Memories for the emotions that you and others experienced during COVID-19 lockdown

Zhe Chen[1],
Cameron Hooson-Smith[1],
Ailsa Humphries[1],
Simon Kemp[1]

[1] University of Canterbury, Christchurch, New Zealand.

Author correspondence:
Simon Kemp,
Department of Psychology,
University of Canterbury,
Private Bag 4800,
Christchurch, New Zealand.
Email: Simon.Kemp@canterbury.ac.nz.

URL: http://trauma.massey.ac.nz/issues/2022-1/AJDTS_26_1_Chen.pdf

Abstract

People's memory for emotion is often biased by their beliefs of what they should have felt. This bias may be stronger when people estimate the emotions of others. We hypothesised that people might remember a lockdown as worse than it really was for them, and, especially if their own was not too bad, they might believe that others had a worse experience. We investigated people's memories of their own emotions experienced during a national COVID-19 lockdown and the emotions they estimated others were feeling. Two hundred and thirty-four participants from Aotearoa New Zealand each completed two matched questionnaires, one during a lockdown and one after the lockdown had ended. The questionnaires asked them to rate eight different emotions, some positive and some negative, and their life satisfaction. They also rated the government's current performance on managing COVID-19 at both time points. Participants had a relatively good memory for their emotions but, as predicted, they tended to recall the lockdown experience as more negative than they had originally experienced it. They also estimated the experiences of others to be more negative than their own. These results agree with our predictions and suggest that we should be cautious about accepting people's memories of how they actually felt during disasters as accurate.

Keywords: *Biases in memory, COVID-19 lockdown, emotion of others, memory for emotion*

On March 21, 2020, Aotearoa New Zealand (NZ) began a national lockdown to stop the spread of COVID-19. The lockdown required people to stay at home and all non-essential businesses to close, therefore immensely impacting everyone's lives. In this paper, we examine the emotional and remembered emotional effects of this lockdown by exploring three main questions: How did people perceive their experience during that period? When the lockdown was over, how did they perceive the experience in retrospect? How did they perceive their experience as differing from those of others? We explore the remembered affective experience of our participants themselves and their beliefs about the affective experience of an average other person in two linked surveys, one focusing on the experience over the previous day during the lockdown and the other on the remembered/imagined experience of a typical lockdown day several months after the lockdown was lifted.

Memory is known to be a constructive process influenced by multiple factors (e.g., Bransford & Johnson, 1972; Conway, 2005; Grant & Ceci, 2000; Loftus, 1975; Shiffman, 2000; see Schacter, 2012, for a review). The constructive nature of memory also applies to people's affective memories (Burt et al., 1998; Christianson & Safer, 1995; Eich et al., 1985; Fredrickson & Kahneman, 1993; Levine, 1997; Redelmeier & Kahneman, 1996). For example, in a now-classic study, Redelmeier and Kahneman asked patients undergoing a medical procedure to report the intensity of pain in real time and then to recall the overall pain of the procedure afterwards. The results showed that the patients' retrospective evaluations of the pain were reasonably approximated by a *peak/end* rule (i.e., the ratings of the pain approximated the weighted average of the end moment and the most intense moment). Although later studies found that memories of past emotions do not always obey the peak/end rule, especially when the experience in question is pleasant, lasts an extended period of time, and changes intensity during its course (e.g., Ariely & Loewenstein, 2000; Ariely & Zauberman, 2000; Burt et al., 1998; Kemp et al., 2008; Kemp & Chen, 2012; Wirtz et al., 2003), the suggestion that memories of emotions are not always remembered correctly and that recall depends on a limited number of moments remains true.

In addition to the disproportionate influence of a few moments, several other factors have been shown to affect memories of past emotions (see Levine et al., 2006, for a review). One of these factors is the experience or post-event knowledge at the time that memories of a past experience are retrieved (Levine, 1997; Safer et al., 2002). Safer et al. (2002) show that students' recollection of their pre-exam anxiety was influenced by the grades they received in the exam; those who did well remembered being less anxious about the exam while those who did not do well remembered being more anxious. This bias was larger for those who had positive personality traits, suggesting that memories of past emotions are influenced jointly by post-event knowledge and individual differences.

