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Memory recall can increase authenticity and engagement: understanding the role of work context and memory function in autobiographical memories.

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Open Science and Transparency

All data have been made publicly available at the OSF and can be accessed at https://osf.io/5kfrh/?view_only=103d0277efbf4f81a0612524c12e2996. Data used in this

study were collected at the same time as that reported in Sutton (2022), but represent distinct research questions and additional variables.

Ethics

Approval was obtained from the ethics committee of the University of Waikato. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Funding and conflict of interest statement

The author received no external funding for this research and has no conflict of interest to declare.

Author Statement

Single author paper.

Acknowledgements

With thanks to Lijana Kuluz and Samantha Carey for research assistance.

Abstract

Authenticity is positively associated with important psychological outcomes in the workplace, such as well-being and engagement, and is reliant on having a coherent sense of self. This coherent self is maintained by recalling autobiographical memories (AM). But the specific relationships between authenticity and memory functions are unclear. This study aims to first, identify differences in memory function and content in the recall of authentic and inauthentic moments and second, address how these AM functions are related to authenticity, engagement and well-being. Participants completed measures of authenticity, engagement and well-being before and after a memory recall task. For the recall task, they were randomly assigned to recall either an authentic, inauthentic, or control memory. Recall narratives were coded for memory functions (self-identity, social, directive) and for physical / social context features. Authentic moments, inauthentic moments and controls differed in terms of social and physical contexts. Authentic moments were most likely to involve being alone while inauthentic moments were most likely to happen at work. Authentic or inauthentic moments were both more likely than controls to involve work colleagues, with inauthentic moments also involving more distant acquaintances such as bosses or customers. In addition, recalling a memory, no matter what type, increased engagement and authentic self-awareness. While there was no difference between authentic or inauthentic moments in influencing these outcomes, individuals' pre-recall levels of engagement and authenticity influenced the memory functions used. This taxonomy of (in)authentic moment recall can guide future research in authenticity and memory function. In addition, these findings begin to address the interactive role that authenticity plays in memory recall and its influence on other psychological outcomes.

Keywords: autobiographical memory; authenticity; inauthenticity; well-being; engagement

Authenticity, or our sense of being true to ourselves, contributes to psychological outcomes of great importance in the workplace and life more generally, such as well-being and engagement [1–3]. This feeling of authenticity is reliant on having a coherent sense of self, which we maintain by recalling and reinterpreting our autobiographical memories (AM) [4–6]. While AM in general are foundational to any sense of being authentic, we do not know how specific memories of times we were authentic or inauthentic differ from other AM nor how they contribute to our overall sense of authenticity.

The ecological perspective on AM seeks to understand how memory functions in real life [7]. That is, it seeks to understand different types of memories, their functions and contexts, and how AM might influence life outcomes such as well-being and engagement. This study, therefore, aims to develop the ecological understanding of autobiographical memory and authenticity. First, I aim to determine how memories of authentic moments differ from inauthentic moments and controls. I do this by analysing the physical and social contexts described in the recall narratives, such as whether the memory involved a workplace or family members, and determining how this relates to the functions that memory served. Second, I seek to identify the relationships between AM functions and respondents' authenticity, engagement and well-being. Third, I test the effect of (in)authentic moment recall on these outcomes, to determine whether guided recall might prove a useful intervention in improving psychological outcomes of value at work.

Autobiographical memory and authenticity

The functional approach to autobiographical memory (AM) suggests that memory serves specific functions, that is, that there are reasons and motivations for AM [8, 9]. These uses or functions cluster into three broad groups [10], namely, the self or identity function, the social or communicative function, and the directive or problem-solving function [11, 12].

The self-identity function involves using memories to construct a consistent personal identity over time [13]. Using AM in this way helps to develop self-knowledge, a coherent self-concept and a sense of self-development over the lifespan [14]. The social function involves using memories to build and maintain relationships, thereby deepening relationship intimacy and fostering social connections. While this function may involve sharing memories with others, the social function may also be fulfilled when recalling memories alone, by increasing people's feelings of warmth and closeness [15]. The directive function involves learning from past experiences to solve current problems and plan for the future. Past events may be to aid in problem-solving, forming opinions, and adapting to new situations [10]. For example, significant moral transgressions, may be remembered and serve as reference points for moral learning and improvement [16]. Recalling these memories can provide guidance when encountering similar situations in the future.

Extensive research has demonstrated that people who use each of these three AM functions more have better well-being [14]. The reasons for this may be related to the specific functions as well as the overall adaptive nature of AM. First, use of the self function helps us to develop our identity and may thereby give a sense of purpose and meaning that is key to well-being [14, 17]. Second, using AM to nurture and develop one's social network can support emotional well-being [18]. Third, use of the directive function may enable people to resolve challenging situations more quickly and build a positive self-perception, thereby also improving subjective well-being [10]. Finally, AM functions are considered adaptive in everyday life, meaning that people will use them in order to meet a perceived need and thereby improve their overall well-being. This adaptivity was supported in a study showing that people with low self-concept clarity were more likely to use AM for the self-identity function and those with greater attachment anxiety were more likely to use the social function [19].

