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In my life: memory, self and The Beatles

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ABSTRACT

In a large-scale study, we asked people for their memories of The Beatles. Over four thousand respondents completed an online questionnaire. The memory could be related to a song, album, event, TV, film, or even a personal encounter. Respondents judged the age at which the event remembered had occurred and rated the memory for vividness, emotional intensity, valence and rehearsal. We found 38% of the memories were classified as “seeing The Beatles live”, 25% “buying Beatles music”, 20% “love of The Beatles” and 17% of the memories were “listening to Beatles songs with other people” – what we refer to as cascading memories. Among the younger respondents (aged 26 and under), 84% of the memories were cascading in nature. The memories dated to what we term the “self-defining period” in autobiographical memory (previously termed “the reminiscence bump”), with a mean age-at-encoding of 13.6 years, which is consistent with other studies of memories associated with music. We propose that these memories reflect the formation of generational identity [Mannheim, K. (1952). The problem of generations. In K. Mannheim (Ed.), *Essays on the sociology knowledge* (pp. 276–321). Routledge & Keegan Paul].

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Autobiographical memory encompasses memory for personal experiences as well as knowledge of the self, and consequently, is critical for personal identity and a functioning self-system (see Conway et al., 2002; Conway & Pleydell-Pearce, 2000; McAdams, 2001, for reviews). One interesting aspect of this is the frequency of the recall of autobiographical memories across the lifespan which shows an unusual rise in memories dating to when the rememberer was aged about 10–30 years. This has been termed the “reminiscence bump” (RB) by Rubin et al. (1986) but this, however, is an atheoretical term simply referring to a characteristic of a graph and, moreover, not consistent with the thinking of the original discoverer of the RB, Fitzgerald and Lawrence (1984), who considered it to reflect aspects of the self.

In order to better capture this particular relation between memory and self it has also been coined the “self-defining period” (SP) in autobiographical memory (Loveday et al., 2020). The central idea here is that the content of memories dating to the SP are more likely to be novel, making them more memorable (Pillemer, 2001). Of course, it could be that these memories are better encoded, especially during this time of optimum neurobiological maturity of the memory system, which improves

during one’s childhood (Howe 2013), but then declines throughout one’s adulthood (Henson et al., 2016).

Cultural life scripts have been attributed to the reminiscence bump. For example, Bernstein and Rubin (2004) asked undergraduate participants to imagine an ordinary infant; the seven most important events that were most likely to take place in the life of this imagery infant, as well as indicate at what age the events were likely to occur, rating the events prevalence, importance, and valence. Their findings revealed the reported events were mainly positive normative life events such as graduation, marriage, falling in love. Interestingly, their findings revealed the expected age of occurrence of positive events were rated to occur during early adulthood (in line with the RB), whereas the age of occurrence of negative events were rated as happening at any time in life. Their findings were replicated widely (Berntsen & Jacobsen, 2008; Bohn & Berntsen, 2008; Collins et al., 2007; Habermas, 2007, Study 2; Rubin et al., 2009; Thomsen & Berntsen, 2008) and concluded life scripts provide an alternative explanation to the reminiscence bump.

For the purposes of this paper, we will focus on the “self-defining period” of autobiographical memory. During this period, the content of memories often relate

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to stages of development, in particular Erikson's psychosocial stages (1982 – see Conway & Holmes, 2004, for an early investigation of SP memories and psychosocial stages). The main psychosocial stages dominating the period are those of identity, intimacy. The identity stage refers to a period of identity formation, where an individual establishes personal goals that endure for many years or even the whole lifespan. Whereas the intimacy stage refers to the formation of intimate personal relations. The main task of the identity stage, which precedes intimacy, although as these are “fuzzy” developmental stages there is inevitably some overlap, is as the name clearly suggests the formation of an individual identity. Essentially, the emergence of an individual self from the years of childhood. There are many ways in which this takes place; however, one we want to focus on here is the identification of the emerging adult self with events and experiences that occur outside the family. It is the identity stage that we will be mainly concerned with in the present study. It is, perhaps important to note that the peak of the SP, in terms of average number of memories recalled occurs at different points or ages in the SP for different methods of eliciting memories, to different cues, and for different classes of memories (see Loveday, et al., 2020; and Munawar et al., 2018 for a recent review). In other words, the peak of the SP is variable within the period itself.

Generational identity occurs when a person knows that they are part of a particular social subgroup that may be for example a social movement, political group or religious group, where they share common goals, ideas and experiences (Conway, 1997). As such, according to Erikson, knowledge during this phase is encoded in a privileged way, compared to knowledge encoded at later points in the life cycle. Importantly, knowledge retained during this period may form the basis of autobiographical memory structures which are added to over the entire lifespan and remain highly accessible.

There are many domains that the adolescent self might identify with, from politics to sport, and so help to define or establish individuality. However, one area that has grown in interest over the years is that of music, particularly popular music. Music by its very nature is related to an individuals' sense of personal and cultural identity (e.g., Bryant, 2005; van Dijck, 2009). Holbrook and Schindler (1989) were the first researchers to show a preference for music in the SP. In their original study, 108 participants rated 28 popular songs released between 1932 and 1986. Their findings showed preference ratings peaked for songs that had been released at the age of 24 years. This finding has been replicated in Janssen et al., 2008; Krumhansl, 2017. However, other studies (e.g., Cady et al., 2008; Schulkind et al., 1999) have tended to use very specific cues such as song titles and/or excerpts from songs to retrieve autobiographical memories. Their findings revealed these autobiographical memories are higher in specificity, vividness, and emotionality. Rather interestingly, Rathbone et al. (2017) showed that the SP for

music was highly associated with *personal* significance of the song and as such argue that there is an explicit link with identity and self that cannot be explained only by age-related encoding.

Related to this, studies conducted by El Haj et al. (2012) – showed that music-evoked autobiographical memories (MEAMS) were not only attached to important periods of one's life but these MEAMS were spontaneously retrieved, contained more emotional content and episodic detail. El Haj et al. (2012) and later confirmed by Krumhansl (2017) concluded if music can play an important role in to access, reinforce, and share memories, this offers a potential explanation as to why people are drawn to music in the SP period.