Another factor that affects the accuracy of recalled emotions is one's expectation or belief about the type of emotion people typically experience in a specific situation (e.g., Kemp et al., 2008; Sprecher, 1999; Wilson et al., 1989). For example, going on holiday and being in a romantic relationship are usually associated with positive feelings. If memories are biased in the direction of one's expectation or belief, people would remember their holiday or love experience as being more positive than their actual experience at the time. This pattern of data has been found in previous research; for example, in one study participants rated daily their happiness over the previous 24 hours throughout a vacation and recalled the experience of the vacation twice after it was over (Kemp et al., 2008). The level of happiness was rated higher in the recall than the average happiness reported during the vacation. Similarly, in a study of the feelings of partners in romantic relationships over 4 years, those who had intact relationships reported a greater degree of love, commitment, and satisfaction in the recall than in their actual experience (Sprecher, 1999). These results indicate that our fond memories of the past are often exaggerated, perhaps partly due to the paucity of information stored in the memory (Kahneman & Riis, 2005) or the limited amount of information accessible at the time of retrieval (Robinson & Clore, 2002).

Given the belief-consistent bias in memories of past emotions, it seems possible that belief would also play a role in the imagined affective experience of another person: that is, what someone thinks others experience emotionally (e.g., Decety & Somerville, 2003; Ruby & Decety, 2004). For example, Wilson et al. (1982) found that people have shared beliefs about the types of events that influence mood. In their study, one group of participants (i.e., the actors) rated their mood and possible predictors of mood every day for several weeks. Afterwards, they judged the relationship between each of the predictors and their mood. Another group of participants (i.e., the observers), who had not taken part in the rating exercise, judged the typical relationship between these same predictors and mood in general. Interestingly, the judgements of the observers were similar to the judgments of the actors, and both deviated substantially from the results obtained in an objective measure based on the participants' actual data. These results show that, when it comes to causal inferences, belief plays a role in the understanding of one's own mood and the mood of another person.

To summarise, people's memory for the emotion experienced over an extended period of time is often inaccurate, biased, and obtained from a small sample of moments in the period. One source of bias may be the beliefs people have about the emotions they think they should have experienced at the time. The present study concentrated on this source.

We took the opportunity of the NZ lockdown to investigate how this belief would influence memories of past emotions and whether it would play a larger role in the imagined affective experience of an average person than in one's own experience. The lockdown in NZ, like those elsewhere in the world, had a massive impact on people's lives. Lockdowns have been widely perceived as events associated with isolation, psychological distress, and negative emotions generally (e.g., Alivernini et al., 2021; Groarke et al., 2020). Moreover, the lockdown was itself a governmental response to people's fear of the real dangers of COVID-19. This perception indicated, firstly, that memories for the lockdown experience would be more negative than they were at the time, and, secondly, that if people did not have negative experiences themselves, they might still assume that others did.

The NZ lockdown experience was different to that of many other countries, and perhaps particularly well suited for our research. The initial NZ lockdown was a Level 4 lockdown (higher level numbers correspond to more severe lockdowns, with 4 being the highest) which lasted from March 25 to April 26, 2020. During this period, the vast majority of people could only leave their residences to shop at supermarkets, seek medical attention, or to exercise locally. After April 26, there was a gradual easing of restrictions and after June 8 until near the end of our research period there were no active reported cases. During this time there were very few restrictions and life within NZ was close to normal,

although the external borders were largely closed. Some restrictions were reimposed on August 12, but these restrictions were limited to the Auckland region. The Canterbury region, where we recruited our participants, had fewer restrictions. To summarise, the initial lockdown was quite severe by international standards, and it was followed by a long period of little restriction.

We conducted two surveys with the same participants completing both. In the first, which was administered during the lockdown, participants reported their affective experiences of the previous day. In the second, which was completed several months after the lockdown, the same participants reported their affective experiences of a typical day during the lockdown. These surveys also asked participants to estimate the affective experiences of the "average New Zealander".

We made two predictions. First, participants would on average recall the lockdown period as a more negative experience than they had actually had. Second, they would believe others had a more negative experience than they did themselves.

