and the public. It is plausible that past research would generalize to past dating experiences, and also generalize from previously studied emotions to relevant memories of emotions such as distress, and to other relevant measures such as remembering feelings about

safety, feeling forced, and having boundaries considered. Nevertheless, memory expert witnesses would likely be challenged on that generalizability claim, hence the need for ever more specific research in the applicable domain. The current experiments explored this specific scenario of past dates in relation to relevant measures.

Theory

Cognitive appraisal theory of emotion at its core suggests that cognitive appraisals are a major cause of emotions, and that changing appraisals will change current emotions (Arnold, 1960; Lazarus, 1991). Levine (1997) combined this theory with memory reconstructive theory to propose that current cognitive reappraisals may change *memories* of emotion. These two theories are simplified in Figure 1, below. Experimental approaches have also suggested a small but real effect for current reappraisals apparently causing a change in memories of emotion (Patihis et al., 2019, with a replicating study 2) but more research would be useful to replicate this (of which the current study is relevant to such efforts). This basic theory has been previously elaborated with more complexity outside the current brief report, and for more on this see Patihis et al. (2019), Levine et al. (2009), and Levine (1997).

Figure 1. *Underlying Theoretical Framework*



Note. Top solid arrow: current cognitive appraisals of a situation are the primary major cause of current emotions (cognitive appraisal theory of emotions; Lazarus, 1991). The broken bottom arrow: current cognitive appraisals of a situation are a (minor relative to the top relationship) cause of memory of emotion (diagram adapted from Patihis et al., 2019; see also Levine, 1997; Levine et al., 2009).

Cognitive Appraisals and Related Terminology

Cognitive appraisals are the complex assessment of the perceived environment in relation to the individual's goals. Lazarus (1991) explains that primary cognitive appraisals are the immediate evaluation of whether an event (or person) is a help or a hindrance to one's personal well-being and goals. Perceptions of help lead to positive emotions, while perceptions of a goal being blocked lead to negative emotions. These primary cognitive appraisals are the main focus of our

independent variable in this study. Lazarus' (1991) secondary appraisals involve the assessment of the ability to cope and thus relate to stress (not the focus of the current research). Cognitive appraisals of a person in the current study are the complex set of evaluations of the helpfulness or hindrance to the observer's personal goals. Reappraisals are any changes in the evaluation of the target person. For the purposes of the current article, think of appraisals and reappraisals as referring to the cognitive assessment of the person (the IV), and distinguish that from the outcome measures of memory of emotion. For the outcome measures of memory, words such as distortion or malleability may be used. So, in terms of terminology for this paper, think of appraisal as applying to the IV, and the DVs use terminology such as memory malleability or distortion. In this line of research, since Levine's (1997) framing, cognitive appraisals are proposed as a cause, and emotions and memories of emotions are the hypothesized effects (not to be confused with research focusing on the effects of emotion on memory). Understanding that this is research about the effect of cognitions on emotions (and memories of emotions), rather than the effect of emotions on cognitions, is important to notice early in the current article.

Flash Bulb Memory Research

Work in the realm of flashbulb memory studies has also suggested that memories of emotion are malleable and subject to reconstruction. Longitudinal research on recollections of highly emotional public events, such as the O. J. Simpson trial verdict, has demonstrated substantial distortions in memory, including how people remembered feeling at the time of the event (Schmolck et al., 2000; see also Neisser & Harsch, 1992). Similarly, multi-year studies of flashbulb memories for the September 11, 2001, attacks have shown that although confidence in these memories remains high, both the consistency of event details and retrospective reports of emotional intensity change considerably over time, often reflecting current appraisals rather than the original emotional experience (Talarico & Rubin, 2003; Hirst et al., 2015). These findings support the idea that even memories for intense emotions associated with flashbulb events are subject to reconstructive processes.

Longitudinal Research

There have been several longitudinal articles that have suggested memories of emotions change and can become biased over time. The aforementioned Levine (1997) study found that supporters of Ross Perot (a U.S. presidential candidate) who changed their appraisal of him, tended to bias their memories of emotion about how they felt following his withdrawal from a presidential race. Similarly, Levine et al. (2001) investigated memories for emotion about the then-famous O.J. Simpson not guilty verdict. They found biased recall for both negative and positive emotions (happiness, anger, and surprise), and that these biases were in directions consistent with current appraisals of the not guilty verdict. In yet another longitudinal study, Safer et al. (2001) asked adults to report their current feelings of grief six months after the death of their spouse, and then to recall those emotions a few years later. After several years, those who still were feeling grief at the time of recall tended to overestimate how much grief they had felt initially. Additionally, Levine et al. (2005) found that memories of emotion about the terrorist attacks on 9/11, 2001 can be explained by the differing cognitive appraisals of younger and older participants. All these findings can be explained by the theory that current reappraisals can bias recall of memories of emotions.

Experimental Past Research

While limited in number, some experiments have also been conducted to test the effects of changing appraisals on memory of emotion. In Keuler and Safer (1998), graduate students appeared to misremember memories of pre-exam anxiety, depending on whether they had received post-exam feedback. Safer et al. (2002) found that those who learned they had done well underestimated pre-test anxiety while those who performed poorly overestimated pre-test anxiety. There was some inconsistency in these early experiments, but the idea that memories of emotion can be manipulated experimentally was building some support.

Experimental research has been extended into the realm of childhood memories, too, and also helped solidify support for the theory of reappraisals being a cause of change of memories of emotions. In Patihis et al. (2019), over two experiments, significant differences were found between the Appraisal Up and Appraisal Down conditions (specifically, the Appraisal Down group remembered lower memory of love in childhood). In the context of this paper, an "Appraisal Up" condition is one that attempts to increase the participant's evaluation of the target person (mother in Patihis et al., 2019; date partner in the current paper) on important attributes (such as generosity), and "Appraisal Down" means a condition that attempts to lower the evaluation of that target person. Patihis & Herrera (2024) also found that these reappraisals affected other emotions (happiness, sadness, anger, interest) and subtly affected memories of childhood emotions as well (such as happiness). Together, these experiments suggested the reappraisals created by the writing prompts might be causing memories of childhood emotions to change.

Some recent experimental research has specifically explored whether reappraisals might also change memories of emotions for first sexual experiences. Herrera (2020) asked some participants to answer several writing prompts (similar to Patihis et al., 2019; Patihis & Herrera, 2024). Herrera found that when controlling for emotion regulation strategies and current relationship status, positive reappraisals appeared to lead to increases in memory of emotions happiness and joy. It is the combination of these mixed results, and small effects, which call for further research.

Related Research

Outside the memory of emotion branch of research, numerous findings suggest that memories of dating experiences and sexual encounters are prone to distortions (Downey et al., 1995; Graham et al., 2003; Jaccard et al., 2002). Research on memory of dates is rarer. Relationship memories have been found to be inconsistent (Drivdahl & Hyman, 2014). Participants showed low levels of accuracy especially when asked to provide detailed analysis of events, including *events* on their first date. There has been very little research on memories for first dates and none in the realm of *memory of emotion* (to our knowledge).

The Current Experiments

Memory of emotion research already has been a rich and fruitful line of work over decades (Smith & Safer, 1993; and for more detail see the introductions to Levine, 1997; Patihis et al., 2019; Levine et al., 2009). Results of past research would suggest that cognitive reappraisals may shift memory of emotion towards both people and events (Levine, 1997; Patihis et al., 2019), though the effects are sometimes subtle and mixed, and more research is needed. Herrera (2020) found some intriguing results that could suggest memories of sexual encounters could be malleable.

Other research has found memory inconsistency for events in dating relationships (Drivdahl & Hyman, 2014). It is unclear though, whether research on mothers (Patihis et al., 2019; Patihis & Herrera, 2024) or political candidates (Levine, 1997) could be generalizable to dating experiences and past dating partners. There is a gap in the literature regarding memories of emotion associated with first dates, as well as a need for replication and refinement to clarify mixed findings and the causal relationship between appraisals and memory of emotion. Other motivations for this research include possible real-world implications for relationships, and memories of distant past dating experiences in legal contexts. In keeping with past research reviewed above, we formulated the following hypothesis:

Memory of Emotions Hypotheses

Hypothesis 1: Composite Positive Emotions. Participants in an appraisal-up condition will report a higher memory of positive emotions than those in an appraisal-down condition.

Hypothesis 2: Composite Negative Emotions. Participants in an appraisal-up condition will report a lower memory of negative emotions than those in an appraisal-down condition.

Hypothesis 3: Memory of Distress. We predict that participants in the Appraisal Up condition will score lower on their memories of distress than those in the Appraisal Down condition.

Hypothesis 4: Memory of Safety. We predict that participants in the Appraisal Down condition will score lower on a question asking how safe they felt on the date (compared to the Appraisal Up condition).

Memory of Non-Emotions

We identified specific additional dependent variable questions that are individually relevant in legal (or social-reputational) contexts, and reason that it was important to analyse and report these individually:

Hypothesis 5: Memory of Reporting to Authorities. We predict that participants in the Appraisal Up condition will score lower on a question asking to what degree participants remember wanting to report their partner to authorities (compared to the Appraisal Down condition).