Krumhansl and Zupnick's (2013) study was the first to show that music transmitted from generation to generation shapes autobiographical memories, preferences and emotional responses, which they refer to as cascading reminiscence bumps. These researchers investigated the reminiscence bump for autobiographical memories, quality judgements and emotional reactions in 20-year old compared with the music experiences of their parents. According to the authors, the young participants showed a typical increase for music ratings and music-evoked autobiographical memories for songs released during their parents' first two decades of life. Thus, music experiences in the home environment seem to function in terms of a musical cultural transmission over generations in terms of “cascading reminiscence bumps”.

The studies outlined above have tended to use very specific cues, in contrast, in our work, we have often tried to use very general cues or even no cues at all (Loveday et al., 2020). Here we explored free recall of music in a naturalistic setting – participants were instructed to select eight pieces of music that they would like to keep with them should they be sent to a place of isolation – a desert island. The main findings revealed that half of all selections were shown to have been most important between the age of 10 and 30 years. Strikingly, the reasons for their selections were because of the song's link to memories of a person, period, or place. Our reasoning for using such general cues is that if an SP is found using these more general, less specific ways to elicit autobiographical memories, a sort of “spontaneous” SP, then this is even stronger evidence for this relation between memory and self.

Some years ago we had a unique opportunity to conduct a large-scale web-based survey of people's memories of The Beatles. This was linked to the annual meeting of the British Science Association (BSA) whose 2008 meeting was held in the City of Liverpool. It was suggested to us by the BSA Psychology Section, that a wide-ranging survey of memories related to the Beatles might be a good way to celebrate the annual meeting and to make it more relevant to the general public of Liverpool.

There were responses across a wide range of ages and from many different countries, which was what we had

hoped for. The BSA has extensive media coverage and the questionnaire and website were widely advertised. We made a number of hypotheses for the present study.

Following our earlier reasoning we expected that people would have most strongly identified with the group, their music, movies, television appearances, etc. when they were in their early adolescence. We predicted that this would be manifest in an SP largely covering the age range of early adolescence with a peak recall somewhere in this age range, making it earlier than the peaks observed in SPs cued in other ways, which typically are later than early adolescence (Loveday et al., 2020).

We also predicted that the majority of memories would be “field” memories: a memory that preserves something approximating to a person’s original point-of-view during the experience that is remembered, rather than an observer memory: a memory in which the person sees or observes him/herself. Our rationale for this, is that field memories are associated mostly with re-experiencing the phenomenological features of the original event, accompanied by a high degree of vividness and recollective experience (Akhtar et al., 2017). Further, specific and detailed memories are more likely to be recalled with a field perspective (Berntsen & Rubin, 2006; D’Argembeau et al., 2003; McIsaac & Eich, 2002; Nigro & Neisser, 1983; Sutin & Robins, 2010). Finally, in line with Krumhansl and Zupnick (2013), we expected those younger participants who take part in this study, to have autobiographical memories that have been transmitted from one generation to the other, and thus show a cascading effect.

Method

Respondents

There were 4039 respondents who completed the survey. Inspection of the memory descriptions led to 141 responses being judged unusable because the memory description was vague and lacked (any) specificity, 391 memories were taken out of all the main analyses as these were negative memories associated with the death of John Lennon rather than with the Beatles. Thus, a total of 3507 respondent memories were used. 1727 (49%) were from female respondents and 1780 (51%) were from male respondents. Respondents had a mean age of 48.0¹ years (SD 13.3) and were recruited from 84 different countries (see Appendix).

Ethical approval was obtained by the University of Leeds, and all study procedures were carried out in accordance with the British Psychological Society guidelines and the Declaration of Helsinki.

Materials and procedure

The questionnaire was accessed via a web link to a bespoke online survey (www.magicalmemory.com – no longer available) and was widely reported in the

international media. The questionnaire began with an information page outlining key instructions regarding the nature of the memory to-be-sampled, an informed consent box to be checked, and collected minimal demographic data (age, gender, nationality). Respondents were also informed that after recalling their memory they would be asked to answer some questions about the memory. For these questions, they were instructed not to guess or infer answers but to only answer if they actually remembered the answer.

They then moved to the next page of the questionnaire proper. They were instructed to recall and then type a description of the first memory to come to mind that was associated with The Beatles. The memory description was to be about a paragraph or so in length. The memory itself had to be one that they were certain they remembered. The memory could be associated with a song, album, event or a personal encounter. After entering the memory description, they were then asked to enter, in years, the age they believed they were in the memory to the nearest year – what we labelled the Age at Encoding (AaE). Following this, the respondents answered a series of questions regarding the recollective qualities of the memory: (1) whether or not they liked The Beatles (2) the era of the memory, (3) how vivid was their memory, (4) how emotionally intense was their memory, (5) How negative/positive their memory was, (6) how rehearsed was their memory and finally (7) their memory perspective: approximating your original point-of-view or from an observer perspective in which you “see” yourself in the memory. Responses to this question were optional and if respondents felt they could not make this judgment they left the boxes unchecked. Questions 1, 3, 4, 6 and 7 were on a 5-point scale, where 1 = low, 3 = moderate, and 5 = high, intermediate numbers were used for more fine-grained answers. Question 2 had 5- response options: “the 60s”, “the 70s”, “the 80s”, “the 90s”, and “2000s” and question 5 had response options: 1 = very negative, 2 = negative, 3 = neutral (low emotion) 4 = positive and 5 = very positive.

Results

All analyses were run in R version 3.6.2 (R Core Team, 2019). All data and R code is available on request to the corresponding author.

Descriptive statistics

The means (and standard deviations), medians (and median absolute deviations) and counts (and percentages) of questionnaire items are shown in Table 1.

Age at encoding

The mean Age at Encoding (AaE) was 13.6 years, SD = 6.92 (median = 13, MAD = 4.45), the distribution is shown in Figure 1.