Despite these proposed associations, we do not yet understand the specific mechanisms that link someone's coherent life narrative to their well-being [5]. In this paper, I propose that authenticity could provide insight into this link between memory and psychological well-being outcomes.

While there are several psychological models of authenticity, they all note the importance of integrating self-knowledge and self-expression. Our sense of authenticity is dependent on both owning our personal experiences and acting in accordance with our inner thoughts and values [20]. Authenticity, therefore, does not necessarily imply consistency of behaviour but rather a coherent narrative that may integrate inconsistent behaviour or changing attitudes into an ongoing sense of self [1]. A more authentic person is expected to have a more coherent life narrative: authenticity levels could therefore influence the AMs that are recalled and the functions those memories serve. In addition, these memories, by supporting or improving the person's sense of authenticity, may enhance psychological outcomes of importance in the workplace, such as well-being or engagement.

The research into authenticity and AM is limited but promising. Past-self authenticity can be increased by the recall of a nostalgic memory [21] and authenticity is positively associated with recall of a memory of helping others or achieving a goal [22]. Preliminary work has also indicated that AM functions are used differentially in recall of authentic and inauthentic moments [23, 24].

Memories: function, type and content

There is indeed extensive evidence that AM functions are used differentially in distinct types of memories, in terms of either the timing of the recalled event or the content of the memory. Single events tend to use the self and directive functions, while repeated or recurring events are more likely to serve a social function [25]. In terms of content, negatively-valenced memories are more likely to use the directive than social or self-identity

functions [7]. To our knowledge, no research has yet examined the relationship between AM functions and the physical or social context described in the recall narrative. Our first aim, therefore, is to contribute towards developing a taxonomy of (in)authentic moment recall by identifying the social and physical contexts most likely to be associated with different AM functions (self, social and directive) and determining the extent to which they differ across authentic or inauthentic moments. Based on the definitions of the AM functions, using a memory to build the sense of self-identity might be more likely to occur in memories of being alone, while the social function is more likely to be used in memories involving close others with whom one would wish to build relationship (e.g. partner, family or friends). However, as the directive function is used to guide behaviour, with no mention of context, we might not expect a stronger relationship with any specific contexts.

The second element in building this taxonomy is to identify how authentic or inauthentic memories are related to the physical and social context in the memory. Previous work has shown that authentic self-expression is important for healthy relationships [26] and people tend to be more authentic with their partner, family and friends than with work colleagues [3]. It may be expected, therefore, that:

H1a: Authentic moments will involve close social relationships such as family or friends.

H1b: Inauthentic moments will involve work colleagues or strangers, and take place outside the home.

AM and psychological outcomes

As might be expected from an ecological approach to memory, the known interactions between AM functions, the type and content of memory, and psychological outcomes are complex. In terms of memory content, valence is related to psychological well-being and depressive symptoms [27] and memories rated as less positive are more likely to be used for

the directive function [7]. While research has shown that greater use of all three AM functions is related to higher levels of well-being [14], the functions used in recall of romantic events are differentially related to relationship satisfaction and intimacy [28]. Additionally, specific sets of predictors are associated with greater use of different AM functions. For example, individuals with lower self-concept clarity use the self function more frequently, perhaps in an effort to maintain continuity [7]. We would therefore expect that individuals' baseline levels of authenticity, well-being and engagement might be related to their differential use of AM functions. As this research aim is exploratory rather than confirmatory, the study is guided by the following research question.

RQ1: How are baseline levels of authenticity, well-being and engagement related to AM function use?

Clarifying the relationships between functions used in (in)authentic moments and psychological outcomes over time will help to elucidate the mechanisms by which AM can influence these outcomes and could guide the development of potential interventions to improve well-being. A meta-analysis of positive psychology interventions demonstrated that even simple interventions such as gratitude exercises, which involve reflecting on something for which one is grateful, can have an influence on well-being [29]. The effectiveness of memory-based interventions in improving psychological outcomes has been demonstrated in research over several decades showing that expressive writing, that is, writing about emotional events and memories in a way that encourages exploration of deeper meanings, can improve well-being, cognitive functioning, satisfaction with relationships and many other positive outcomes [30]. More specifically, recall of nostalgic events can increase authenticity [21], but it is not yet known whether recall of a specific (in)authentic moment can do the same. Here, I suggest that recall of both authentic and inauthentic moments could be associated with increased authenticity, the former as it reinforces the individual's coherent

sense of self and the latter because previous work has indicated people may use past inauthentic experiences to reflect on their current (improved) authenticity [31].

H2a: Recall of an authentic moment increases authenticity

H2b: Recall of an inauthentic moment increases authenticity

Authenticity is positively related to well-being and engagement in a wide variety of contexts and it may be expected that recall of an authentic moment may also increase well-being and engagement. Similarly, and because inauthenticity is associated with negative well-being outcomes, such as reduced life satisfaction and increased distress [32], recall of inauthentic moments may be associated with decreased well-being and engagement.