Method

Two hundred and thirty-four participants each completed two online questionnaires, one during and one following the March to April 2020 COVID-19 lockdown described above. In both questionnaires they reported on their emotional state during the lockdown. They did this both for their own emotional state and for that of an "average New Zealander".

Participants and Procedure

There were two samples, one consisting of 135 students and one of 99 members of the (non-student) general public. We used these two different samples to check if the results would generalise over two different groups of people, especially given that students are a common sample in psychological research. All participants completed their first questionnaires between April 12 and April 26, 2020. Their second questionnaires were completed between July 21 and August 18. All but seven of the second questionnaires were completed during light Level 1 restrictions; the remaining seven were completed under Level 2 restrictions that commenced on August 12. Encouragement to complete the second questionnaire was given electronically to all original participants.

Three hundred and eleven completed the first questionnaire. One hundred and thirty-five students completed both questionnaires and could be matched from the university email addresses supplied. Ten completed both but could not be matched. Students were recruited from, and received some credit towards, an introductory course in psychology. This course ended in June, hence the low rate of completions for the second questionnaire. The students were predominantly female (112/135) and 127 of them were aged 24 years and under. One student had already completed a Bachelor's degree. Of the 162 non-students who completed the first questionnaire, 99 completed both and could be matched from codewords supplied (a further three completed both but could not be matched.) Sixty-five non-students were female. Seven were aged 24 or under, 14 were aged 25-34, 25 35-44, 25 45-54, 20 55-64, and eight were 65 or over. Sixty-nine non-students possessed a Bachelor's or higher degree. The non-students were recruited through social media.

Only results obtained from the 234 participants who completed two matched questionnaires are presented. Ethics approval was obtained from the University of Canterbury Human Ethics Committee (HEC 2020/27/LR-PS).

Questionnaires

Apart from somewhat different requests for information to enable matching the first and second questionnaires, the questionnaires given to the two samples (student and general public) were identical. All questionnaires were completed online via Qualtrics.

Questionnaire completed during lockdown. Following introductory information summarising the purpose of the research, ethical requirements, and matching procedures, the questionnaire asked first for demographic data and general life satisfaction. This question asked "On a scale from 0 to 10 where 0 indicates "completely dissatisfied" and 10 indicates "completely satisfied", how satisfied are you with your life as a whole these days?".

Then followed a request to "Please take a moment to think about your experiences yesterday. On a scale from 0 to 10 please rate your experience of the following emotions." This was followed by seven questions asking "How much of yesterday did you spend feeling angry/depressed/joyful/happy/sad/stressed/worried"? Below each question was a scale from 0 "I felt no… at all" to 10 "I felt … all day". An eighth question asked "Would you like to have more days like yesterday?", again answered on a scale from 0 to 10 with anchors "Not at all" to "Definitely".

These eight questions were followed by parallel questions asking how they imagined the average New

Zealander had felt yesterday. As an example, the anger question read: "How much of yesterday do you think the average New Zealander spent feeling angry?" We made no attempt to influence or limit how the participants should define or consider the "average New Zealander".

Finally, we asked: "Do you think that the New Zealand government is doing enough to fight COVID-19?" to be answered on a scale from 0 ("Not at all") to 10 ("Definitely"). We also asked whether the US and Chinese governments were doing enough.

Recall questionnaire completed after lockdown. The second questionnaire was structured similarly to the first, except without requests for demographic data. Wording was similar except for appropriate changes to focus the participants on their lockdown experience. The changes are outlined in the next paragraph.

The second life satisfaction question read "On a scale from 0 to 10 … how satisfied were you with your life as a whole during Level 4 lockdown?" The eight personal emotional statements began by asking participants "to remember a typical day during the Level 4 lockdown. Try to remember as many sensory details as possible (e.g. sight, sound, smell etc.). Please think about that day before answering the questions." Wording of the following questions was identical to that of the first questionnaire with the substitution of "that day" for "yesterday". The eight "average New Zealander" questions were also identical with the same substitution. The government response question substituted "has been doing" for "is doing".