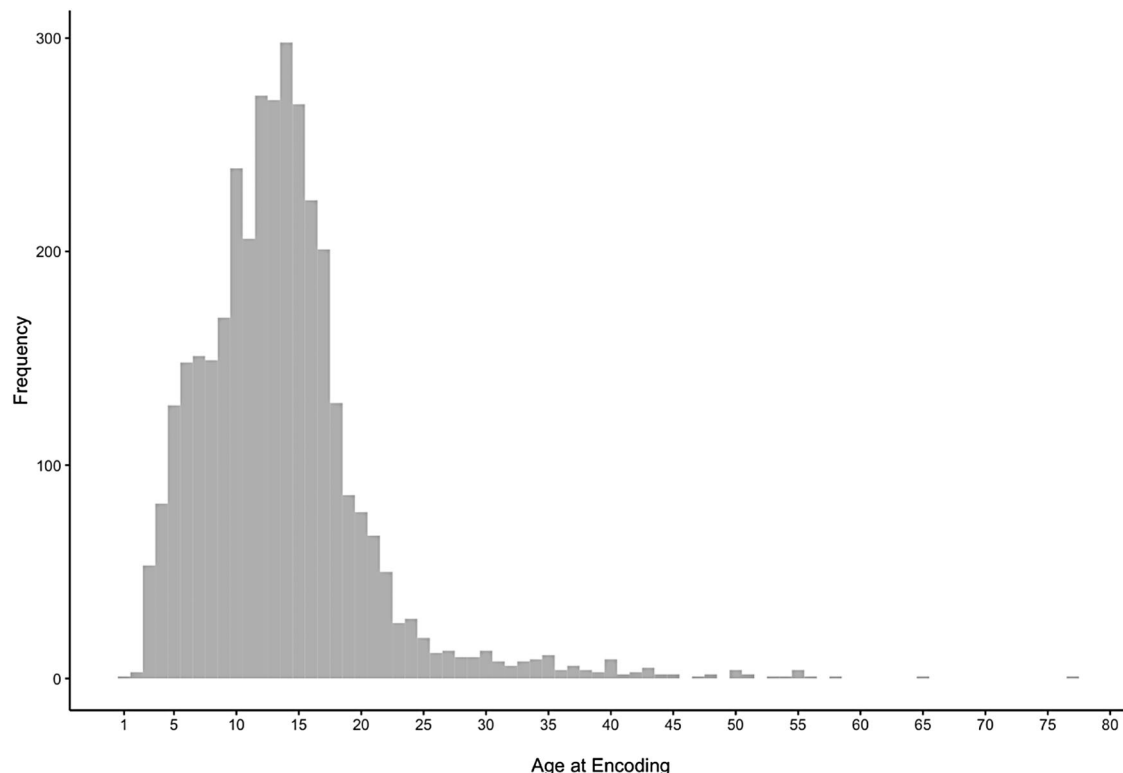
Table 1. Descriptive statistics of questionnaire items.

Variables	Mean (sd)	Median (mad)	Age at Encoding Mean (sd)	Age Mean (sd)	Count (%)
Age at Encoding	13.6 (6.92)	13 (4.45)			
Like Beatles	3.21 (1.46)	2 (1.48)			
Vividness	4.36 (0.83)	5 (0)			
Emotional Intensity	4.08 (1.02)	4 (1.48)			
Valence	4.29 (1.07)	5 (0)			
Rehearsal	3.17 (1.12)	3 (1.48)			
Perspective <i>Field</i>					2757 (79%)
Perspective <i>Observer</i>					750 (21%)
Era <i>The Sixties</i>			14.71 (7)	52.58 (12.01)	2115 (60%)
Era <i>The Seventies</i>			11.74 (6)	47.35 (9.5)	764 (22%)
Era <i>The Eighties</i>			12.18 (6.6)	38.2 (8.3)	304 (9%)
Era <i>The Nineties</i>			12.57 (6.6)	28.0 (7.9)	322 (9%)
Era <i>The Noughties</i>			15.5 (6.3)	18.1 (2.09)	2 (0.5%)

To understand if AaE changed as a function of respondent demographics and recollective measures we used a linear model with AaE as the outcome variable, fitted with a lognormal distribution. Respondent age, gender, nationality, vividness, emotional intensity, valence, rehearsal and perspective taken were entered into the model as fixed effects. Note that the data collected contained respondents from 84 different nationalities, of which only three had $n > 100$ (English: 1267, American: 823 and Canadian: 267). We therefore collapsed the data into two groups: British (including English, Northern Irish, Scottish and Welsh) and the rest of the world. The amalgamation of groups has both statistical and theoretical justification. Statistically, the two collapsed groups contained more even numbers of respondents (British: 1425, rest of world: 2082) allowing for more robust estimates to be

made. Theoretically, we assumed that there might be differences in memory recall between British respondents and others due to The Beatles being a British group, emerging in an era when North American music prevailed in pop culture, so for a British band to explode onto the pop music scene was quite revolutionary. Further, it has been argued that The Beatles caused a sea-change in British culture (Finney, 2006).

We found a reliable effect of AaE and respondent age, such that AaE increased with age. Vividness and emotional intensity were also found to reliably increase with AaE whilst there was a reliable negative relationship with AaE and valence, such that as AaE increased memories became marginally more negative. However, for all reliable predictors effect sizes were found to be very small. Gender, nationality, rehearsal and perspective taken did not have

**Figure 1.** Distribution of age at encoding.

reliable relationships with AaE. Model results are shown in Table 2 and effects of reliable model are shown in Figure 2; figures of predictors without reliable effects are shown in the appendix for completeness.

Memory perspective

In line with previous findings (Akhtar et al., 2017; Nigro and Neisser 1983), 79% of the memories were rated as field memories and 21% of memories as observers. We investigated differences between age, gender and recollective measures of field and observer memories using a binary logistic regression with recollective measures entered into the model as fixed effects and memory perspective included as the outcome.