H3a: Recall of an authentic moment increases well-being and engagement

H3b: Recall of an inauthentic moment decreases well-being and engagement

The Present Study

In summary, this study aims to develop the detailed ecological understanding of AM and authenticity, by addressing three related objectives. First, the study contributes to building a taxonomy of memories by identifying differences in function and content in recall of authentic and inauthentic moments compared to controls. Second, it identifies the relationships between AM functions and the psychological outcomes of authenticity, well-being and engagement. And third, it begins to unravel the mechanism of AM effects on these psychological outcomes by testing the effect of memory recall in a pre- and post-test design.

Method

Participants

Undergraduate psychology students from New Zealand gained partial course credit for their participation in the study. All participants gave informed consent and their data were anonymised to protect privacy. Power analysis indicated that a sample size of 212 was

needed to detect a medium effect size for the planned ANCOVA (described below). Using a conservative estimate of 15% incomplete or unusable responses, minimum sample size for data collection was set at 243 and, because participants may sign up for the study up to a week before completing it, data collection continued until the end of the week after this number was achieved. After data cleaning (also described below), the final sample size was 239. Most respondents (66.1%) were aged 18-24, followed by 21.3% aged 25-34 and 12.6% older than this. Just over half (56.1%) reported NZ European ethnicity, 6.7% Māori, 17.2% other ethnicities and 17.2% mixed ethnicity. Eighty-one percent were female, 15.8% male and 2.9% other/unspecified.

Procedure

In a single session, participants completed a series of online questionnaires. First, they provided basic demographic data (sex, age and ethnicity) and completed measures of well-being, engagement in university studies and authenticity. They were then randomly assigned to one of three conditions (authentic, inauthentic or control) and asked to recall a memory relevant to that condition using the following wording:

> Please take a moment to think back over the last year and recall a time in your personal or professional life when you behaved in a way that made you feel *(un)*true to yourself, that made you feel *(in)*authentic. *(Or, for the control condition: Please take a moment to think back over the last year and recall a memorable time in your personal or professional life.)* Describe what happened, where and when the memory took place, who was involved, and thoughts and feelings during the event.

Finally, all participants completed the measures of well-being, engagement and authenticity a second time.

Measures

The SWEMWBS is a short version of the Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS) [33] used to measure mental wellbeing in the general population. It consists of 7 items (e.g. *I've been feeling optimistic about the future*) rated on a scale from 1= none of the time to 5 = all the time. Raw scores are summed and converted to metric scores using the published table.

The Integrated-Authenticity Scale (IAS) measures authenticity on two subscales: self-awareness (4 items, e.g. *For better or worse, I know who I really am*, reported $\alpha = .8$) and self-expression (4 items, e.g. *I always stand up for what I believe in*, reported $\alpha = .74$) on a scale from 1 = never to 5 = almost always.

Engagement was measured using the Utrecht Work Engagement Scale for Students–9S [UWES-9S, 34], a 9 item scale (e.g. *When I study, I feel like I am bursting with energy*) with responses scored on a 7-point frequency rating scale ranging from 0 = never to 6 = always.

Autobiographical memory functions

The author, plus two trained coders blind to the conditions and research question, used Waters et al.'s [25] autobiographical memory function coding scheme to score the recall narratives. Each narrative was coded for the expression of self, directive and social functions on a 4-point scale from 0 *(no content expressing this function)* to 3 *(extensive elaboration of this function)*. Coders independently scored a 15% sample of the narratives, met to discuss and resolve inconsistencies, then scored the remaining narratives. Raters' function scores were thus combined into a mean score for each function and 96% percent of the recall narratives received at least one nonzero score. Table 1 provides examples of the coding for authentic and inauthentic events.

Table 1. Coding Examples of Self, Social and Directive Functions in Autobiographical Memories of Authentic and Inauthentic Experiences.