Results

The analyses of emotional states below feature analyses of variance and correlations. Analyses of variance were carried out using questionnaire order; that is, lockdown versus recall as one within-subjects factor and ratings of self or other (except for life satisfaction) as another within-subjects factor. Correlations were between self and other (average New Zealanders) ratings and also between ratings for the two questionnaires (lockdown and recall of lockdown).

Life Satisfaction

Students (Mean = 6.1, *SD* = 1.7) were significantly less satisfied with their lives than the non-students (Mean = 6.9, *SD* = 1.9, $F(1, 232) = 12.64$, $p = .0005$), but there was no significant ($p < .05$) difference between lockdown and recalled life satisfaction or interactive effect (see Tables 1 and 2).

Emotion Measures

In addition to the individual emotion measures, a composite emotion scale was constructed. Principal component analysis of the eight lockdown self ratings suggested the existence of a single factor (First Eigenvalue = 4.50; second eigenvalue = 1.11; Cronbach's α = .88), which clearly represented positive versus negative emotion. Accordingly, we compiled a single Emotion Scale that averaged the eight different measures (reverse scored for anger, depression, sadness, stressed, and worried) for all four variants (Lockdown other, α = .81; Recall self α = .91; Recall other α = .85). Results obtained with this Emotion Scale are included in the following analyses. Larger scale values indicate more positive emotions.

Table 1 shows the average ratings for each emotion and the Emotion Scale for self versus other at both lockdown and recall. Summaries of the analyses of variance are also given. A number of important features can be noted from the table. First, the lockdown experiences were overall not that bad. Second, unsurprisingly, there was considerable variation in the individual experiences. This is indicated by the large standard deviations of the self ratings, both during lockdown and subsequently. Third, people generally rated their own experiences as more positive than those of the average New Zealander. Specifically, the ratings for the average New Zealanders were higher than the ratings for oneself for

Table 1
Mean Emotion Ratings for Self and Other at Both Lockdown and Recall for Eight Emotion Measures, the Composite Emotion Scale, and Life Satisfaction

	Self		Other		
Measures	Lockdown	Recall	Lockdown	Recall	F-test sign.
Anger	2.0 (1.9)	2.3 (1.9)	3.9 (1.6)	4.4 (1.8)	S/O; L/R
Depression	2.7 (2.7)	3.2 (2.7)	4.7 (1.8)	5.0 (1.8)	S/O; L/R
Enjoyment	5.8 (1.9)	5.7 (2.0)	5.4 (1.5)	5.1 (1.5)	S/O
Happiness	6.0 (2.1)	5.9 (2.1)	5.6 (1.4)	5.3 (1.5)	S/O; L/R
Sadness	3.0 (2.4)	3.4 (2.4)	4.4 (1.8)	4.7 (1.7)	S/O; L/R
Stressed	4.3 (3.0)	4.5 (2.7)	5.9 (1.8)	6.2 (1.9)	S/O
Worried	4.1 (2.7)	4.2 (2.7)	5.8 (1.9)	6.2 (1.9)	S/O; L/R
Repeat day	5.2 (2.8)	5.6 (3.0)	3.9 (1.9)	3.8 (1.9)	L/R; X
Emotion Scale	6.4 (1.8)	6.2 (1.9)	5.0 (1.1)	4.7 (1.2)	S/O; L/R
Life Satisfaction	6.4 (1.8)	6.4 (2.3)			

Note. Numbers in parentheses are standard deviations. All measures on a scale from 0 to 10. Summaries of 2 X 2 analyses of variance results are given in the final column. S/O = Significant ($p < .05$) difference between self and other; L/R = Significant ($p < .05$) difference between lockdown and recall; X = Significant ($p < .05$) interactive effect.

negative emotions (e.g., anger, depression, sadness, stressed, and worry) and vice versa for positive emotions (e.g., enjoyment and happiness). Fourth, the recalled experience of the typical day is less positive than most people's rating of yesterday during the actual lockdown. The results are consistent with people having a general impression that lockdown should be worse than they actually experienced. They tended to recall it as a little worse than it was and think that, even if they had a reasonable time, others did not.