Results, shown in Table 3, revealed that the probability of recalling a memory with a field perspective increased with age, and that field memories were associated with higher levels of vividness and rehearsal than observer memories. Gender, emotional intensity and valence were not reliable predictors of perspective taken. Figures of the effects of the reliable predictors are shown in Figure 3, figures for the effects of the non-reliable predictors can be found in the appendix

Memory content

The whole corpus of memory descriptions was analysed using the Alceste Software for statistical analysis of textual data. The software bridges quantitative and qualitative methods, analysing natural language using multivariate statistical methods to identify groups of words that reliably cluster together across different contexts, i.e., phrases and sentences. Alceste conducts an analysis of the co-occurring lexemes within simple statements of a text and is based on Benzecri's (Reinert, 1998) contribution to textual statistics.² Analyses were performed on the whole data corpus, yielding a linguistic profile. This showed that 38% of the memories were classified as "seeing The Beatles live", 25% "buying Beatles music", 20% "love of The Beatles" and 17% of the memories were "listening to Beatles songs with other people".

Table 2. Age at encoding model summary.

Predictors	Age at Encoding		
	Estimates	95% CI	p
(Intercept)	5.90	5.29–6.57	
Respondent age	1.01	1.01–1.01	<.001
Gender [Male]	0.99	0.96–1.02	.662
Nationality [British]	1.00	0.97–1.03	.948
Vividness	1.03	1.01–1.05	.012
Emotional intensity	1.04	1.02–1.06	<.001
Valence	0.97	0.95–0.98	<.001
Rehearsal	1.00	0.99–1.02	.788
Perspective [Field]	1.02	0.98–1.06	.286
Observations		3507	
R ² /R ² adjusted		0.123/0.121	

Note: coefficients are back-transformed to the original scale (years).

In a separate analysis, we were interested in the phenomenon of cascading memories, music transmitted from generation to generation in the younger respondents in the study (Krumhansl, 2017). We analysed the memory content of the younger respondents (26 years and below). There were 486 memories in this group. The analysis performed on this data corpus revealed 54% of the memories were of listening/singing to Beatles music with respondents' parents in the home, 30% of the memories were of listening/singing to Beatles music with respondent's schoolteachers and 16% of the memories were listening to Beatles music with respondent's friends/siblings. Thus 84% of memories from the younger respondents were transmitted from generation to generation – showing the cascading effect (Krumhansl, 2017).

Positive nature of memories

The majority of memories in this study were all very positive in nature. We used the computerised text analysis programme Linguistic Inquiry Word Count (LIWC; Pennebaker et al., 2007) to count the number of words associated with measures such as "positive emotion", "negative emotion", "sad" and "anxious". The analysis revealed more positive emotional words were used in the memories compared to negative emotional words, such that only 8.35% of the memories contained "sad" words, 3.1% of the memories contained "anger" words and 2% of the memories contained "anxious" words. Finally, when respondents were asked to rate their memory valence, 81% of respondents rated their memory 4 or 5 indicating very emotionally positive memories. In sum, the majority of memories collected in this study were positive memories associated with the Beatles.

Discussion

Respondents in this study were asked to list a specific memory of an event associated in some way with the 1960s pop group The Beatles. As predicted the majority of these memories dated to when respondents were 10 to 20 years of age. This spontaneous emergence of the self-defining period (SP) is striking and unusual as the only, general, memory cue was "The Beatles". Here we consider the nature of the observed SP, the qualities of the memories, and the role of variables such as age, culture, and the set of "cascading" memories that were also found.

The self-defining period and autobiographical memories

Our original conjecture, based on findings by Loveday et al., (2020) and also on earlier work, e.g., Conway and Holmes (2004), was that the SP would be marked by an increase in the recall of memories from this period. A secondary and more tentative hypothesis was that the peak of this rise in the spontaneous recall of Beatle-related