Self	*Code*	*Mention of self-enhancement or self-deprecation due to reflection or remembering the experience, mention of similarity or difference of self and other, identification with an individual or group, identification of personal goals, explicit mention of personal traits*
	Authentic example	[recording a song] I ended up staying until my time finished in the studio. I was then greeted by three other adult figures who are highly regarded in their work. Which is really inspiring for me. … I took part in the recording session, I learnt about my Māori culture, the instruments… I felt pride and comfort knowing that I was in a right place and part of an opportunity not many know about, let alone can be part of.
	Inauthentic example	I was playing futsal against a team and the opposition had quite big egos and at the time I was unaware of the fact that it was riling me up so as a result, I started reacting in the same way by acting cocky and arrogant … I was quite disappointed with myself after the game
Social	*Code*	*Mention of a relationship or tradition as meaningful or valuable; description of a relationship as helpful; missing an individual or time in a relationship*
	Authentic example	[describing memory of how they met closest friends] Given the pandemic, we all spent a lot of time at home and one of the more popular apps was Tiktok. From a user that I followed …I grew close to some like minded people with their own mental health struggles. Together, from all different parts of the globe we had formed a great connection, and sense of support and trust within each other… These people deserve my forever love, support and gratefulness- there's not enough words to describe how much positive impact they have in my life. Our connection is so so special, I hope I never lose [them]
	Inauthentic example	Throughout the earlier half of last year and the year before that I would say I wasn't in the best state with physical health therefore this meant I was always in a lot of pain … and looking back I understand that being in pain meant I wasn't myself … I perhaps made decisions that were irresponsible and that looking back I know I would never have made normally. Breaking out of it though especially this year I feel a lot stronger [and my relationship with my] parents is better, last year particularly there was bit of conflict and stress because they care for me and were upset with some ways I behaved.
Directive	*Code*	*Mention of a change in a specific behaviour, attitude or principle as a result of the experience*
	Authentic example	… when I was able to tell people I was going to enrol in uni. not many family members were interested and told me to give up in the first month. Even though my grades were low and telling me

	to quit, being the real me, I could make a game plan on how I could be better [at my exams] next time.
Inauthentic example	Some stranger that was different was walking down the street with a different hairstyle and impulsively I mocked and laughed. instantly afterwards I felt bad and thought who am I to judge I need to be better. This made me more aware the next time someone else was different to be more accepting and loving to that person.

Context

The physical context described in the narrative was coded as *home, work, school/university* or *other/elsewhere* and social context coded as *alone, with partner, with family, with friends, with colleagues* or *other*. Context codes were pooled using the mode of the three coders' scores. Only 2.1% of physical context codes and 2.9% of social context codes did not have a valid mode value, indicating that at least 2 of 3 coders agreed on the context in over 95% of cases.

Data analysis

Incomplete responses and responses that were considered low quality due to speed of completion (50% faster than the median [35]) were removed from the dataset (N=22), leaving a final sample of 239. Cronbach alphas indicated good to excellent internal reliability for each measurement scale (Table 1).

Inter-rater reliability was assessed using Krippendorff's alpha [36] due to its flexibility in handling different levels of measurement. Reliability was acceptable for the context measures (social context α = .75, 95% CI [.70, .79]; physical context α = .73, 95% CI [.69, .77]) but was low for the AM functions (self-identity α = .17, 95% CI [.09, .25]; social α = .59, 95% CI [.51, .66]; directive α = .13, 95% CI [.02, .22]), possibly reflecting the common finding that AM functions overlap when studied in everyday situations [10]. Reliability analysis was therefore followed up with correlational analysis, which showed significant bivariate correlations between raters for each of the three functions, compared to

no significant correlations across functions. Despite the low Krippendorff's alpha indicating low inter-rater agreement, therefore, the mean of the raters' scores was used for the following reasons. First, each rater contributes unique insights, and averaging their scores captures a broader spectrum of evaluations, thus enhancing the comprehensiveness of our analysis. Second, the mean score is less susceptible to the influence of any individual outlier ratings, ensuring a more balanced and representative assessment. Third, in contexts where subjective judgments are involved, the mean can reflect a consensus view that acknowledges the diversity of perspectives. However, the low reliability is borne in mind during interpretation and returned to in the limitations section.

Bivariate correlations were conducted to identify relationships between the variables of interest and address our RQ about the relationship between individual psychological variables (authenticity, well-being and engagement) and AM function use.

Because scoring of the recall narratives gives higher scores for greater elaboration, the influence of word count on relevant variables was tested and word count then included as a covariate where necessary.

To address H1 and determine whether condition (authentic/inauthentic/control) influenced the physical or social contexts described in the memory recall, chi-squared analysis was conducted. I further tested whether AM functions were used differently in memories describing distinct physical or social contexts using a one way ANCOVA.

And finally, to address H2 and H3 and determine the effect of memory recall on outcomes, repeated measures ANCOVA was used, with the experimental condition (control, authentic moment, inauthentic moment) as the between-subjects factor and including narrative word count as a covariate.

Results

To address RQ1 and identify relationships between participants' authenticity, well-being and engagement and their use of AM functions, bivariate correlations were conducted (Table 2). Pre-test engagement was positively correlated with subsequent use of self and directive AM functions, while pre-test authentic self-expression was positively correlated with subsequent use of the directive function. Finally, use of the directive function was associated with greater post-test well-being.

Word count was significantly correlated with the function scores and one way ANOVA showed a significant main effect of condition on word count ($F(2,236) = 3.51$, $p = .03$) with Bonferroni post-hoc tests revealing that word count in the control condition ($M = 123$) was significantly higher than in the inauthentic condition ($M = 95$). For these reasons, word count is used as a control variable / covariate in the following analyses.