Hypothesis 6: Memory of Feeling Forced. We predict that participants in the Appraisal Up condition will score lower on a question asking to what degree participants remember feeling forced to do something (compared to the Appraisal Down condition).

Hypothesis 7: Memory of Consideration of Boundaries. We predict that participants in the Appraisal Up condition will score higher on a question asking how considerate their first date was of their boundaries (compared to the Appraisal Down condition).

Experiment 1 Method

Participants

One hundred and forty-eight participants took part in the experiment either for course credit or through survey swap groups online for no compensation. Some were recruited through the

university participation pool for course credit (*n* = 46), and others through social media survey swap groups (*n* = 102). We excluded 55 that did not answer a large number of questions and those that did not follow directions (e.g., answering the positive, Appraisal Up writing prompts with negative answers and vice versa), leaving a dataset of 93. Due to time considerations, a larger sample could not be collected. Although random assignment was used, the group ns were uneven (49, 27, & 17), which is a potential confound that necessitated the follow up and replication later in this article. This uneven assignment was due to uneven dropout by condition. When participants in the experimental conditions saw that they were required to write out sentences, this may have led to higher dropout rates. The control group (n = 49) had lower dropout rates due to it being shorter and easier for the unpaid participants. A G-Power analysis revealed that if we need to find a medium effect of between *f* = 0.25 and .20 (with a Power of .8 and alpha of .05 for a 3 group ANOVA), we would need between 159 and 246 participants. In our smaller sample of 93, this was only sufficient to detect effects that are medium to large, *f* = .33 (though Experiment 2 with 201 participants is better powered to find medium effects). Eleven reported being male, 79 female, and 2 non-binary. Participant age range was 18–39 (*M* = 22.2, *SD* = 5.10). Departmental ethics approval (number 2021-015) was granted at the University of Portsmouth.

Design

The experiment is a between subjects three group design (Appraisal Up, Appraisal Down, Control). The independent variable is their cognitive appraisal of their first date partner, which is manipulated via writing prompts. The dependent variables are the memories surrounding participants' first date (especially memories of emotion).

Materials

The following materials were developed from the materials from Patihis et al. (2019), but substantially and carefully adapted for the different context of a past dating partner. In terms of the experimental appraisal manipulation, attributes important to being a good romantic partner or date were identified (kind, funny, polite, made you feel comfortable, considerate). In turn, the outcome variables were substantially adapted to be important emotions and feelings relevant to revaluating past dating experiences that could be consequential (for example, remembering distress or whether boundaries were considered are plausibly consequential in the societal issue under study; for more see discussion of the issue in the introduction and discussion). Discussions between the first and second authors over time identified plausible mechanisms as to why certain attributes, if manipulated upwards or downwards, might plausibly lead to changes in memories of the specific emotions and feelings we chose as DVs (e.g., changing an appraisal of kindness downwards will plausibly reduce memories of positive emotions). We also chose materials to somewhat mimic real life possible reappraisals of attributes, and measures potentially important in real life situations.

Experimental Conditions

Appraisal Up Condition. Participants in this condition were given five writing prompts asking them to give examples of when their first date demonstrated positive attributes (i.e., kind, funny, polite, made you feel comfortable, considerate). An example of these prompts is "Please write out 2 sentences giving examples of how your first date partner was kind towards you." For the wordings of the four other prompts see Appendix A (for full materials and datasets, see

https://osf.io/9p5jg/). Participants were asked to write 2 sentences for each of the five prompts.

Appraisal Down Condition. Participants in this condition were also given five writing prompts but instead the questions were negatively valenced (compared to the Up condition). We asked participants to write out two sentences for each prompt, describing the first date partner in a negative way (i.e. unkind, not funny, impolite, made you feel uncomfortable, inconsiderate). An example of one of these prompts was "Please write out 2 sentences giving examples of how your first date partner was unkind towards you." For the four wordings of the other four prompts see Appendix A.

Control. Participants in this condition were not given any writing prompts and were instead shown a screen that asked them to continue on to the next section and complete the memory of emotion questionnaire. We decided against neutral prompts to prevent uncontrolled appraisal nudges.

Memory of Emotion Questionnaire

All participants regardless of condition were provided with the memory of emotion questionnaire. The questionnaire took the form of 23, seven-point Likert scale questions on how they remembered feeling in the first 24 hours following their first date. We adapted these questions from both the psychometric study by Patihis et al., (2020), and Herrera (2020). Questions were asked about the partner they had for the date and the date itself. An example of the questions on their partner is "During the first 24 hours following your first date, to what degree did you feel happy towards your partner." The other questions used similar words like joyful, impolite, safe etc. An example of a question on the first date itself is "During the first 24 hours following your first date, to what degree did you feel embarrassed about the date." The other items used substituted words like angry, distressed, excited etc. Participants were asked 12 questions about the partner and 11 questions about the date (see Appendix B for other questions). The scale options ranged from *1 = Not at all* to *7 = Extremely*. A question about the partner also included 1 question that read "During the first 24 hours following your first date, to what degree were you likely to report your partner or complain to the authorities." Since this is not a question that measures their memory of emotion, it will be analysed separately.

Composite Measures Scoring.

Memory of Positive Emotions Towards Partner Composite. This composite measure was calculated as the mean score of the participants' responses to four items measuring memory for how happy, amused, joyful, and calm they felt towards their partner. The Cronbach's alpha for these four items was .878 in Experiment 1 (.881 in Experiment 2).

Memory of Positive Emotions About the Date Composite. This composite measure was calculated as the mean score of the participants' responses to the three items measuring memory for how joyful, amused, and excited they felt about the date. The Cronbach's alpha for these three items was .899 Experiment 1 (.889 in Experiment 2).

Memory of Negative Emotions Towards Partner Composite. This composite measure was calculated as the mean score of the participants' responses to four items measuring memory for anger, fear, outrage, and disgust they felt towards their partner. The Cronbach's alpha for these four items was .859 in Experiment 1 (.918 in Experiment 2).

Memory of Negative Emotions About the Date Composite. This composite measure was calculated as the mean score of the participants' responses to the three items measuring memory for the degree to which they felt embarrassed, angry, and shame about the date. The Cronbach's alpha for these three items was .715 in Experiment 1 (.860 in Experiment 2).

Procedure

Participants read a participant information sheet and consent form and then answered demographic questions. They were then randomly assigned into one of the three groups. Some participants were asked to write out examples of when their first date partner had exhibited positive attributes (Appraisal Up), other participants were asked for examples demonstrating a *lack of* those positive attributes (Appraisal Down), and some participants received no writing prompts at all (Control). Next participants answered rating scale questions about their memory of emotion towards their partner on their first date, and then about the date itself. Then a debriefing sheet was displayed, and the experiment ended. On average (median), the experiment lasted about 6.0 minutes.

Data Analysis Choices and Multiple Tests

We chose to keep $\alpha = .05$ in the ANOVAs and Tukey HSD post-hoc comparisons in the results section of the current experiments for several reasons. The tests and hypotheses were based on similar findings, and similar hypotheses, in Patihis et al. (2019), which is one reason for not reducing α. Other reasons include avoiding increasing the risk of failing to find real effects, plus the additional reason that replication usually illuminates false positives, and in memory of emotion research where the dose of independent variable manipulation is usually low due to ethics, enough power to find small effects is important. The combination of $\alpha = .05$, and then replication is a sufficient combination. In addition, most findings would remain significant even under a conservative Bonferroni-adjusted threshold of $\alpha = .007$ (.05/7). Family-wise corrections in some contexts can be risk missing real effects (Rothman, 1990; Perneger, 1998; Lakens, 2022).

Experiment 1 Results

Correlations between Dependent Variables

Table 1.1 below gives the correlations between all the dependent variables, with the magnitude of the correlations ranging between .159 and .677. The correlation between memories of positive emotions and memories of negative emotions (or feelings) are negative, whilst correlations between similarly valenced items are positive. Due to these correlations not being very high (e.g., over .9) these results confirm some degree of item differentiation, as well as confirming reverse coded items do indeed yield negative correlations.

Table 1.1. *Correlation Table of Dependent Measures Analysed in Hypotheses*

Variable	1	2	3	4	5	6
1. Memory of positive emotions toward partner	1					
2. Memory of negative emotions toward partner	-.614**	1				
3. Memory of distress toward partner	-.590**	.677**	1			
4. Memory of feeling safe about date	.464**	-.266**	-.288**	1		
5. Memory of likelihood to report partner to authorities	-.184	.594**	.213*	-.012	1	
6. Memory of feeling forced to do anything on the date	-.174	.229*	.308**	-.260**	.159	1
7. Memory of partner being considerate of your boundaries	.746**	–.609**	–.572**	.517**	–.190	–.305**

Note. N = 92. All variables measured on 1–7 scales. *p < .05. **p < .01 (two-tailed)

Hypothesis 1

Memory of Positive Emotions Composite Towards Partner

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and the composite memory of positive emotions towards partner, $F(2, 90) = 8.49$, $p < .001$, $\eta^2 = 0.159$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly less positive emotion than both the Control (Mean difference 1.11, $p = .004$; Cohen's $d = 0.86$) and the Appraisal Up condition (mean difference 1.50, $p < .001$, Cohen's $d = 1.16$). There was no significant difference between Appraisal Up and Control. See Figure S1.1 in the Supplemental Online Materials (SOM; top graph; Experiment 1, Hypothesis 1, hence the numbering 1.1) for a representation of this graph, and Table 1.2 below for the means and standard deviations (and number in each condition n). Also in the SOM is Table S1.1 that gives all the Cohen's d effect sizes for pairwise comparisons.