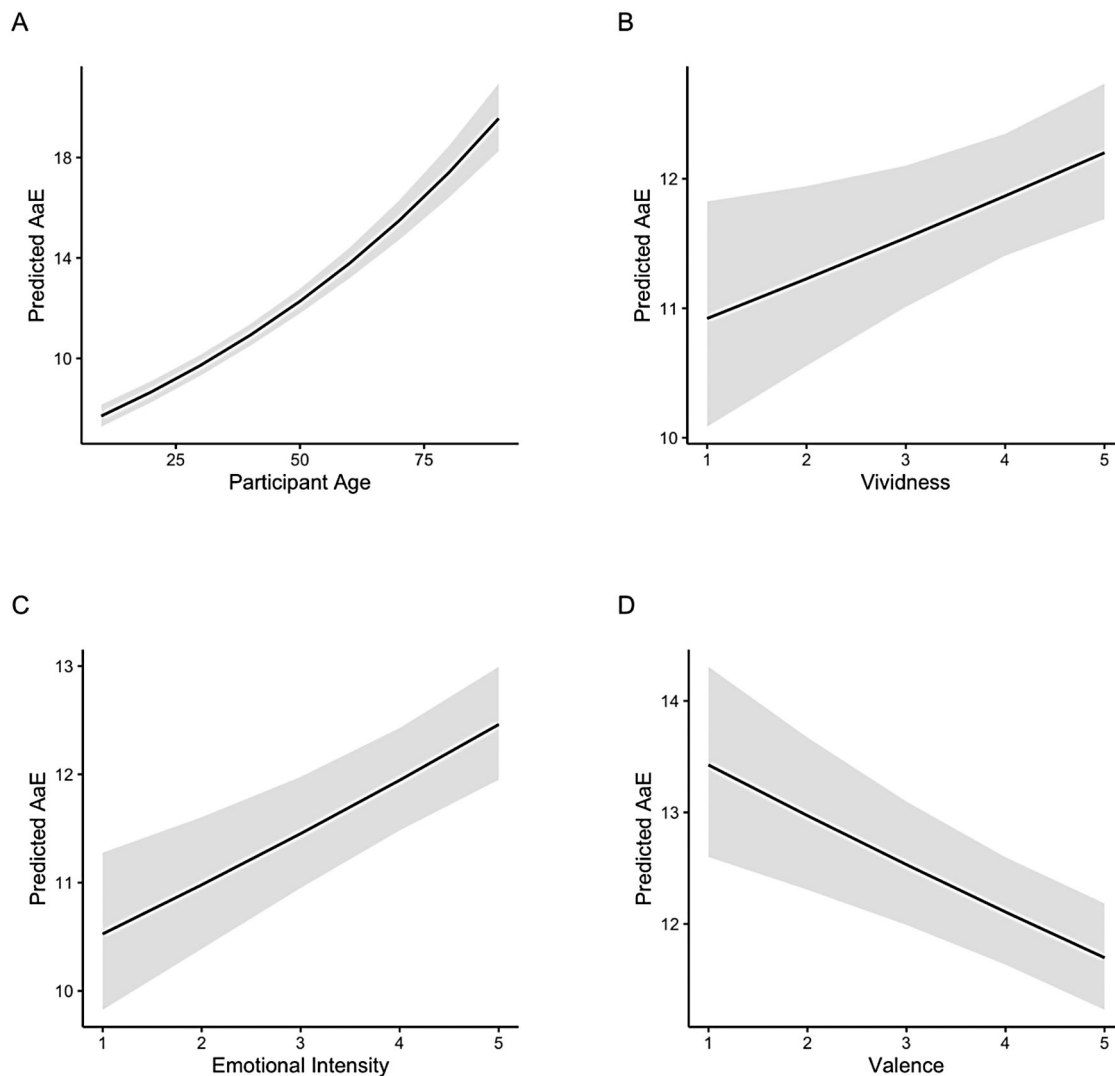


Figure 2. Effects of reliable predictors in the AaE model. Results are back-transformed to the original scale (AaE in years). The grey band represents the 95% confidence interval.

memories would date to some point in early adolescence. Our reasoning was that the SP relates to a period of identity formation that occurs after childhood and is one of the hallmarks of (early) adolescence. The two main psychosocial tasks that characterise this period are the formation of an identity that includes, social groups, society and culture generally as well as the formation of important

personal relationships. Our proposal was that evidence of both these psychosocial stages would be found in autobiographical memories freely recalled from age ranges in which these developments of self were considered to occur. In fact, we found little evidence of memories dating to the later intimacy stage (late “teens to early 20s) but, and as predicted, powerful evidence of freely recalled memories dating to the identity formation stage. The mean AaE here was 13.6 years and showed no difference for women and men. Memories of different AaE were distributed around this mean, with a positive skew, and had a standard deviation of about 7 years (see Figure 1). In our view, these autobiographical memories in many ways define the SP for identity. Taking this one step further we suggest that memories from this period contribute to the representation of *generation identity* in long-term memory (Mannheim, 1952; see too Conway, 1997).

In Mannheim’s (1952) original concept, generation identity is not defined by age but rather by the social

Table 3. Perspective taken model summary.

Predictors	Perspective [Field]		
	Probabilities	95% CI	<i>p</i>
(Intercept)	0.29	0.19–0.41	
Respondent age	0.50	0.50–0.50	.044
Gender [Male]	0.51	0.47–0.55	.731
Vividness	0.58	0.56–0.61	<.001
Emotional intensity	0.50	0.48–0.53	.721
Valence	0.49	0.47–0.51	.547
Rehearsal	0.54	0.52–0.56	<.001
Observations	3347		
R^2 Tjur	0.030		

Note: the model coefficients have been back-transformed and represent the probability of a respondent reporting a field perspective.