Table 2. Descriptives and correlations for all study variables

	M	SD	word count	Eng	ASA	ASE	WB	self	social	direct	T2 Eng	T2 ASA	T2 ASE	T2 WB
word count	105.91	72.52												
Eng	3.31	.70	.132*	(.87)										
ASA	3.67	.74	.103	.327**	(.81)									
ASE	3.49	.69	.031	.247**	.237**	(.72)								
WB	20.73	3.12	-.076	.423**	.444**	.237**	(.81)							
self	1.01	.65	.415**	.201**	.020	.059	-.011							
social	.29	.56	.346**	.043	.058	.075	-.064	.082						
direct	.24	.34	.281**	.181**	.136*	.096	.124	.311**	-.030					
T2 Eng	3.38	.78	.101	.917**	.357**	.188**	.453**	.174**	.034	.168**	(.92)			
T2 ASA	3.71	.76	.055	.291**	.832**	.288**	.463**	-.013	.002	.124	.371**	(.84)		
T2 ASE	3.48	.75	.030	.252**	.268**	.877**	.283**	.048	.057	.119	.196**	.354**	(.76)	
T2 WB	21.01	3.83	.015	.511**	.509**	.233**	.805**	.063	-.001	.151*	.606**	.530**	.293**	(.87)

Note. *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed). Cronbach α in brackets on the diagonal. Eng = Engagement, ASE = authentic self-expression, ASA = authentic self-awareness, WB = well-being, T2 = time 2.

Memory function, type and content

A 3x2 ANCOVA with word count as a covariate was used to test whether the AM functions (self, social, directive) differed by memory content (physical and social context). The univariate effect of physical context on the social AM function was significant ($F(3,230) = 4.16$, $p = .007$, partial $\eta^2 = .05$). Controlling for word count, pairwise comparisons indicated the social function was significantly less likely to be used in work memories than memories of home (M diff = -.33, p=.005) or elsewhere (M diff = -.29, p=.002).

The univariate effect of social context on both social ($F(5,226) = 4.54$, $p < .001$, partial $\eta^2 = .09$) and directive functions ($F(5,226) = 2.99$, $p = .012$, partial $\eta^2 = .06$) was also significant. Table 3 shows the pairwise comparisons. When controlling for word count, the self function was more likely to be used in memories of being alone than with friends; the social function was more likely to be used in memories of being with partner, family or friends than in memories of being alone, with colleagues or with others; and the directive function was more likely to be used in memories of being alone or with others than with family or friends.

Table 3. Pairwise comparisons of AM function by social context, controlling for word count.

			95% Confidence Interval	
AM function	Social context	Mean[†]	Lower	Upper
self	alone	1.227[a]	.958	1.497
	partner	1.002	.780	1.225
	family	1.003	.831	1.174
	friends	.880[a]	.720	1.040
	colleagues	.985	.781	1.189
	other	1.041	.878	1.204

social	alone	.042[b,c,d]	-.183	.267
	partner	.432[b,e,h]	.247	.618
	family	.434[c,f,i]	.292	.577
	friends	.380[d,g,j]	.247	.513
	colleagues	.057[e,f,g]	-.113	.228
	other	.172[h,i,j]	.036	.308
direct	alone	.401[k,l]	.256	.545
	partner	.219	.099	.338
	family	.171[k,m]	.080	.263
	friends	.151[l,n]	.066	.237
	colleagues	.271	.161	.380
	other	.323[m,n]	.235	.410

Note. † word count covariate is evaluated at 104.45.

Superscript letters (a-n) indicate significantly different pairs ($p<.05$)

Chi-squared goodness-of-fit test was used to determine whether the physical or social context described in memory narratives differed across the three memory conditions. Physical context differences approached significance with a small to medium effect size (χ^2 (6, N = 235) = 11.18, p = .08, Cramer's V = .154), and cell comparisons using Bonferroni corrections indicated that the inauthentic condition resulted in a higher proportion of participants describing memories at work than the control condition did (26.8% vs 7.8%). Social context was also significantly different across conditions, (χ^2 (10, N = 233) = 23.06, p = .01) with a medium effect size (Cramer's V = .222). Cell comparisons indicated that memories in the authentic and inauthentic conditions were more likely to include mention of colleagues (19.7% and 19.8% respectively) compared to the control (2.6%).

Effect of AM recall

To test the effect of memory recall on authenticity (H2) as well as engagement and well-being (H3), a repeated measures ANCOVA, with experimental condition (control, authentic moment, inauthentic moment) as the between-subjects factor and including narrative word count as a covariate was conducted.

In the within-subjects tests, the main effect of time on all measures approached significance ($F(4,232) = 2.40$, $p = .051$, partial $\eta^2 = .04$). Univariate tests showed that pre- and post-measures of engagement ($F = (1,235)\ 5.17$, $p = .024$, partial $\eta^2 = .22$) and authentic self-awareness ($F = (1,235)\ 3.93$, $p = .049$, partial $\eta^2 = .02$) were significantly different, indicating that memory recall had small effects on improving these outcomes (Table 4). The interactions between time and word count ($F(4,232) = 1.85$, $p = .12$) and time and condition ($F(4,232) = 1.38$, $p = .20$) were not significant.