Such an interpretation is supported by two additional features of the results. First, the smaller standard deviations for the experiences of others (both at the time and later) suggest a comparatively common impression, perhaps derived from the media, of what lockdown was like that was not solely based on the participants' own experience. Second, there is only one significant interaction effect, suggesting that people's retrospective view that lockdown was worse than it actually was applied generally to both their own recalled experience and to that of the average New Zealander.

Table 2
Pearson Correlations Between Lockdown and Recall Ratings for the Eight Emotion Measures, the Composite Emotion Scale, and Life Satisfaction

	Ratings	
Measures	Self	Other
Anger	.46	.52
Depression	.69	.50
Enjoyment	.46	.37
Happiness	.55	.38
Sadness	.68	.47
Stressed	.59	.47
Worried	.64	.45
Repeat day	.46	.35
Emotion Scale	.68	.55
Life Satisfaction	.59	

Note. All correlations significant at $p < .05$.

Table 3
Pearson Correlations Between Self and Other Ratings for the Eight Emotion Measures and the Composite Emotion Scale

	Questionnaire	
Measures	Lockdown	Recall
Anger	.27	.33
Depression	.23	.34
Enjoyment	.24	.35
Happiness	.25	.37
Sadness	.30	.39
Stressed	.30	.39
Worried	.45	.40
Repeat day	.42	.46
Emotion Scale	.33	.40

Note. All correlations were significant at $p < .05$.

Table 2 shows the Pearson correlations for the emotion measures and scale between the lockdown and recall ratings. The strong correlations indicate that participants were largely but not entirely accurate in remembering their own experiences.

Table 3 shows the Pearson correlations between the self and other ratings at both lockdown and recall. All correlations are positive, indicating that individuals considered the experiences of others to be generally like their own. However, the relatively small size of these correlations suggests that our participants recognized other people as having similar but not the same experiences as them. As Table 1 shows, others were seen as doing a little worse.

Sample Differences

We also included sample (student versus non-student) in our analyses. Consistent with the finding that the students had lower life satisfaction we also found that students were significantly more angry, depressed, sad, stressed, and worried, and less joyful and desirous of repeat days than non-students (all *p*s < .05). There were also occasional significant interactive effects with the sample. A 2 x 2 x 2 analysis of variance of the Emotion Scale results found significant effects of the sample ($F(1, 232) = 38.7$, $p < .0001$; Partial $\eta^2 = .14$), lockdown/recall ($F(1, 232) = 10.7$, $p = .001$, Partial $\eta^2 = .04$); self/other ($F(1, 232) = 179.7$, $p < .0001$, Partial $\eta^2 = .44$), sample X self/other ($F(1, 232) = 10.8$, $p = .001$, Partial $\eta^2 = .04$), and sample X self/other X lockdown/recall ($F(1, 232) = 4.21$, $p = .04$, Partial $\eta^2 = .02$). Table 4 shows the mean results for this breakdown.

Table 4
Average Emotion Scale Score as a Function of Sample, Lockdown and Recall, and Self Versus Other Rating

	Students	Non-students
Lockdown		
Self	5.6 (1.7)	7.1 (1.8)
Other	4.8 (1.2)	5.3 (1.1)
Recall		
Self	5.7 (1.7)	6.8 (2.1)
Other	4.4 (1.2)	5.0 (1.2)

Note. Numbers in parentheses are standard deviations. All scores on a scale from 0 to 10, with higher numbers indicating more positive emotions.

Government Response

On average, the NZ government's response to COVID-19 was rated as 8.6 on the first questionnaire and 8.5 on the second (*SD* = 1.4; *t*(234) = .55, *n.s.*). Table 5 shows the correlations between the Emotion Scale and Life Satisfaction measures and ratings of the NZ government response. The significant correlations during lockdown were in the expected direction but they were not high.

Taken over the two questionnaires, the average rating of the Chinese government's response was 5.5 while that of the US government was 1.9. Clearly our NZ sample saw the NZ government as dealing with COVID-19 more effectively than the Chinese government and very much more effectively than the US government ($F(2,466) = 941.3$, $p < .0001$). The high rating of the NZ government performance combined with its low variability may be a statistical reason for the low correlations shown in Table 5.