Memory of Positive Emotions Composite About the Date

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and the composite memory of positive emotions about the date, $F(2, 89) = 5.76$, $p = .004$, $\eta^2 = 0.115$. Degrees of freedoms in the current paper vary slightly from one analysis to another due to missing data on some items but not others (typically by no more than $n = 1$ or 2). A Tukey HSD post-hoc analysis revealed the Appraisal Down condition remembered significantly less positive emotion than the Appraisal Up condition (mean difference 1.32, $p = .004$; Cohen's $d = 0.89$). There was no significant difference between other group comparisons. See Figure S1.1 (bottom) in the SOM for a representation of this pattern in a graph, and Table 1.2 for the means and standard deviations.

In summary, Hypothesis 1 was supported, with the Appraisal Up condition remembering significantly more positive emotion than the Appraisal Down condition, with the Control

condition generally being in between the two.

Table 1.2. *Mean Scores by Condition of Various Memory of Emotions, with Number per Condition and Standard Deviations (Hypotheses 1 through 4)*

	n	*M*	*SD*
Hypothesis 1			
Memory of positive emotions towards partner*			
Control	49	5.37	1.10
Appraisal Up	27	5.77	0.95
Appraisal Down	17	4.26	1.72
Memory of positive emotions about the date*			
Control	48	5.62	1.09
Appraisal Up	27	5.91	1.22
Appraisal Down	17	4.59	1.84
Hypothesis 2			
Memory of negative emotions towards partner*			
Control	49	1.30	0.69
Appraisal Up	27	1.12	0.37
Appraisal Down	17	2.47	1.46
Memory of negative emotions about the date*			
Control	48	1.96	1.14
Appraisal Up	27	1.68	0.78
Appraisal Down	17	2.65	1.54
Hypothesis 3			
Memory of distress towards the partner*			
Control	49	1.47	0.92
Appraisal Up	27	1.67	1.66
Appraisal Down	17	2.94	1.52
Memory of distress about the date*			
Control	48	1.46	0.97
Appraisal Up	27	1.44	0.85
Appraisal Down	16	2.63	1.59
Hypothesis 4			
Memory of feeling safe on the date			
Control	48	5.96	1.20
Appraisal Up	27	6.00	1.14
Appraisal Down	17	5.35	1.17

Note. *Hypotheses 1, 2, 3 found significant differences in the ANOVA, lending some support for the hypotheses. Hypothesis 4 yielded no significant differences. See text for inferential statistics details. Hypotheses 1 and 2 used composite measures. N = 93 in some analyses, and 92 in others due to missing data on some items.

Hypothesis 2

Memory of Negative Emotions Composite Towards Partner

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and the composite memory of negative emotions towards partner, $F(2, 90) = 16.1$, $p < .001$, $\eta^2 = 0.264$ (composite of angry, fear, outrage, disgust). A Tukey HSD post hoc analysis

revealed the Appraisal Down condition remembered significantly more negative emotion than both the Control (mean difference 1.17, $p < .001$, Cohen's $d = 1.24$) and the Appraisal Up condition (mean difference 1.35, $p < .001$, Cohen's $d = 1.43$). There was no significant difference between Appraisal Up and Control condition. See Figure S1.2 (top) in the SOM for a representation of this graph, and Table 1.2 for the means and standard deviations.

Memory of Negative Emotions About the Date

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and the composite memory of negative emotions about the date, $F(2, 89) = 3.88$, $p = .024$, $\eta^2 = 0.080$ (composite of embarrassed, angry, shame). A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more negative emotion than the Appraisal Up (mean difference 0.97, $p = .019$, Cohen's $d = 0.86$) condition. There was no other significant difference between conditions. See Figure S1.2 (bottom) in the SOM for a representation of this graph, and Table 1.2 for the means and standard deviations.

Hypothesis 2 was therefore supported, with the Appraisal Up condition remembering significantly less negative emotion than the Appraisal Down condition, with the Control condition generally being in between the two.

Hypothesis 3

Memories of Distress Towards the Partner

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and memory of distress towards the partner, $F(2, 90) = 8.44$, $p < .001$, $\eta^2 = 0.158$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more distress than both the Appraisal Up (mean difference 1.28, $p = .005$, Cohen's $d = 0.79$) and the Control condition (mean difference 1.47, $p < .001$, Cohen's $d = 1.34$). There was no significant difference between the Control and Appraisal Up conditions. See Figure S1.3 (top) in the SOM for a representation of this graph, and Table 1.2 for the means and standard deviations.

Memories of Distress About the Date

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and memory of distress on the date, $F(2, 88) = 7.94$, $p = .001$, $\eta^2 = 0.153$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more distress than both the Appraisal Up (mean difference 1.18, $p = .002$, Cohen's $d = 1.01$) and the Control condition (mean difference 1.17, $p = .001$, Cohen's $d = 1.02$). There was no significant difference between the Control and Appraisal Up conditions. See Figure S1.3 (bottom) in the SOM for a representation of this graph, and Table 1.2 for the means and standard deviations.

Hypothesis 3 was generally supported, with the Appraisal Up condition scoring lower on memories of distress than the Appraisal Down condition. The Control condition generally had similar means to the Appraisal Up condition.

Hypothesis 4: Memories of Feeling Safe on the Date

There was a non-significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and memory of feeling safe on the date, $F(2, 89) = 1.93$, $p = .151$, $\eta^2 = 0.042$. A

Tukey HSD post hoc analysis revealed no significant differences between groups. See Figure S1.4 in the SOM, and Table 1.2 for the means and standard deviations.

Hypothesis 4 was not generally supported in this Experiment 1 dataset due to the differences between groups being not statistically significant.

Hypothesis 5: Report to Authorities

There was a non-significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) on participants' memory of their likelihood to report their partner to the authorities, $F(2, 90) = 2.76$, $p = .069$, $\eta^2 = 0.058$. A Tukey HSD post hoc analysis revealed no significant differences between groups. See Figure S1.5 in the SOM for a representation of this graph, and Table 1.3 below for the means and standard deviations.

Table 1.3. *Mean Scores by Condition of Memory of Reporting to Authorities, Feeling Forced, and Boundaries (Hypotheses 5 through 7)*

	n	*M*	*SD*
Hypothesis 5			
Memory of likelihood to report partner to authorities			
Control	48	1.14	0.76
Appraisal Up	27	1.00	0.00
Appraisal Down	17	1.47	0.80
Hypothesis 6			
Memory of feeling forced on the date			
Control	48	1.52	1.17
Appraisal Up	27	1.41	1.37
Appraisal Down	17	1.76	1.30
Hypothesis 7			
Memory of partner being considerate of boundaries*			
Control	49	5.98	1.20
Appraisal Up	27	6.15	1.06
Appraisal Down	17	4.53	1.84

Note. Hypotheses 5 and 6 found no significant differences. *Hypothesis 7 found significant differences between the Appraisal Down and the Control condition, lending support for the hypotheses. The difference in *n*s is due to missing data.

Hypothesis 5 was not generally supported in this Experiment 1 dataset due to the differences between groups being not statistically significant.

Hypothesis 6: Memories of Feeling Forced on Date

There was a non-significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) on participants' memory of feeling forced to do something on their first date, $F(2, 89) = 0.43$, $p = .652$, $\eta^2 = 0.010$. A Tukey HSD post hoc analysis revealed no significant differences between groups. See Figure S1.6 in the SOM for a representation of this graph, and Table 1.3 above for the means and standard deviations.

Hypothesis 6 was not generally supported in this Experiment 1 data due to the differences

between groups being not statistically significant.

Hypothesis 7: Memories of Boundaries

There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) on participants' memory of their partner being considerate of boundaries, $F(2, 90) = 9.49$, $p < .001$, $\eta^2 = 0.174$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition had a mean score significantly lower than both the Appraisal Up condition (mean difference 1.62, $p < .001$, Cohen's $d = 1.15$), and the Control condition (mean difference 1.45, $p < .001$, Cohen's $d = 1.04$). There were no significant differences between Control and Appraisal Up groups. See Figure S1.7 in the SOM for a representation of this graph, and Table 1.3 above for the means and standard deviations.

Hypothesis 7 was generally supported, with the Appraisal Up condition scoring higher on their memory of their partner being considerate of boundaries than the Appraisal Down condition. The Control group scored similarly to the Appraisal Up condition.

Experiment 1 Discussion

Experiment 1 provided initial experimental evidence that prompting participants to reappraise a first date partner biased subsequent memories of emotional experience, particularly for negative emotions and distress. However, several features of Experiment 1 warranted cautious interpretation. The sample consisted primarily of students and young adults, the sample size within conditions was low and uneven after exclusions, and some effects—especially for non-emotional items—were weaker or non-significant. These limitations raised questions about the generalizability and robustness of the observed effects. Accordingly, Experiment 2 was designed to provide a more stringent test of the hypotheses using a larger and more demographically diverse sample from the general UK population, while retaining the same experimental manipulation and outcome measures. This second experiment aimed to assess whether the pattern of appraisal-dependent memory biases observed in Experiment 1 would replicate under conditions of increased statistical power and broader population coverage.