In the between-subjects effects, the main effect of condition ($F(8,466) = .478$, $p = .87$) and word count ($F(4,232) = 2.01$, $p = .09$) were not significant, indicating that the type of recall and length of narrative did not influence the outcomes. Therefore, although the memory recall intervention improved engagement and authentic self-awareness, this effect was not due to the type of memory that participants were instructed to recall.

Table 4. ANCOVA of pre- and post-test scores.

	Pre-test		Post-test		F	df	p	partial η^2
	M	SD	M	SD				
Engagement	3.31	.70	3.38	.78	5.17	1,235	.024	.022
ASA	3.67	.74	3.71	.76	3.93	1,235	.049	.016
ASE	3.49	.69	3.48	.75	.08	1,235	.776	0

Well-being	20.73	3.12	21.01	3.83	.30	1,235	.586	0

Note. ASE = authentic self-expression, ASA = authentic self-awareness

Discussion

This study aimed to contribute to the ecological understanding of autobiographical memory and authenticity by constructing a taxonomy of (in)authentic moment recall and testing the effect of recall on psychological outcomes. It was possible to differentiate between authentic moments, inauthentic moments and controls in terms of social or physical contexts and the AM functions used in the recall. In addition, preliminary evidence for distinct effects of (in)authentic moment recall on psychological outcomes were found.

Memory function, type and content

When considering physical contexts, the social AM function is less likely to be used in memories that describe a work context than a home or other context. There are also distinct differences in how the AM functions are used depending on how close the individual is to the people recalled in the memory. While both the self and directive functions are more likely to be used in memories of being alone than with close others, the directive function is also more likely to be used in memories involving distant others. The social function, in contrast, is most likely to be used in memories involving close others such as partner, family and friends.

We can therefore see a taxonomy of memory content and function, where different AM functions are served by memories of different people. I took this further to explore whether memory content could be influenced by the type of memory respondents were instructed to recall. Physical context differences between the three conditions did not reach significance though there are indications that the workplace might be involved in slightly more inauthentic moments than other contexts are.

Social context, on the other hand, was significantly different, with AMs involving work colleagues more likely to be recalled in the authentic and inauthentic conditions than in

controls. This provides added nuance to previous findings that people tend to be less authentic with work colleagues than with family or friends [3]. It appears that work colleagues are likely to play a role in memories of both authentic and inauthentic moments. Given that authentic self-expression is important for healthy relationships [26] and healthy work relationships are key to many organisational outcomes, it is encouraging to see that work colleagues are not solely associated with inauthentic experiences.

Effect of AM recall

Following on from this taxonomy, the relationships between AM functions and authenticity, well-being and engagement were identified. Those with higher pre-test engagement showed increased use of self and directive functions while those with higher authenticity showed increased use of the directive function. Greater use of the directive function was also associated with higher post-test well-being.

And finally, this study demonstrated initial evidence for a potential mechanism of AM function on positive psychological outcomes. The simple act of recalling a memory, no matter what type, has a small but significant positive effect on engagement and authentic self-awareness. These are promising findings, especially given such a brief intervention, as meta-analysis of positive psychology interventions has shown larger effect sizes for longer interventions [29]. Whether a longer intervention would show similar effects for a memory-based exercise such as this one, however, is not yet known. Recalling life chapters was found to improve self-esteem, but the effect was fairly brief and was not enhanced with cumulative writing sessions [37].Researchers should therefore be encouraged to engage in longer term interventions based around this brief recall format to determine the duration of effects on authenticity.

Previous work has shown that recall of a nostalgic event affects authenticity [21], but this study found that directing people to recall a memory specifically related to authenticity

has no exclusive effect. The Baldwin et al. studies were designed to test very different hypotheses from ours and thus used a different measure of authenticity, namely 'past-self authenticity' rather than the IAS, and did not utilise pre- and post-measures of the variables. What is clear from both of these studies is that authenticity has an interactive role to play in how memory recall influences other psychological outcomes.

In summarising these results, we can describe a 'typical' authentic or inauthentic moment. Both are less likely to involve family and friends and more likely to involve work colleagues than control memories. An authentic moment is most likely to involve being alone. An inauthentic moment is most likely to happen at work and involve unspecified others: those who are less close than family or even work colleagues. Post-hoc review of the narratives showed that these 'others' commonly included bosses and customers at work, where participants described having to 'put on a mask', or interactions with strangers. To optimise future research in memories of being authentic, it may be valuable to make use of this in order to guide participant recall to the richest seams of memory.

Limitations and future research

Inter-rater reliability was low for the AM function scoring, indicating substantial measurement error and thereby reducing confidence in the consistency of these findings. As noted, AM often fulfils more than one function at a time [10], and this could have contributed to the low inter-rater reliability. Similarly, this multi-function use may help to explain the finding that *type* of memory did not have a significant effect on the outcomes: these memories were serving more than one function at a time. Although this study adopted a compromise measure that allowed for comprehensiveness of interpretation of the recall narratives, future work in this area should focus on improving rater training. The findings here should therefore be viewed as indicative of potential mechanisms and await further replication.