Table 5
Correlations Between the Emotion Scale and Life Satisfaction Scores and Ratings of the New Zealand Government's Response

	Emotion Scale self	Emotion Scale other	Life Satisfaction
Lockdown	.13*	.05	.15*
Recall	.04	.10	.08

Note. * Significantly different from zero, two-tailed, $p < .05$.

Discussion

The results generally supported our expectation that people's memory for their emotions and ideas about what others were feeling would change in line with what they might be expected to feel from a general "lockdowns are unpleasant" belief. The change in their own memories was statistically significant but not large. The size of the effect indicates that they generally retained reasonable memories of the time, as also indicated by the moderately high correlations shown in Table 2. The other prediction, that they would believe that others had a worse experience than they did, was also upheld, and this effect was somewhat larger. Here we would expect the participants to rely more on their general beliefs about lockdowns, and proportionally less on their own memories which could be regarded as atypically positive.

Average personal life satisfaction during lockdown did not differ on recall and was also reasonably high. This is in line with a recent World Happiness Report showing that, in a number of countries where death rates were not high, life satisfaction was not drastically reduced by COVID-19 (Helliwell et al., 2021). It is possible that this reflects the general perception by our participants that the government was acting appropriately.

Although not central to the focus of this study, it was noticeable that students had lower life satisfaction in lockdown than the general public, possibly due to a greater need for social life and/or fewer financial resources. Our other unpublished research indicates that student life satisfaction is lower than that of the general public in normal times, although there seems little published research on the issue. In this study, we used two rather different samples mainly to see if the same kinds of bias might be shown by them. The results suggest that both samples saw the experience of others as worse than their own.

In sum, the 2020 NZ national COVID-19 lockdown provided an opportunity to see whether previous findings concerning the recall of emotion from largely more individual and often shorter events would extend to a relatively long event which was shared by many people. We found that they do.

Limitations

The NZ lockdown and its aftermath provided a rather unusual example of a shared, largely negative event that was succeeded by a longer period of relative normalcy. There were also few deaths (totalling 24 up to the close of our data gathering). It would be unwise to generalise the results obtained here with those obtained in other countries with rather different COVID-19 experiences. Indeed, if our participants' judgement of the performance of the Chinese and, especially, US governments is accurate, one might expect a very different pattern of response in these countries.

One idiosyncratic feature of the NZ lockdown was that it was accompanied by unusually pleasant weather and this, coupled with the freedom to go outside to walk or cycle individually, may have not only made the lockdown experience actually more enjoyable but also contributed to a relatively enjoyable memory of it.

The first questionnaire asked for participant's feelings from yesterday, while the second asked for their perceptions of a typical day. It is likely then that the judgements made in the second questionnaire extended over a longer time period than the first, and this may have led to a different way of evaluating the experience. We could also think of this as a difference in abstraction level (Robinson & Clore, 2002). Ideally, it would have been better to have asked each respondent to complete a series of questionnaires over different

days during lockdown. Getting a relatively large sample to complete such a series, however, would not have been straightforward. To some extent this confound was mitigated by different participants answering the first questionnaire at different times.

Implications

This study contributes to our knowledge of how people remember emotion by showing that the influence of belief on remembered emotion can extend to a long-term shared real-life event such as a lockdown. However, there are also important lessons for our understanding of the impact of disasters. As a general although not universal rule, when we assess the impact of a disaster or similar event on people, we do so after the event. However, the results of the present study indicate that people's memories for how they felt during these events are likely to be biased. If you recall an event which is generally thought to be unpleasant, as disasters are, you may be likely to report at a later time that it was more unpleasant than you actually found it at the time. Our findings show that even if your own experience was not so bad, you may still be likely to think that of others was bad.

It would be unwise to assume that people necessarily remember all disasters as more unpleasant than they really experienced at the time. Indeed, as indicated in the limitations above, it would be unwise even to assume this is true of all lockdowns. However, the key point is that memories of the emotion experienced in an event are not always accurate, and they are subject to biases.