Experiment 2 Method

Participants

In Experiment 2, 201 adults in the UK participated for £3.90 compensation. The mean age was 36.8 (SD = 12.4), range 19–75. Of these 201, 144 self-reported as female (71.6%), and 57 as male (28.2%). Table 1 in the results section gives sex and age by experimental condition. Of the 199 who gave ethnicity information, 175 identified as white (87.9%), 10 as Asian (5.0%), 7 as Black (3.5%), 5 mixed (2.5%), and 2 other (1.0%). The country of residence was reported as UK by all participants, with 85.7% (168 of 196) born in the UK. An amendment to ethics application 2021-015 was approved by the departmental ethics board at the University of Portsmouth.

Design, Data Analysis, and Materials

The design, data analysis, and materials of Experiment 2 were identical in all respects, so the reader is referred back to Experiment 1 method section for details.

Procedure

The procedure was identical to Experiment 1 (see Experiment 1 Method section earlier in the manuscript), with the following minor differences. Participants in Experiment 2 signed up via Prolific.com online and were linked to a Qualtrics survey that they completed online at a place and time of their choice. At the end of Experiment 2, participants were returned to Prolific where they were automatically credited £3.90. Experiment 2 took an average time of about 7.1 minutes. For materials, datasets, and SPSS output for Experiment 1 and 2, see https://osf.io/9p5jg/.

Experiment 2 Results

Correlations between Dependent Variables

Table 2.1 below gives the correlations between the dependent variables, with the magnitude of the correlations ranging between .202 and .838. As in Experiment 1, these results again confirm some degree of item differentiation, with correlations between memories of emotions and feelings somewhat correlating, as well as showing that reverse coded items do indeed yield negative correlations. These correlations are moderately higher in Experiment 2, compared to Experiment 1, but in both Experiments similar patterns of correlations are observed, with identical patterns of negative and positive correlations.

Table 2.1. *Correlation Table of Dependent Measures Analysed in Experiment 2 Hypotheses*

Variable	1	2	3	4	5	6
1. Memory of positive emotions toward partner	1					
2. Memory of negative emotions toward partner	-.717**	1				
3. Memory of distress toward partner	-.678**	.838**	1			
4. Memory of feeling safe about date	.659**	-.642**	-.628**	1		
5. Memory of likelihood to report partner to authorities	-.232**	.437**	.376**	-.202**	1	
6. Memory of feeling forced to do anything on the date	-.539**	.592**	.632**	-.563**	.385**	1
7. Memory of partner being considerate of your boundaries	.818**	–.706**	–.637**	.684**	–.221**	–.559**

Note. *N* = 201. *p < .05. **p < .01 (two-tailed)

For a comparison of age and sex on condition that confirms equal distribution by condition, see the Supplemental Online Materials, p. S11.

Memory of Emotions and Feelings

Table 2.2. *Mean Scores by Condition of Memory of Emotions*

	n	*M*	*SD*
Hypothesis 1			
Memory of positive emotions towards partner			
Appraisal Up	68	5.89	0.80
Appraisal Down	61	4.41	1.85
Control	72	5.49	1.05
Memory of positive emotions about the date			
Appraisal Up	68	5.99	0.73
Appraisal Down	61	4.50	1.82
Control	72	5.75	1.12
Hypothesis 2			
Memory of negative emotions towards partner			
Appraisal Up	68	1.09	0.32
Appraisal Down	61	2.16	1.58
Control	72	1.22	0.70
Memory of negative emotions about the date			
Appraisal Up	68	1.37	0.65
Appraisal Down	61	2.74	1.76
Control	72	1.54	0.81
Hypothesis 3			
Memory of distress towards the partner			
Appraisal Up	68	1.13	0.38
Appraisal Down	61	2.28	1.87
Control	72	1.29	0.91
Memory of distress about the date			
Appraisal Up	68	1.19	0.58
Appraisal Down	61	2.21	1.87
Control	72	1.24	0.74
Hypothesis 4			
Memory of feeling safe on the date			
Appraisal Up	68	6.46	0.98
Appraisal Down	61	5.48	1.80
Control	72	6.10	1.05

Note. See text for inferential statistics details: Hypotheses 1, 2, 3, and 4 found significant differences between the Appraisal Down and the Control condition, lending some support for the hypotheses. Hypotheses 1 and 2 used composite measures. *n* = Number per Condition; *SD* = Standard Deviation.

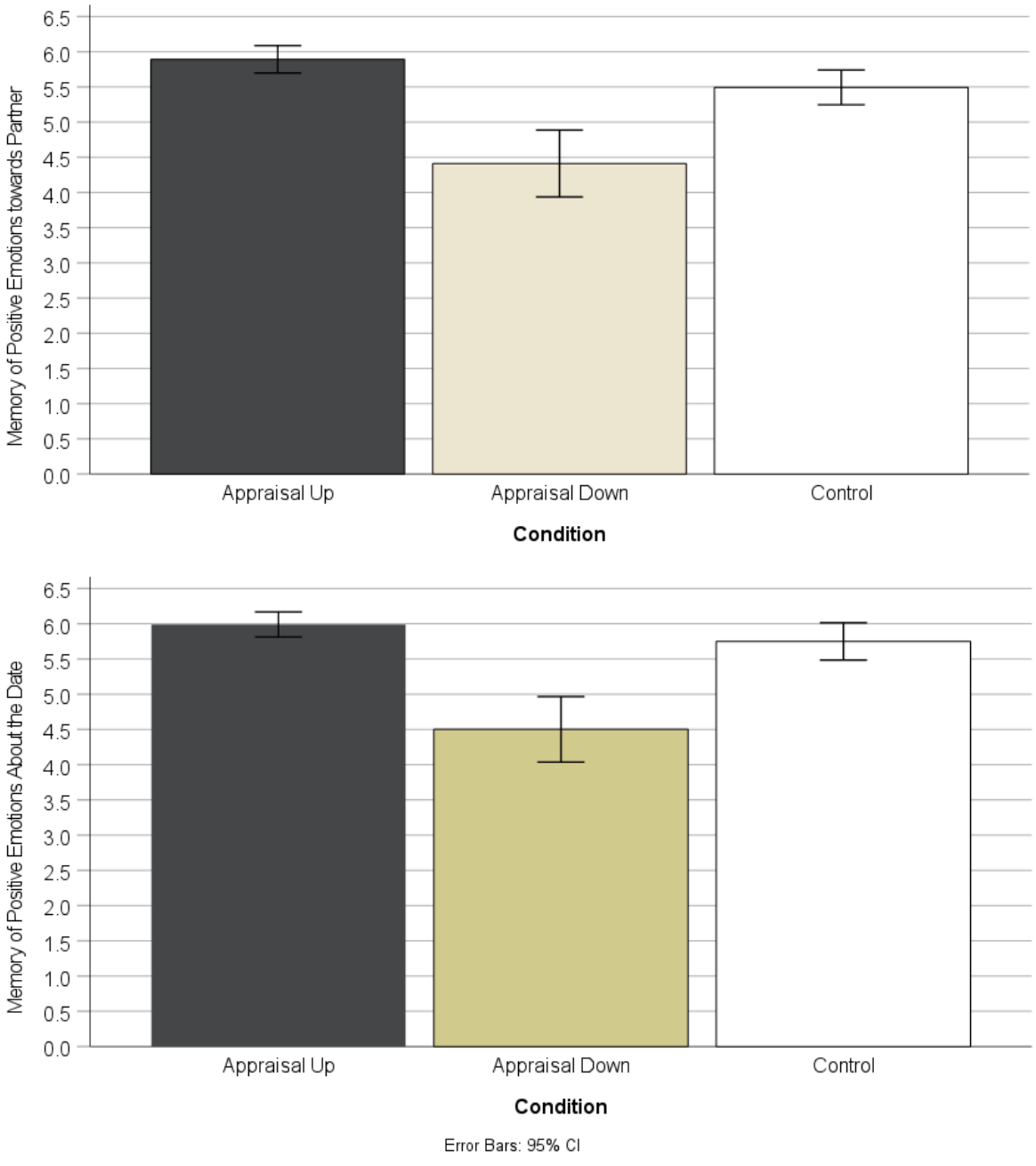
Hypothesis 1

Memory of Positive Emotions Composite Towards Partner. There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) with the dependent variable set to be the composite memory of positive emotions towards partner, $F(2, 198) = 22.6$, $p < .001$, $\eta^2 = 0.186$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly lower positive emotion than both the Control (Mean difference 1.08, $p < .001$, Cohen's $d = 0.73$) and the Appraisal Up condition (mean difference 1.48, $p < .001$, Cohen's $d = 1.06$). Table S2.1 in the SOM contains a full set of pairwise Cohen *d* effect

sizes for Experiment 2. There was no significant difference between Appraisal Up and Control. For dataset and outputs, see https://osf.io/9p5jg/. See Figure 2.1 (top) below for a graphical representation, and for the means and standard deviations see Table 2.2 above.