As with any psychological study, demand characteristics may have influenced the results. Not only is there the possibility of social desirability in questionnaire responses (which was mitigated against by assuring participants of their anonymity), but, as participants were attempting to communicate their memories, their recall may have been influenced by audience tuning. Audience tuning occurs when a communicator attempts to adapt their message to the assumed audience and is more likely when communicators are able to establish a shared reality with their audience [38]. In this study, for example, student participants might assume a shared reality of university life the researcher, and therefore be primed to recall memories of university/work.

While sex differences were not explored in this study, previous reviews indicate that females may report more elaborative and emotional narratives, often including a greater sense of connection with others [39]. With a sample that was 81% female, therefore, this study may include recall narratives with greater elaboration and greater use of the social function than a more balanced sample. In addition, the constructs measured here, namely AM functions and authenticity, may be uniquely related in the age group (young adults) that formed the majority of the sample. The drive to be "authentic" is particularly salient to this age group [40] and the development of autobiographical memory, specifically the construction of a coherent life narrative, is a particular focus at this time [5]. Similarly, younger adults are more likely to use the directive and social functions than older adults [19]. These findings therefore await confirmation and elaboration in older age groups.

It would also be valuable to further explore why certain contexts are more or less important when recalling authentic moments. For example, the finding that people are most likely to describe memories of being alone when recalling an authentic moment may reflect the conceptualisation of authenticity common to Western cultures, namely that authenticity involves being true to oneself over and against social pressures. Measures of authenticity,

including the IAS used here, that draw heavily on Rogers' humanistic psychology [41] include items specifically assessing one's ability to stand up for one's views and values even in the face of conflict with others. Alternative conceptualisations of authenticity may adopt a more integrative model, where positive relationships with others are a key element [42]. Different measures of authenticity may well uncover different relationships with the AM functions.

Sutin and Robins [43] suggested a model for how memory content may influence feelings of authenticity: a memory that is appraised as less self-congruent (equivalent to an 'inauthentic' moment in this study) is expected to reduce feelings of authenticity, and hence have an influence on whether the individual uses 1st or 3rd person perspective in retrieving the memory. According to the model, adopting a 3rd person perspective on these inauthentic moments may help to provide distance and objectivity and thereby lead to improved feelings of authenticity. Further work could address the extent to which perspective influences authenticity.

Conclusion

In this study, I have identified a taxonomy of (in)authentic moment recall as well as establishing relationships between the social context described in the recall and the AM functions more likely to be used. Finally, I offer preliminary evidence for the utility of guided memory recall as a brief intervention to improve engagement and authenticity.

References

1. Sutton A (2020) Living the good life: A meta-analysis of authenticity, well-being and engagement. Pers Individ Dif 153:109645
2. van den Bosch R, Taris TW (2014) The authentic worker's well-being and performance: The relationship between authenticity at work, well-being, and work outcomes. The Journal of Psychology: Interdisciplinary and Applied 148:659–681

3. Robinson OC, Lopez FG, Ramos K, Nartova-Bochaver S (2013) Authenticity, Social Context, and Well-Being in the United States, England, and Russia. J Cross Cult Psychol 44:719–737
4. Conway MA, Singer JA, Tagini A (2004) The self and autobiographical memory: Correspondence and coherence. Soc Cogn 22:491–529
5. Fivush R (2011) The development of autobiographical memory. Annu Rev Psychol 62:559–582
6. Demiray B, Bluck S (2011) The relation of the conceptual self to recent and distant autobiographical memories. Memory 19:975–992
7. Lind M, Demiray B, Bluck S (2019) Identifying distinct sets of predictors of specific functions of autobiographical memory. Memory 27:1313–1318
8. Harris CB, Rasmussen AS, Berntsen D (2014) The functions of autobiographical memory: An integrative approach. Memory 22:559–581
9. Pillemer DB (2009) Twenty years after Baddeley (1988): Is the study of autobiographical memory fully functional? Appl Cogn Psychol 23:1193–1208
10. Pillemer DB (2003) Directive functions of autobiographical memory: The guiding power of the specific episode. Memory 11:193–202
11. Bluck S, Alea N, Habermas T, Rubin DC (2005) A tale of three functions: The self-reported uses of autobiographical memory. Soc Cogn 23:91–117
12. Bluck S, Alea N (2011) Crafting the tale: Construction of a measure to assess the functions of autobiographical remembering. Memory 19:470–486
13. Conway MA (2005) Memory and the self. J Mem Lang 53:594–628
14. Waters TEA (2014) Relations between the functions of autobiographical memory and psychological wellbeing. Memory 22:265–275