It is, of course, not easy to solve the research problem this raises. Simply knowing that recalled emotion may differ from that experienced takes us only so far. Ideally, one should evaluate the psychological and emotional impact of disasters either as they happen or very shortly afterwards, but this is not always possible or desirable. People fleeing a bushfire or reeling from the shock of an earthquake are unlikely to prioritise questionnaire completion, nor is anyone likely to think they should. Given that some delay in recording the response is probably inevitable it might then be useful to record more than one later response, but at different times. In this way one could establish if there is a trend in the recall bias.

Another, perhaps even trickier, issue raised here is whether in considering the impact of disasters, it is more important to consider the experience at the time or what people remember of it. We make no attempt to resolve this issue, which is by no means straightforward (e.g. Kahneman, 2000), but it is worth bearing in mind that it might often exist.

Open Practices Statement

The data for the study are publicly available from the Open Science Framework under Simon Kemp's Quick Files/COVID Lockdown Emotion (Chen et al Lockdown Emotion Study.xlsx). Experiments were not preregistered.

References

Alivernini, F., Manganelli, S., Girelli, L., Cozzolino, M., Lucidi, F., & Cavicchiolo, E. (2021). Physical distancing behavior: The role of emotions, personality, motivations, and moral decision-making. *Journal of Pediatric Psychology*, *46*(1), 15–26. https://doi.org/10.1093/jpepsy/jsaa122

Ariely, D., & Loewenstein, G. (2000). When does duration matter in judgment and decision making? *Journal of Experimental Psychology: General*, *129*(4), 508-523. https://doi.org/10.1037/0096-3445.129.4.508

Ariely, D., & Zauberman, G. (2000). On the making of an experience: The effects of breaking and combining experience on their overall evaluation. *Journal of Behavioral Decision Making*, *1*(2), 219-232. https://doi.org/10.1002/(SICI)1099-0771(200004/06)13:2<219::AID-BDM331>3.0.CO;2-P.

Bransford, J., & Johnson, M. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, *11*, 71-726. https://doi.org/10.1016/S0022-5371(72)80006-9

Burt, C. D., B., Strongman, K. T., & Costanzo, C. L. (1998). Memorial distortions and homesickness following relocation. *Australian Journal of Psychology*, *50*(2), 106-113. https://doi.org/10.1080/00049539808257541.

Christianson, S-A., & Safer, M. S. (1995). Emotional events and emotions in autobiographical memories. In D. C. Rubin (Ed.), *Remembering our past: Studies in autobiographical memory* (pp. 218-243). Cambridge University Press.

Conway, M. A. (2005). Memory and the self. *Journal of Memory & Language*, *53*, 594-628. https://doi.org/10.1016/j.jml.2005.08.005.

Decety, J., & Sommerville, J. A. (2003). Shared representations between self and other: A social cognitive neuroscience view. *Trends in Cognitive Science*, *7*, 527-533. https://doi.org/10.1016/j.tics.2003.10.004.

Eich, E., Reeves, J. L., Jaeger, B., & Graff-Radford, S. B. (1985). Memory for pain: Relation between past and present pain intensity. *Pain*, *23*(4), 375-380. https://doi.org/10.1016/0304-3959(85)90007-7.

Fredrickson, B., & Kahneman, D. (1993). Duration neglect in retrospective evaluations of affective episodes. *Journal of Personality and Social Psychology*, *65*(1), 45-55. https://doi.org/10.1037/0022-3514.65.1.45.

Grant, E. R., & Ceci, S. J. (2000). Memory: Constructive processes. In A. E. Kazdin (Ed.), *Encyclopedia of psychology* (Vol. 5, pp. 166-169). American Psychological Association.

Groarke, J. M., Berry, E., Graham-Wisener, L., McKenna Plumley, P. E., McGlinchey, E., & Armour, C. (2020).

Loneliness in the UK during the COVID-19 pandemic: Cross-sectional results from the COVID-19 Psychological Wellbeing Study. *PLoS ONE*, *15*(9). https://doi.org/10.1371/journal.pone.0239698

Helliwell, J. F., Layard, R., Sachs, J., & De Neve, J-E. (2021). *World happiness report 2021*. Sustainable Development Solutions Network.

Kahneman, D. (2000). Evaluation by moments: Past and future. In D. Kahneman & A. Tversky (Eds.), *Choices, values, and frames* (pp. 693–708). Cambridge University Press.