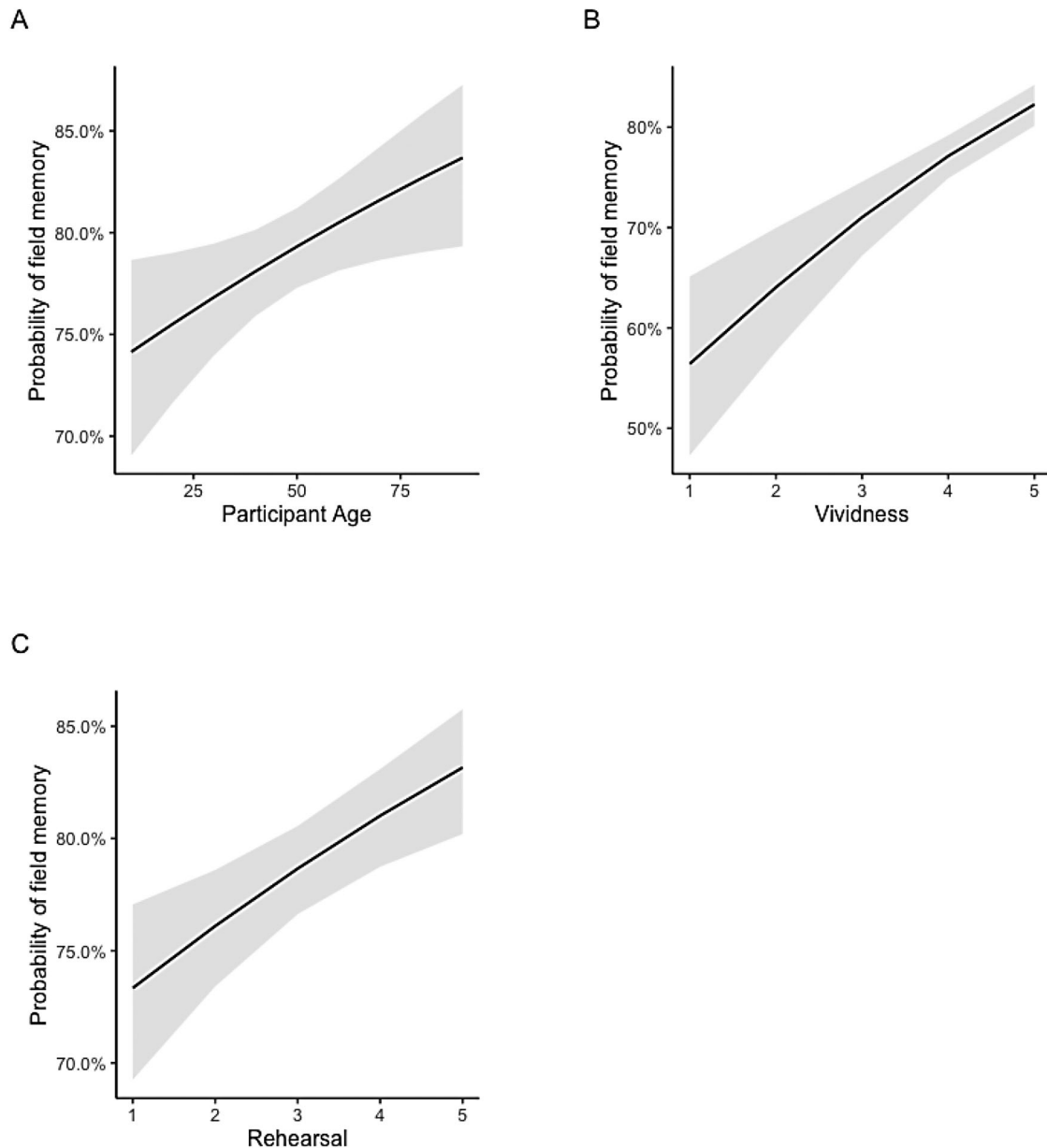


Figure 3. Effects of reliable predictors in the perspective model. Results are back-transformed and represent probabilities of reporting a field perspective. The grey band represents the 95% confidence interval.

groups one identifies with. Thus, it is by no means the case that only those in early adolescence have a SP associated with aspects of The Beatles. As our data show younger people (not alive at the time of The Beatles) may have cascading memories dating to The Beatles-related events (largely songs played to them by their parents). Similarly, older people, past the psychosocial stage of identity formation in early adolescence at the time of The Beatles may, nonetheless, have an SP for The Beatles. Indeed, we found that respondents of all ages showed this phenomenon but older adults were more likely to recall memories slightly later in the SP compared to younger respondents – a small but reliable effect shown in Figure 2(A).

Our more general proposal is that most people in developing generation identity do so by identifying with and

internalising aspects of culture, which for whatever reason they resonate with. It would, of course, be preposterous to suggest that this external identification rested solely on one's experience of The Beatles and we certainly do not suggest that. However, identification and the subsequent formation of memories associated with aspects of culture must form a major part of the emergence of generation identity and identity in a more individual way too. It may be the case that pop music and pop culture have become one major source of cultural knowledge associated with the creation of autobiographical memories and autobiographical knowledge that underlie identity. But there are many other aspects of culture that could, and almost certainly do, serve this purpose too: politics, cultural movements, even sports (see Janssen et al.,

2011), etc. There is no reason why several of these might not contribute equally to the creation of generation identity, thus, one could, for example, like the Beatles but still have (an equal number or even more) memories associated with the international politics of that time. Because generation identity depends on identification with different social groups its representation in memory is likely complex and diverse. Our central point here is that our findings demonstrate that aspects of generation identity, and identity more widely, can be detected and examined in sets of freely recalled autobiographical memories (given an appropriate cue).

Qualities of memories

Interestingly many respondents in the present study showed an SP for The Beatles with age of encoding occurring slightly later as respondent age increased. It is not clear why this should be but possibly the older respondents formed memories related to later work by the group, i.e., dating to the mid- rather than early-1960s. Although there were no reliable nationality differences, similar SPs were present in our collapsed group of the rest of the world compared to the U.K., where there was one notable difference: The song most often mentioned by respondents from the U.S. was “I Want to Hold Your Hand” (1964, The Beatles’ first number one hit in North America which they played live on the Ed Sullivan show) whereas respondents from the U.K. most frequently mentioned “She Loves You” (1963, the song most credited with their initial fame – it flopped in the U.S.). The point being that different societies identified with different aspects of the Beatles.

Age, culture, and cascading memories

Other qualities of the memories showed that the majority of the memories were highly positive – more so than any other corpus of memories that we are aware of. They were also highly vivid and emotionally intense compared to many other studies of autobiographical memories that have collected such ratings. Rehearsal ratings were above moderate level ($M = 3.17$ $SD = 1.2$) and these memories had not been extensively thought/talked about. We would have expected this to be higher, and to account for this one can perhaps argue that memories associated with the Beatles could be generational-defining, although there is an overlap between generational and self-defining. It could be that several of our respondents were from the Beatles era, but not consider the era as self-defining. However, our analysis also showed that all these ratings, judgments of memory qualities, vividness, AaE, emotional intensity, valence, and rehearsal, reliably correlated positively together (see appendix for details). This is a frequent finding in autobiographical memory research and possibly reflects some overall properties of memories that are grouped together. What that quality is we do not know.

The findings also showed that music transmitted from generation-to-generation-shaped respondents’ autobiographical memories, preferences, and emotional responses. This phenomenon of cascading SPs was first reported by Krumhansl and Zupnick (2013), who proposed that as these effects of cascading memories have not been found previously in other domains, music may then be special, perhaps because of its strong personal and emotional meanings, its prevalence, and its role in social development. For these reasons, music-evoked autobiographical memories may have unique properties. Previous research has found that the music encountered during one’s late adolescence and early childhood has the greatest impact on individuals throughout their lives. Studies of older adults show, for example, that music from their youth is recognised more often, more facts are known about it, and that it evokes more specific autobiographical memories and stronger emotions than music from later in life (Schulkind et al., 1999).

Cavalli-Sforza and Feldman (1981) proposed childhood was a period where cultural transmission (knowledge, skills, abilities, social norms passed down in a social context, typically from one’s parents). For the younger respondents in our study, the recorded music their parents favoured during their childrearing years would have been played in the home, and this was supported in the memory content.

Memory perspective

Finally, consider the judgments of perspective in this corpus of memories. Memories were dominated by a field perspective, in other words, respondents judged that in the majority of their memories, they had a perspective that was close or similar to the original perspective they had at encoding. These field memories were reported as being more vivid and emotionally intense than observer memories. These findings are consistent with those of previous findings (see Akhtar et al., 2017, for review) and we consider them to be a type of manipulation check. Memories that preserve the rememberer’s original perspective, to at least some degree, are vivid and emotional, most probably specific autobiographical memories, which is what respondents were asked to recall. Memories that have an observer perspective, in which one sees oneself, are memories that have clearly been recorded in some (currently unknown) way. Lower in vividness and emotion they may not be the highly specific autobiographical memories respondents were instructed to recall. What observer memories exactly are is unknown but whatever the explanation turns out to be they are not highly specific autobiographical memories.