15. Alea N, Bluck S (2007) I'll keep you in mind: The intimacy function of autobiographical memory. Appl Cogn Psychol 21:1091–1111
16. Stanley ML, Cabeza R, Smallman R, De Brigard F (2021) Memory and Counterfactual Simulations for Past Wrongdoings Foster Moral Learning and Improvement. Cogn Sci. https://doi.org/10.1111/cogs.13007
17. McAdams DP (2001) The Psychology of Life Stories. Review of General Psychology 5:100–122
18. Nelson K (1993) The Psychological and Social Origins of Autobiographical Memory. Psychol Sci 4:7–14
19. Vranić A, Jelić M, Tonković M (2018) Functions of Autobiographical Memory in Younger and Older Adults. Front Psychol 9:219
20. Harter S (2002) Authenticity. In: Handbook of positive psychology. Oxford University Press, New York, NY, US, pp 382–394
21. Baldwin M, Biernat M, Landau MJ (2015) Remembering the real me: Nostalgia offers a window to the intrinsic self. J Pers Soc Psychol 108:128–147
22. Smallenbroek O, Zelenski JM, Whelan DC (2017) Authenticity as a eudaimonic construct: The relationships among authenticity, values, and valence. Journal of Positive Psychology 12:197–209
23. Sutton A, Render J (2021) Memories of who we are: A preliminary identification of autobiographical memory functions in recall of authentic and inauthentic events. Social Psychological Bulletin 16:1–12
24. Sutton A (2022) Autobiographical memory functions in the recall of authentic moments. Current Psychology. https://doi.org/10.1007/s12144-022-03997-w
25. Waters TEA, Bauer PJ, Fivush R (2014) Autobiographical Memory Functions Served by Multiple Event Types. Appl Cogn Psychol 28:185–195

26. Brunell AB, Kernis MH, Goldman BM, Heppner W, Davis P, Cascio E V., Webster GD (2010) Dispositional authenticity and romantic relationship functioning. Pers Individ Dif 48:900–905

27. McFadden E, Siedlecki KL (2020) Do depressive symptoms and subjective well-being influence the valence or visual perspective of autobiographical memories in young adults? Memory 28:506–515

28. Aydin C, Buyukcan-Tetik A (2021) Remembering the romantic past: Autobiographical memory functions and romantic relationship quality. PLoS One 16:e0251004

29. Sin NL, Lyubomirsky S (2009) Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. J Clin Psychol 65:467–487

30. Baddeley JL, Pennebaker JW (2011) Chapter 6: The Expressive Writing Method. In: Research on Writing: Approaches in Mental Health. BRILL, pp 85–92

31. Sutton A (2018) Distinguishing between authenticity and personality consistency in predicting well-being: A mixed method approach. European Review of Applied Psychology 68:117–130

32. Boyraz G, Waits JB, Felix VA (2014) BRIEF REPORT. Authenticity, Life Satisfaction, and Distress: A Longitudinal Analysis. J Couns Psychol 61:498–505

33. Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkinson J, Weich S (2009) Internal construct validity of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS): a Rasch analysis using data from the Scottish Health Education Population Survey. Health and Quality of Life Outcome 7:15–22

34. Schaufeli WB, Martínez IM, Pinto AM, Salanova M, Barker AB (2002) Burnout and engagement in university students a cross-national study. J Cross Cult Psychol 33:464–481

35. Greszki R, Meyer M, Schoen H (2014) The impact of speeding on data quality in nonprobability and freshly recruited probability-based online panels. In: Online Panel Research. John Wiley & Sons, Ltd, Chichester, UK, pp 238–262

36. Krippendorff K, Hayes AF (2007) Answering the Call for a Standard Reliability Measure for Coding Data. Commun Methods Meas 1:77–89

37. Steiner KL, Pillemer DB, Thomsen DK (2019) Writing about life story chapters increases self-esteem: Three experimental studies. J Pers 87:962–980

38. Echterhoff G, Higgins ET, Groll S (2005) Audience-tuning effects on memory: The role of shared reality. J Pers Soc Psychol 89:257–276

39. Grysman A, Hudson JA (2013) Gender differences in autobiographical memory: Developmental and methodological considerations. Developmental Review 33:239–272

40. Thomaes S, Sedikides C, van den Bos N, Hutteman R, Reijntjes A (2017) Happy To Be "Me?" Authenticity, Psychological Need Satisfaction, and Subjective Well-Being in Adolescence. Child Dev 88:1045–1056

41. Wood AM, Linley PA, Maltby J, Baliousis M, Joseph S (2008) The authentic personality: A theoretical and empirical conceptualization and the development of the Authenticity Scale. J Couns Psychol 55:385–399

42. Wang YN (2016) Balanced authenticity predicts optimal well-being: Theoretical conceptualization and empirical development of the authenticity in relationships scale. Pers Individ Dif 94:316–323

43. Sutin AR, Robins RW (2008) When the "I" looks at the "Me": Autobiographical memory, visual perspective, and the self. Conscious Cogn 17:1386–1397