Figure 2.1

Mean Scores by Condition on the Memory of Positive Emotions Towards the Partner (Top Graph) and About the Date Event (Bottom Graph)



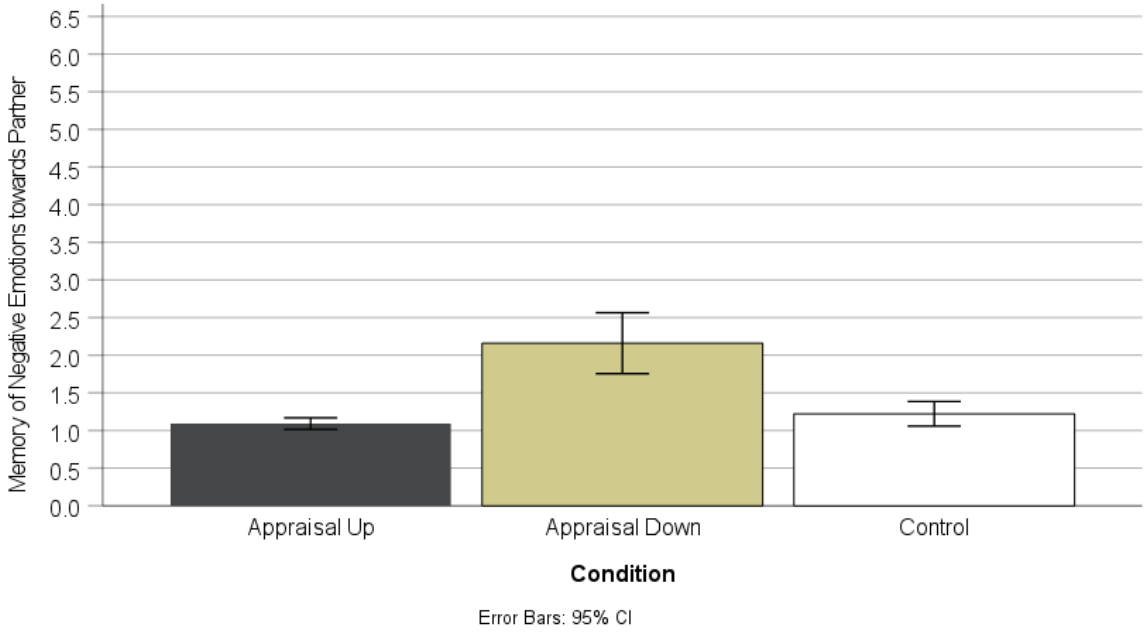
Memory of Positive Emotions Composite About the Date. There was a significant overall ANOVA between the three conditions on the composite memory of positive emotions about the date, $F(2, 198) = 24.8$, $p < .001$, $\eta^2 = 0.200$. A Tukey HSD post-hoc analysis revealed the Appraisal Down condition remembered significantly less positive emotion than the Appraisal Up condition

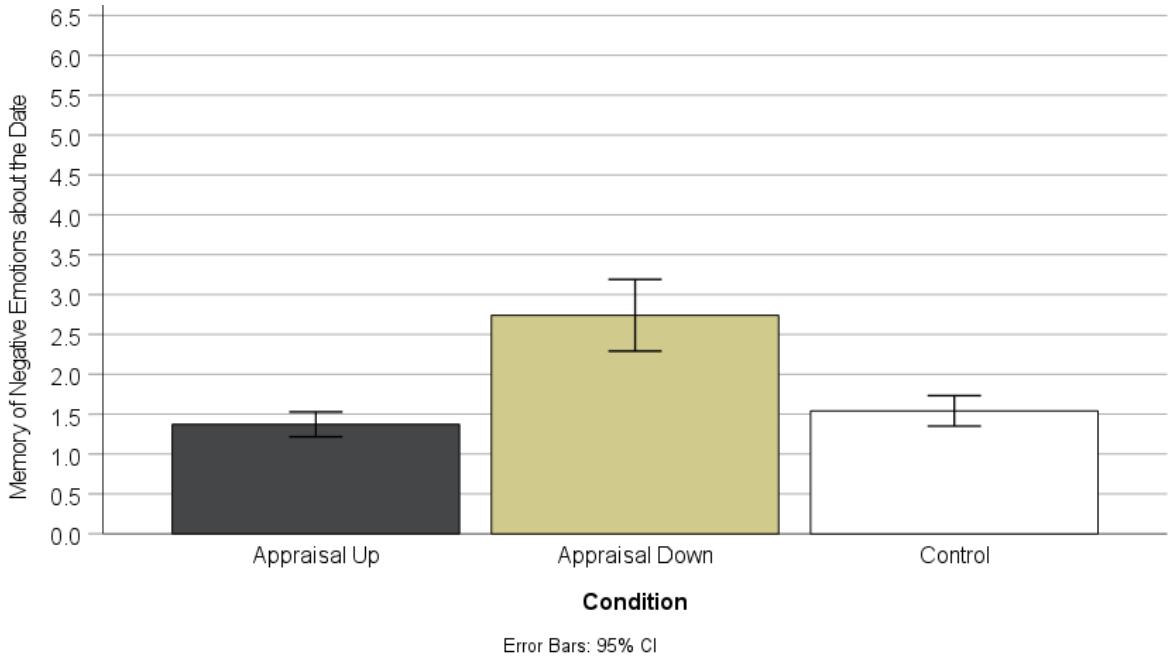
(mean difference 1.49, $p < .001$, Cohen's $d = 1.10$), and the Control condition (mean difference 1.25, $p < .001$, Cohen's $d = 0.84$). There was no significant difference between Appraisal Up and Control. See Figure 2.1 above (bottom graph) for a representation of this pattern in a graph, and for the means and standard deviations see Table 2.2. Hypothesis 1 was supported.

Hypothesis 2

Memory of Negative Emotions Composite Towards Partner. There was a significant overall ANOVA between the three conditions and the composite memory of negative emotions towards partner, $F(2, 198) = 22.3$, $p < .001$, $\eta^2 = 0.184$ (composite of angry, fear, outrage, disgust). A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more negative emotion than both the Control (mean difference 0.93, $p < .001$, Cohen's $d = 0.79$) and the Appraisal Up condition (mean difference 1.07, $p < .001$, Cohen's $d = 0.96$). There was no significant difference between Appraisal Up and Control condition. See Figure 2.2 below (top graph), and Table 2.2 for the means and standard deviations.

Figure 2.2. *Mean Scores by Condition on Memory of Negative Emotions towards the Partner (top graph) and About the Date Event (bottom graph)*