Summary

Specific autobiographical memories recalled to the general memory cue “The Beatles” elicited a powerful SP effect across genders, nationalities, and age groups. We propose that this reflected identification with culture mainly occurring in early adolescence but also at older

ages too. In our view, it is strong evidence, from memory, of the formation of generation identity. Much as that was conceived of by the founder of the sociology of knowledge, Mannheim (1952), in the earlier part of the twentieth century, in his famous essay: *The problem of the generations*.

Notes

1. This study was conducted in 2008, thus the mean age of the participants today would be 64 years.
2. Full details can be found at: <http://www.image-zafar.com/Logicieluk.html>.

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Data availability statement

The data that support the findings of this study will be available upon request.

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Appendix

Table A1. Frequency and percentage of participant nationalities.

Nationality	n	%
Albanian	2	0.06
Algerian	1	0.03
American	823	23.47
American Samoan	2	0.06
Andorran	1	0.03
Argentinian	64	1.82
Armenian	3	0.09
Australian	90	2.57
Austrian	8	0.23
Bahamian	1	0.03
Belgian	7	0.20
Bolivian	1	0.03
Brazilian	36	1.03
Bruneian	1	0.03
Bulgarian	1	0.03
Canadian	267	7.61
Channel Islander	1	0.03
Chilean	9	0.26
Chinese	9	0.26
Colombian	5	0.14
Cook Islander	1	0.03
Croatian	2	0.06
Cuban	6	0.17
Cypriot	1	0.03
Czech	2	0.06
Danish	98	2.79
Dutch	10	0.29
Ecuadorian	2	0.06

(Continued)

Table A1. Continued.

Nationality	n	%
English	1267	36.13
Filipino	3	0.09
Finnish	15	0.43
French	32	0.91
German	17	0.48
Greek	14	0.40
Guatemalan	3	0.09
Haitian	1	0.03
Hong Kong Chinese	15	0.43
Hungarian	3	0.09
Icelander	1	0.03
Indian	14	0.40
Indonesian	2	0.06
Iranian	1	0.03
Irish	59	1.68
Israeli	4	0.11
Italian	99	2.82
Jamaican	2	0.06
Japanese	3	0.09
Kyrgyz	1	0.03
Lebanese	1	0.03
Lithuanian	2	0.06
Malaysian	3	0.09
Maltese	3	0.09
Mexican	79	2.25
New Zealander	71	2.02
Nicaraguan	1	0.03
Niuean	1	0.03
Northern Irish	23	0.66
Norwegian	11	0.31
Pakistani	1	0.03
Paraguayan	1	0.03
Peruvian	11	0.31
Polish	7	0.20
Portuguese	3	0.09
Puerto Rican	6	0.17
Russian	14	0.40
Salvadorian	4	0.11
Scottish	96	2.74
Serbian	1	0.03
Singaporean	2	0.06
Slovenian	2	0.06
South African	29	0.83
South Korean	6	0.17
Spanish	39	1.11
Sri Lankan	2	0.06
Swedish	6	0.17
Swiss	6	0.17
Tanzanian	1	0.03
Trinidadian/Tobagonian	1	0.03
Turkish	5	0.14
Turks and Caicos Islander	1	0.03
Ukrainian	2	0.06
Uruguayan	6	0.17
Venezuelan	11	0.31
Welsh	39	1.11

Table A2. Spearman correlations between recollective measures.

	Vividness				
Vividness	–	AaE			
Age of Memory	.21 ***	–	Emotional Intensity		
Emotional Intensity	.43 ***	.12 ***	–	Valence	
Valence	.25 ***	-.02 ns	.32 ***	–	Rehearsal
Rehearsal	.36 ***	.05 **	.35 ***	.21 ***	–

Notes: Significance codes: < .001***, < .01**, AaE and valence p = .17.