Kahneman, D., & Riis, J. (2005). Living, and thinking about it: Two perspectives on life. In F. A. Huppert, N. Baylis, & B. Keverne (Eds.), *The science of well-being* (pp. 285-304). Oxford University Press.

Kemp, S., Burt, C. D. B., & Furneaux, L. (2008). A test of the peak-end rule with extended autobiographical events. *Memory & Cognition*, *36*, 132-139. https://doi.org/10.3758/mc.36.1.132

Kemp, S., & Chen, Z. (2012). Overall hedonic evaluations and evaluation of specific moments from past relationships and high school days. *Journal of Happiness Studies*, *13*(6), 985-998. https://doi.org/10.1007/s10902-011-9302-6.

Levine, L. J. (1997). Reconstructing memory for emotions. *Journal of Experimental Psychology: General*, *126*(2), 165-177. https://doi.org/10.1037/0096-3445.126.2.165.

Levine, L. J., Safer, M. A., & Lench, H. C. (2006). Remembering and misremembering emotions. In L. J. Sanna, & E. C. Chang (Eds.), *Judgment over time: The interplay of thoughts, feelings, and behaviors* (pp. 271-290). Oxford University Press.

Loftus, E. F. (1975). Leading questions and the eyewitness report. *Cognitive Psychology*, *7*, 696-699. https://doi.org/10.1016/0010-0285(75)90023-7

Redelmeier, D. A., & Kahneman, D. (1996). Patients' memories of painful medical treatments: Real-time and retrospective evaluations of two minimally invasive procedures. *Pain*, *66*(1), 3-8. https://doi.org/10.1016/0304-3959(96)02994-6.

Robinson, M. D., & Clore, G. L. (2002). Episodic and semantic knowledge in emotional self-report: Evidence for two judgment processes. *Journal of Personality and Social Psychology*, *83*(1), 198-215. https://doi.org/10.1037/0022-3514.83.1.198.

Ruby, P, & Decety, J. (2004). How would you feel versus how do you think she would feel? A neuroimaging study of perspective-taking with social emotions. *Journal of Cognitive Neuroscience*, *16*(6), 988-999. https://doi.org/10.1162/0898929041502661

Safer, M. A., Levine, L. J., & Drapalski, A. (2002). Distortion in memory for emotions: The contributions of personality and post-event knowledge. *Personality and Social Psychology Bulletin*, *28*(11), 1495-1507. https://doi.org/10.1177/014616702237577.

Schacter, D. L. (2012). Constructive memory: Past and future. *Dialogues in Clinical Neuroscience*, *14*(1), 7-18. https://doi.org/10.31887/DCNS.2012.14.1/dschacter.

Shiffman, S. (2000). Real-time self-report of momentary stats in the natural environment: Computerized ecological momentary assessment. In A. Stone, J. S. Turkkan, C. A. Bachrach, J. B. Jobe, H. S. Kurtzman, & V. S. Cain (Eds.), *The science of self-report: Implications for research and practice* (pp. 277-296). Erlbaum.

Sprecher, S. (1999). "I love you more today than yesterday": Romantic partners' perceptions of changes in love and related affect over time. *Journal of Personality and Social Psychology*, *76*(1), 46-53. https://doi.org/10.1037/0022-3514.76.1.46.

Wilson, T. D., Laser, P. S., & Stone, J. I. (1982). Judging the predictors of one's own mood: Accuracy and the use of shared theories. *Journal of Experimental Social Psychology*, *18*(6), 537-556. https://doi.org/10.1016/0022-1031(82)90072-5.

Wilson, T. D., Lisle, D. J., Kraft, D., & Wetzel, C. G. (1989). Preferences as expectation-driven inferences: Effects of affective expectations on affective experience. *Journal of Personality and Social Psychology*, *56*(4), 519-530. https://doi.org/10.1037/0022-3514.56.4.519.

Wirtz, D., Kruger, J., Scollon, C. N., & Diener, E. (2003). What to do on spring break? The role of predicted, on-line, and remembered experience in future choice. *Psychological Science*, *14*(5), 520–524. https://doi.org/10.1111/1467-9280.03455