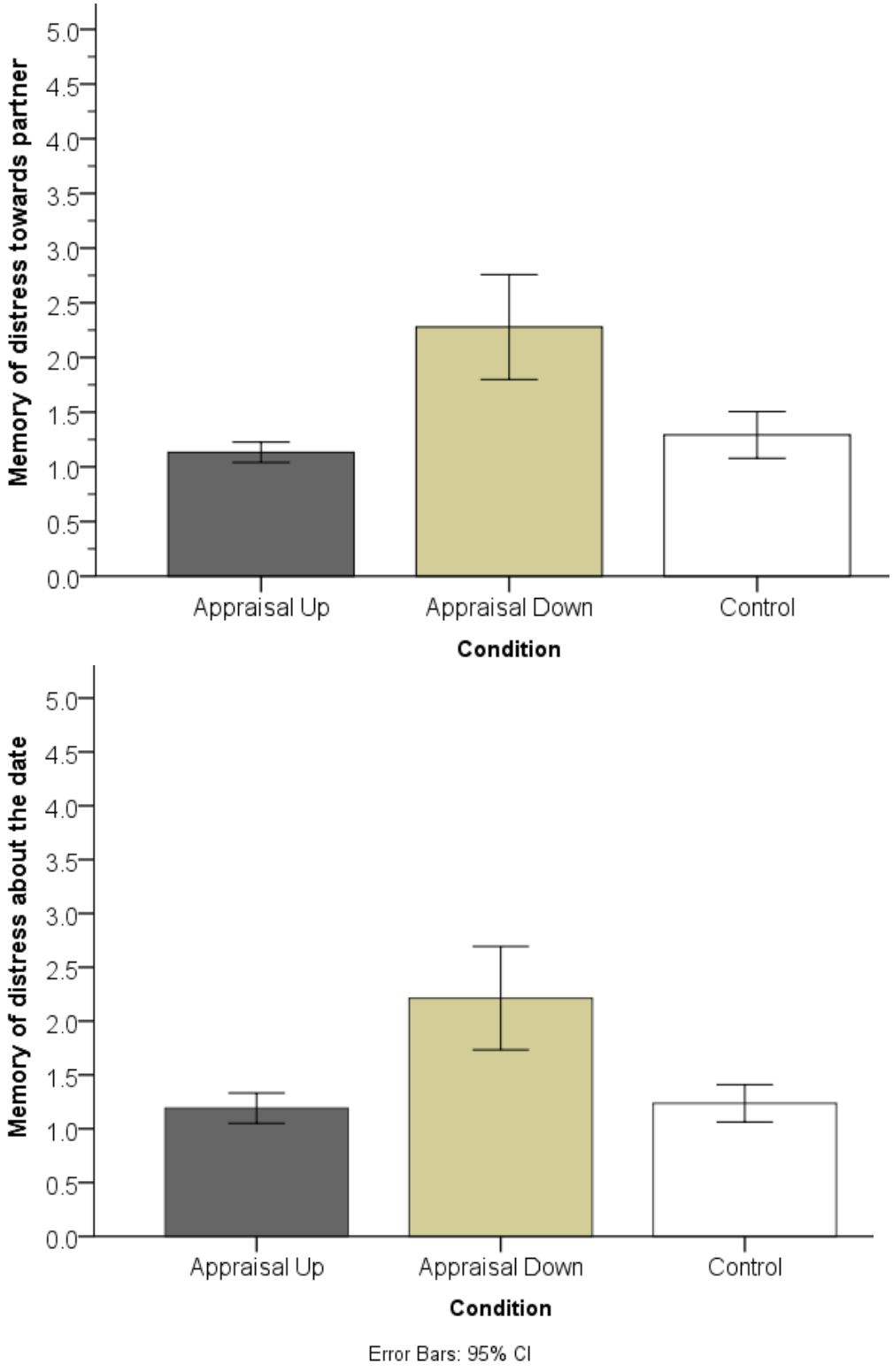


Memory of Negative Emotions Composite About the Date. There was a significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) and the composite memory of negative emotions towards partner, $F(2, 198) = 27.0$, $p < .001$, $\eta^2 = 0.214$ (composite of memories of embarrassed, angry, shame). A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more negative emotion than both the Control (mean difference 1.20, $p < .001$, Cohen's $d = 0.90$) and the Appraisal Up condition (mean difference 1.37, $p < .001$, Cohen's $d = 1.05$). There was no significant difference between Appraisal Up and Control condition (mean difference 0.17, $p = .658$). See Figure 2.2 above (bottom graph), and Table 2.2 above for the means and standard deviations. Hypothesis 2 was supported.

Hypothesis 3

Memories of Distress Towards the Partner. There was a significant overall ANOVA between the three conditions and memory of distress towards the partner, $F(2, 198) = 17.4$, $p < .001$, $\eta^2 = 0.150$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly more distress than both the Appraisal Up (mean difference 1.15, $p < .001$, Cohen's $d = 0.87$) and the Control condition (mean difference 0.99, $p < .001$, Cohen's $d = 0.69$). There was no significant difference between the Control and Appraisal Up conditions. See Figure 2.3 below (top graph), and for the means and standard deviations see Table 2.2.

Figure 2.3. *Comparison of Mean Scores by Condition on Memory of Distress Towards Partner (Top Graph) and About the Date (Bottom Graph)*



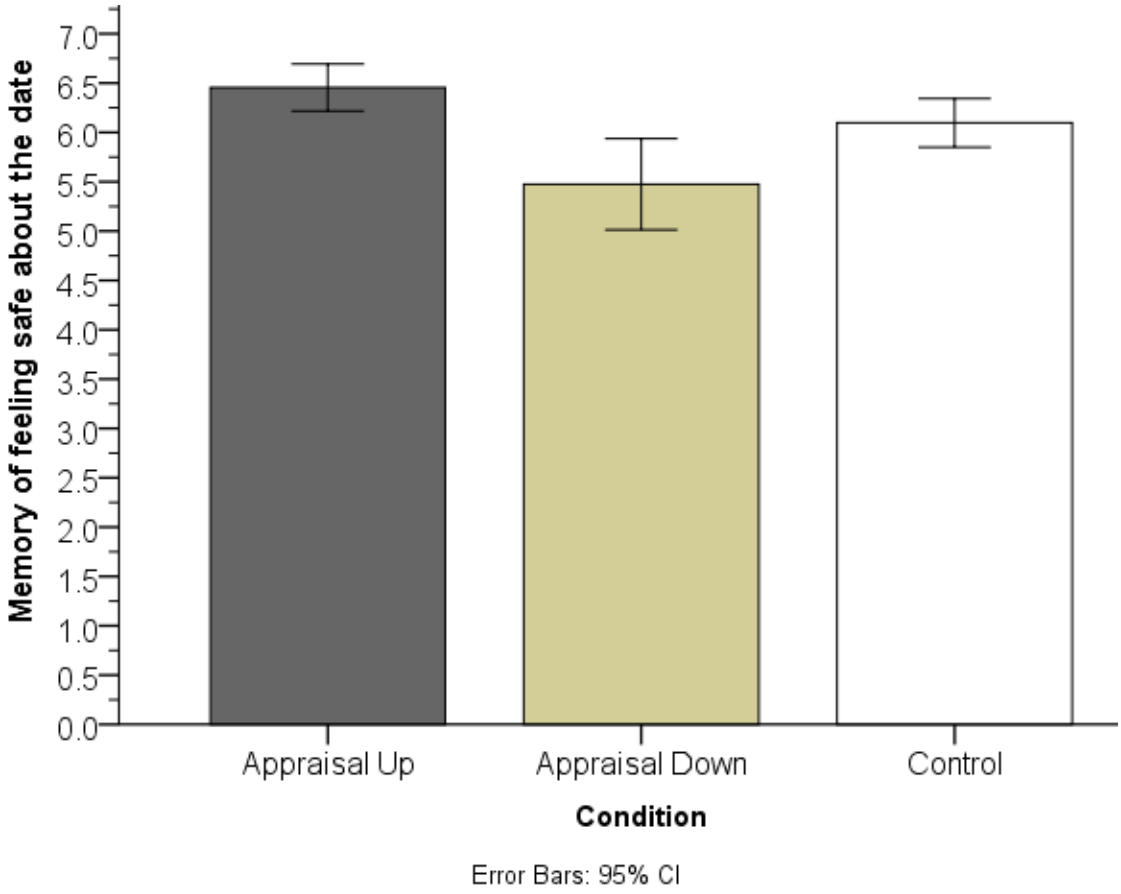
Memories of Distress About the Date. There was a significant overall ANOVA between the three conditions and memory of distress on the date, $F(2, 198) = 15.5$, $p < .001$, $\eta^2 = 0.135$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition remembered significantly

more distress than both the Appraisal Up (mean difference 1.02, $p < .001$, Cohen's $d = 0.75$) and the Control condition (mean difference 0.98, $p < .001$, Cohen's $d = 0.70$). There was no significant difference between the Control and Appraisal Up conditions. See Figure 2.3 above (bottom graph) and Table 2.2 above for the means and standard deviations. Hypothesis 3 was supported.

Hypothesis 4: Memories of Feeling Safe on the Date

There was a significant overall ANOVA between the three conditions and memory of feeling safe on the date, $F(2, 198) = 9.19$, $p < .001$, $\eta^2 = 0.085$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition had significantly lower memories of feeling safe compared to Appraisal Up (mean difference = 0.98. $p < .001$, Cohen's $d = 0.69$) and the Control condition (mean difference = 0.62, $p < .001$, Cohen's $d = 0.43$). See Figure 2.4 below and Table 2.2 above for the means and standard deviations. Hypothesis 4 was supported.

Figure 2.4. *Comparison of Mean Scores by Condition on Memory of Feeling Safe on the First Date*



Memory of Non-Emotions

Hypothesis 5: Report to Authorities

There was a non-significant overall ANOVA between the three conditions (Appraisal Up, Appraisal Down, Control) on participants' memory of their likelihood to report their partner to the authorities, $F(2, 198) = 0.87$, $p = .419$, $\eta^2 = 0.009$. A Tukey HSD post hoc analysis revealed no significant differences between groups. Table 2.3 below gives the means and standard deviations by condition. Hypothesis 5 was not supported.

Table 2.3. *Mean Scores by Condition for Memory of Reporting to Authorities, Feeling Forced, and Boundaries*