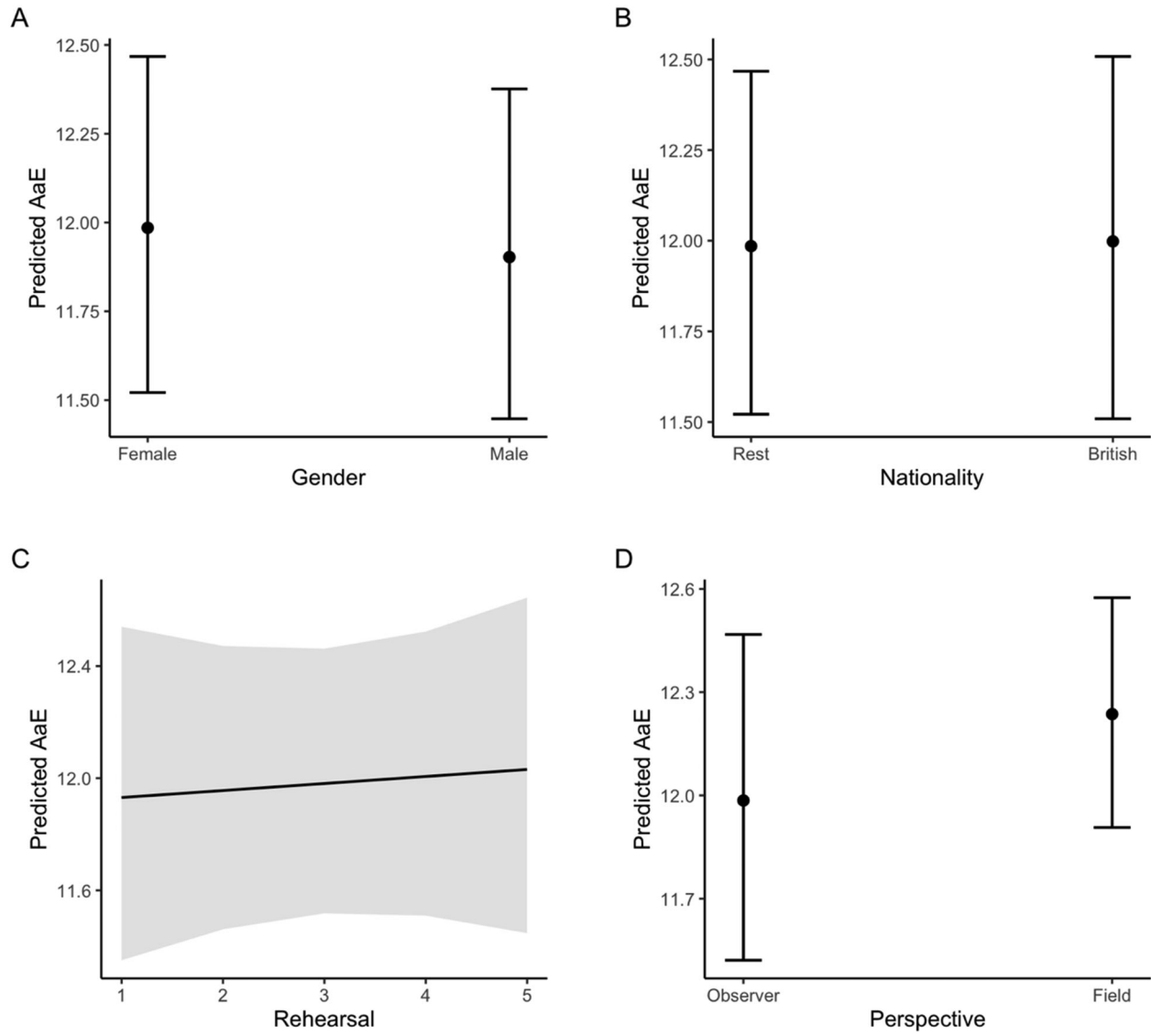


Figure A1. Effects of non-reliable predictors in the AaE model. Results are back-transformed to the original scale (AaE in years). The grey band / whiskers represent the 95% confidence interval.

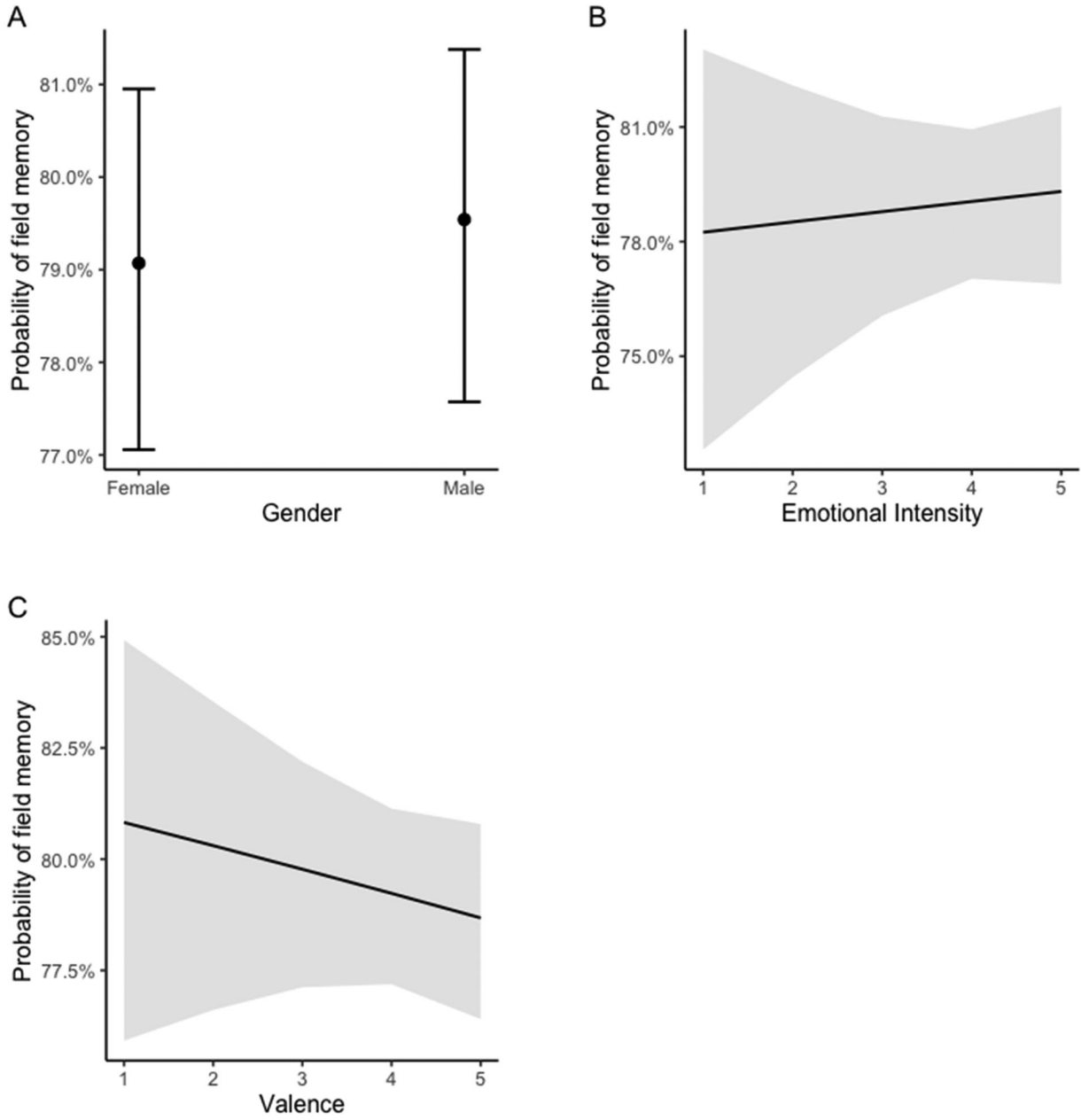


Figure A2. Effects of non-reliable predictors in the perspective model. Results are back-transformed and represent probabilities of reporting a field perspective. The grey band / whiskers represent the 95% confidence interval.