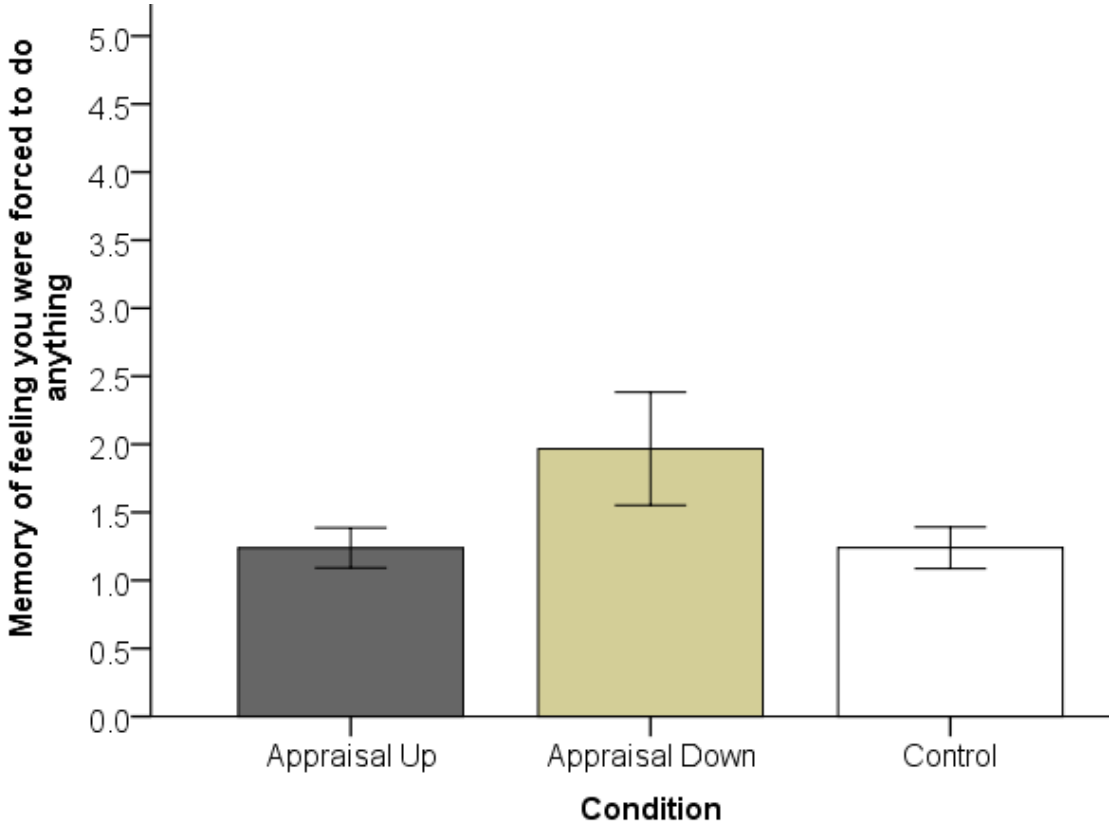
	n	*M*	*SD*
Hypothesis 5			
Memory of likelihood to report partner to authorities			
Appraisal Up	68	1.06	0.49
Appraisal Down	61	1.18	0.53
Control	72	1.11	0.55
Hypothesis 6			
Memory of feeling forced on the date*			
Appraisal Up	67	1.24	0.61
Appraisal Down	61	1.97	1.62
Control	71	1.24	0.64
Hypothesis 7			
Memory of partner being considerate of boundaries*			
Appraisal Up	68	6.44	0.72
Appraisal Down	61	4.51	2.26
Control	72	5.93	1.30

Note. Hypothesis 5 found no significant differences. *Hypotheses 6 and 7 found significant differences between the Appraisal Down and the Control condition, lending support for the hypotheses. The slight differences in *n's* is due to missing data.

Hypothesis 6: Feeling Forced on Date

There was a significant overall ANOVA between the three conditions on participants' memory of feeling forced to do something on their first date, $F(2, 196) = 10.4$, $p < .001$, $\eta^2 = 0.096$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition had higher memories of feeling forced that the Appraisal Up condition (mean difference = .728, $p < .001$, Cohen's $d = 0.61$) and the Control condition (mean difference = .728, $p < .001$, Cohen's $d = 0.61$). See Figure 2.6 below and Table 2.3 above. Hypothesis 6 was supported.

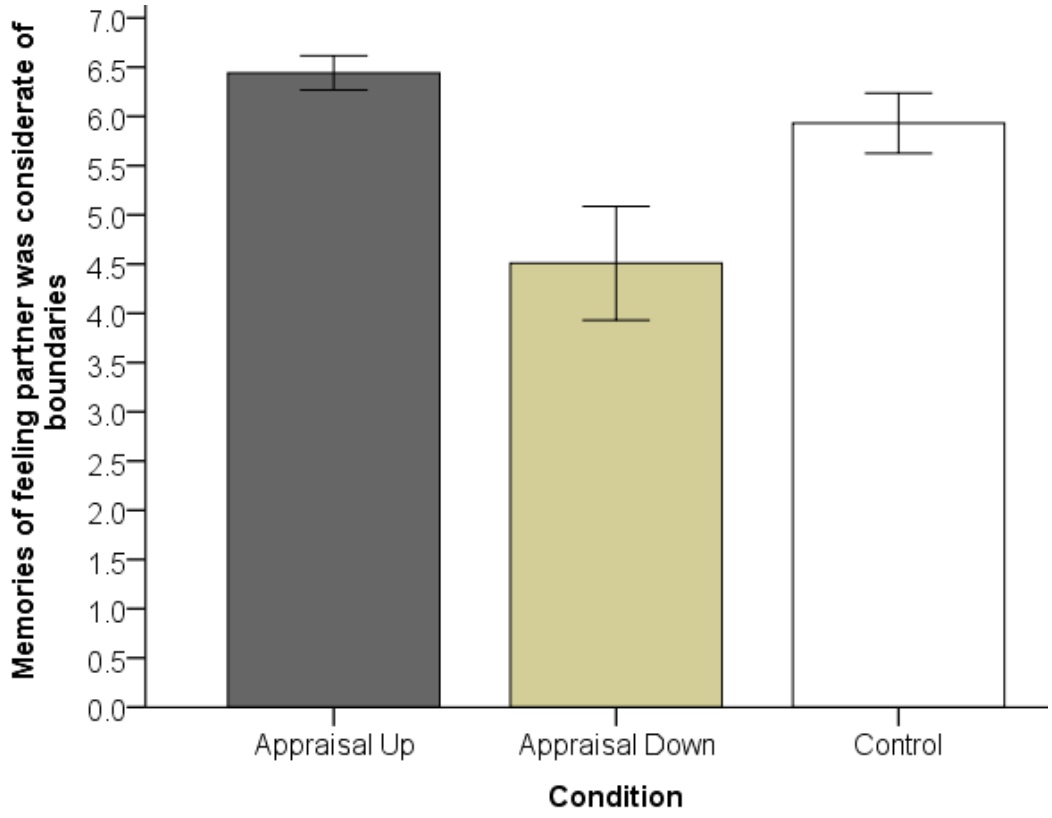
Figure 2.6. *Mean Scores by Condition on Memory of Feeling Forced to Do Something on the First Date*



Hypothesis 7: Remembering Consideration of Boundaries

There was a significant overall ANOVA between the three conditions on participants' memory of their partner being considerate of boundaries, $F(2, 198) = 27.4$, $p < .001$, $\eta^2 = 0.217$. A Tukey HSD post hoc analysis revealed the Appraisal Down condition had a mean score significantly lower than both the Appraisal Up condition (mean difference 1.93, $p < .001$ Cohen's $d = 1.18$), and the Control condition (mean difference 1.42, $p < .001$, Cohen's $d = 0.79$). There were no significant differences between Control and Appraisal Up groups. See Figure 2.7 below and Table 2.3 above. Hypothesis 7 was supported.

Figure 2.7. *Mean Scores by Condition on Memory of their Partner being Considerate of Boundaries*



General Discussion

The current experiments found that when people reappraised their first date (nudged via writing prompts), this appeared to in turn affect memories of emotion. We found that lowering appraisals of first date partners corresponded with lower memories of positive emotions and higher memories of negative emotions (both towards the partner and about the date itself). In measures of particular relevance to a subset of legal cases or disciplinary hearings, we found that lowering appraisals of the first date partner increases memories of feeling distress and feeling forced to do something on the date, and lowers memories of feeling safe on the date and feeling boundaries were well considered by the partner on the date.

This research adds to the literature by expanding the general finding of memories of emotion being malleable (see Levine, 1997), into an important new domain of memories about first dates. In Patihis et al. (2019) and Patihis & Herrera (2024), we showed that current reappraisals of a parent can bias memories of childhood emotion (love) and other emotions towards parents. We found that negative reappraisals had the largest effect on memories of emotion, and the current study found a similar pattern. In the current study, we found negative reappraisals affected memories of emotion to past first dates. Our findings differ from Herrera (2020) in that we found a stronger effect possibly due changes in methodology, and whereas Herrera focused on sexual encounters, we focused on first dates (without inquiring about sexual activity).

In the current study, we add to past findings that suggest a causal relationship between reappraisals and memories of emotion. In our experiments, random assignment into appraisal conditions affected the composite positive and negative emotions measures. The previous

research combining longitudinal data without random assignment (e.g., Levine, 1997) and experiments with random assignment (e.g., Patihis et al., 2019), suggested a causal relationship, and our current data adds to that. The fact that we found this both Experiment 1 and 2 is reassuring that the effect is a real one.

As outlined in the introduction, the possibility that memories of emotional experience may shift over time has been raised as a relevant consideration in understanding retrospective evaluations of past dating and sexual experiences, including those discussed in the context of the #MeToo movement. The current findings were observed even when the reappraisal manipulation involved participants reflecting on their own experiences rather than receiving external suggestions about a partner's character. Our findings on some individual items may have particular interest. For example, we found that negatively reappraising a date partner appears to increase memories of feeling distress on that date. We also found negative reappraisals of the first date increases memories of feeling forced to do something on the date, lowered memories of feeling safe on the date, and that boundaries were less respected by the partner on the date. In real cases, dating experiences that subsequently involve drastic negative reappraisals after the fact, could lead to the biasing of important memories, such as these. This may be relevant in some legal contexts that rely heavily on retrospective reports of emotional experience (e.g., a subset of #MeToo cases, Mendes et al., 2018). In some cases, those memories of emotions, such as distress or feeling forced, will be accurate, nevertheless past research has shown memories of emotions can shift with current reappraisals of a person (e.g., Patihis et al., 2019). It is not just the current study that raises these considerations, the whole branch of memory of emotion research from the 1990s to today has proposed this phenomenon *in general* (work by Martin Safer, Linda Levine, the current first author, and others). The current experiments are important in that it may confirm that these general set of findings may indeed generalize to memories of emotion towards dating partners.

Beyond the primary hypothesis tests, several noteworthy patterns emerged. First, across both experiments, negative reappraisals produced more consistent and larger effects than positive reappraisals, with the Appraisal Down condition repeatedly diverging from both the Appraisal Up and Control conditions, whereas the latter two were often similar. This asymmetry suggested that memory of emotion for first dates may be more sensitive to negative reappraisal than to enhancement of positive evaluations, consistent with broader evidence for negativity biases in evaluative processing. Second, items related to interpersonal boundaries showed particularly strong and reliable effects, despite not being composite emotional measures, indicating that memories of socially salient relational judgments may be especially malleable. Third, the Control condition frequently resembled the Appraisal Up condition, raising the possibility that unguided recall may default toward relatively benign or positive appraisals of past dating partners. Finally, correlational analyses revealed that while memory of emotion measures were clearly related, they were not redundant, and these associations were stronger in Experiment 2 than Experiment 1, suggesting that appraisal-dependent reconstruction of memory may become more coherent or internally consistent in more heterogeneous samples. Together, these patterns provided converging evidence that memory malleability was not uniform across emotional valence, item type, or condition, pointing to boundary conditions that may be informative for future research.

Demand Characteristics and Alternative Explanations

Experimental research on memory of emotion raises the possibility of demand characteristics—namely, that participants may infer the hypotheses and respond in ways they believe align with

researcher expectations. We took several steps to minimize this risk. As in Patihis et al. (2019), the purpose of the study was not disclosed until debriefing, and the writing prompts required participants to generate their own autobiographical examples rather than endorsing researcher-provided claims about the target person. Importantly, participants were not directed to change their memories, nor were the outcome measures framed in terms of bias or distortion.

Moreover, several aspects of the findings are difficult to explain solely by demand characteristics. First, if participants were merely attempting to comply with perceived expectations, one might expect generalized shifts across all dependent variables. Instead, we observed selective effects, with stronger and more consistent effects for negative reappraisals than positive ones, and weaker or null effects for some variables (e.g., reporting to authorities in Experiment 1). Second, prior work using similar paradigms has demonstrated persistence of memory-of-emotion effects across time delays (Patihis et al., 2019), which is difficult to reconcile with a demand-based explanation that would require participants to remember and sustain hypothesized response patterns over extended periods. Third, earlier studies have shown that reappraisal manipulations affect memory of emotion even when controlling for current affect (Patihis et al., 2019), suggesting that the observed effects are not simply due to mood congruency or a general response tendency.

Alternative mechanisms such as priming, suggestion, or selective retrieval may contribute to the observed effects and are not mutually exclusive with cognitive reappraisal. Cognitive appraisals can be understood as an umbrella construct encompassing multiple sub-processes, including reminders of past behaviors, evaluative framing, and accessibility of certain autobiographical details. In the present studies, the writing prompts may have increased the accessibility of appraisal-consistent information, thereby nudging participants' current evaluations of their first date partner and, in turn, shaping reconstructive recall. While other designs—such as providing external negative information about a target—might also shift appraisals, such approaches raise ethical and ecological concerns when applied to real interpersonal relationships.

Overall, although demand characteristics cannot be ruled out entirely in experimental research, the converging evidence from longitudinal studies (e.g., Levine, 1997; Levine et al., 2001), prior experiments using similar manipulations, and the selective and replicable pattern of effects across the current two experiments suggests that the findings are more parsimoniously explained by appraisal-based reconstruction of memory of emotion rather than by participant compliance alone.

Limitations

The current studies have some limitations. The two experiments varied in sampling strategy. Experiment 1 used a student-heavy convenience sample, while Experiment 2 recruited a heterogeneous UK adult sample via Prolific, improving age diversity and external validity, although neither sample was designed to precisely mirror UK population demographics (UK Census matching of demographics was not used). Another limitation is that unlike Patihis et al. (2019), in the current study we did not measure the independent variable as a manipulation check, and we did this in order to keep the current study short and best suited to detect an effect immediately after the manipulation (including small effects). Nevertheless, in Patihis et al. (2019) we found significant effects on the independent variable by condition, with very similar methodology. Another possible concern is that the time between the first date and the study may

vary between participants due to age, but this is somewhat answered by the non-significant different in age between conditions (see Table S2.2 in SOM). The studies were not preregistered, and thus future research would benefit from preregistered designs to further test the robustness of these effects. We did not measure time to first date, but if we assume that random assignment would likely result in similar ages of first date in both conditions, then it may not be a confound given the mean ages by the conditions being similar. Replication over two experiments may have reduced concern over some variables being inadvertently distributed unevenly in the conditions—even unmeasured variables are unlikely to be confounds.

Future research could build on the current experiments, and add to the recent literature (Herrera, 2020), by investigating whether significant effects for reappraisals on memories of emotion can be found not only for first dates, but for past sexual encounters specifically. Demand characteristics and the probable cognitive causes of reappraisals could also be studied (e.g., suggestion, priming, reframing, reminding of faults, etc.). Future research could also attempt to use a pretest, post-test design (compare with Experiment 2 in Patihis et al., 2019), although that design will come with the problem of participants remembering their pretest answers, with a risk of consolidating their memories before the manipulation. Longitudinal research would also be beneficial in future research relating to memories of dating experiences as this addresses both ecological validity and demand characteristics, although this design comes with increased uncertainty of cause and effect relationships.

Conclusion

Both the Experiment 1 and 2 showed that reappraisal manipulations via writing prompts can lead to memory of emotion biases with significant direct effects on most dependent variables. Some of our outcome measures may have relevance to retrospective complaints related to dating experiences—for example we found biasing by condition in remembering distress, safety, boundaries, and feeling forced to do something on the date. These findings add to the growing evidence that manipulating appraisals experimentally using relatively non-suggestive writing prompts may lead to distortions in memories of emotion.

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Appendix A: Writing Prompts

Appraisal Up Condition

Please write out 2 sentences giving examples of how your first date partner was **kind** towards you_____

Please write out 2 sentences giving examples of how your first date partner was **funny** towards you_____

Please write out 2 sentences giving examples of how your first date partner was **polite** towards you_____

Please write out 2 sentences giving examples of how your first date partner made you feel **comfortable**_____

Please write out 2 sentences giving examples of how **considerate** your first date partner was towards you_____

Appraisal Down Condition

Please write out 2 sentences giving examples of how your first date partner was **unkind** towards you._____

Please write out 2 sentences giving examples of how your first date partner was **not funny** towards you._____

Please write out 2 sentences giving examples of how **impolite** your first date partner was towards you._____

Please write out 2 sentences giving examples of how **inconsiderate** your first date partner was towards you._____

Please write out 2 sentences giving examples of how **uncomfortable** your first date partner made you feel._____

Control Condition

Please press the arrow to continue with the study.

Appendix B: Memory Questionnaire

Partner Related Questions

For the following questions, remember back to how you felt towards the partner you had for your first date during the first 24 hours after the date had occurred.

During the first 24 hours following your first date, to what degree did you feel **happy** towards your partner.

Not at all						Extremely
1	2	3	4	5	6	7
○	○	○	○	○	○	○

[This Likert rating-scale was the same for the questions that follow as well]

During the first 24 hours following your first date, to what degree did you feel **amused** by your partner.

During the first 24 hours following your first date, to what degree did you feel **joyful** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **calm** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **safe** around your partner.

During the first 24 hours following your first date, to what degree did you feel your partner was **considerate** of your boundaries.

During the first 24 hours following your first date, to what degree did you feel **angry** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **distress** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **fear** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **outrage** towards your partner.

During the first 24 hours following your first date, to what degree did you feel **disgust** towards your partner.

During the first 24 hours following your first date, to what degree were you likely to report your partner or complain to the authorities.

Date Related Questions

For the following questions, remember back to how you felt about the event of your first date as a whole and not your partner during the first 24 hours after it occurred.

During the first 24 hours following your first date, to what degree did you feel **joyful** about the date.

During the first 24 hours following your first date, to what degree did you feel **amused** about the date.

During the first 24 hours following your first date, to what degree did you feel **embarrassed** about the date.

During the first 24 hours following your first date, to what degree did you feel **excited** about the date.

During the first 24 hours following your first date, to what degree did you feel you were **forced** to do anything.

During the first 24 hours following your first date, to what degree did you feel **angry** about the date.

During the first 24 hours following your first date, to what degree did you feel **distressed** about the date.

During the first 24 hours following your first date, to what degree did you feel **shame** about the date.

During the first 24 hours following your first date, to what degree did you feel **happy** about the date.

During the first 24 hours following your first date, to what degree did you feel **calm** about the date.

During the first 24 hours following your first date, to what degree did you feel **safe** about the date.

[Note: the bolded key words above were bolded in the original survey]