

RESEARCH ARTICLE

Tattoos embody autobiographical memories

Kristina Klug¹ , Christin Camia²  and Sonja Rohrmann¹ 

¹Department of Psychology, Goethe-University Frankfurt, Frankfurt, Germany and ²Department of Psychology, Zayed University, Abu Dhabi, United Arab Emirates

Corresponding author: Kristina Klug; Email: klug@psych.uni-frankfurt.de

Abstract

Autobiographical memories play a vital role in shaping personal identity. Therefore, individuals often use various methods like diaries and photographs to preserve precious memories. Tattoos also serve as a means of remembering, yet their role in autobiographical memory has received limited attention in research. To address this gap, we surveyed 161 adults (68.9 per cent female, $M = 26.93$, $SD = 6.57$) to explore the life events that motivated their tattoos and to examine their most significant memories. We then compared these findings with significant memories of 185 individuals without tattoos (80.0 per cent female, $M = 31.26$, $SD = 15.34$). The results showed that the majority of tattoos were inspired by unique life events, including specific events about personal growth, relationships, leisure activities, losses, or diseases. Even when not directly tied to specific events in life, tattoos still reflect autobiographical content, such as mottos, beliefs, and values. Furthermore, the most significant memories of younger tattooed individuals (20–24 years) tended to be more normative and less stressful compared to those of their non-tattooed counterparts in the same age group, though the nature of these memories varied. This difference was not found among older participants (30–54 years). Additionally, those without tattoos indicated to use specific objects and methods for preserving important events, suggesting tattoos are only one of several ways to reminisce. However, tattoos uniquely allow for the physical embodiment of autobiographical memories, indicating that engraving significant life events in the skin aids in reflecting on one's life story.

Keywords: tattoos events; normative life events; memory objects; identity

My latest tattoo is from a few years ago. I got it for my deceased dog, just to carry a reminder of him on the skin. The dog paw stands for my dog. Also, this tattoo says 'Collect memories not things'. This saying fits so well, because we had the dog unfortunately only for half a year, in which countless vet visits took place. But still, I have so beautiful memories despite this short time. But the writing also means that we don't have to keep his things because we carry the memories in our hearts. I think tattoos can be very helpful to process experiences.

When asked about the meaning of her tattoo, Nicole, a 30-year-old participant told this experience of losing her dog. She remarks that she considers personal memories more useful than objects for keeping an emotional connection to the lost pet and that the tattoo helped her processing that experience and possibly sustaining the corresponding

memory. This example illustrates that autobiographical memories are often allied with memory objects, and apparently also with tattoos. It moreover emphasizes that tattoos are multifunctional and symbolic media that express life stories without words (Häusle-Paulmichl 2018; Stirn 2007). Some important events in life literally get under people's skin in the form of tattoos.

The growing popularity of tattooing and piercing (Heywood *et al.* 2012), along with their appeal to a more diverse clientele, has sparked increased interest in the body among social and cultural theorists (e.g., Giddens 1991; Shilling 1993). Although psycho-analytical, sociological, and ethnological research addressed the tattooing of life events from different perspectives (e.g., Atkinson 2003; Lemma 2010; Mun *et al.* 2012; Oksanen and Turtiainen 2005; Pitts 2003; Sanders and Vail 2008; Shelton and Peters 2006; Steadman *et al.* 2019; Sweetman 1999; Velliquette *et al.* 2006), there are hardly any studies connecting tattoos and research on autobiographical memory. Therefore, our study addresses this gap. Specifically, we investigated the kinds and mnemonic characteristics of life events that motivated tattooing, which we label here *tattoo events*. Further, we compared mnemonic characteristics of important memories of tattooed and non-tattooed individuals and explored reasons for and use of other memory objects and ways in which non-tattooed individuals remember. Overall, this study aims at providing insight into whether and how tattoos function as extended autobiographical memory and what might separate them from other memory objects.

Autobiographical memory, memory objects, and tattoos

Autobiographical memories are essential for constructing life stories and maintaining a continuous sense of self (Bluck and Liao 2013; Habermas and Bluck 2000; Habermas and Köber 2015; Prebble *et al.* 2013). Our self-concept is closely linked to our autobiographical memory (Conway *et al.* 2004; Rubin 1986). While memories are products of internal cognition, they also rely on external media or objects for storage and retrieval. Janet (1928) argues that

[fi]rst memories are memories of objects and use objects as memory-aids. An individual who wants to remember takes something away with him: you bind a knot into the handkerchief, you put a pebble in your pocket, you take a piece of paper along. [...] From distant towns you take along souvenirs [...]; they are your memory-aids. Memory very often is material. (cited in Habermas and Paha 2002, p. 124)

Scholars from various academic fields, including consumer behaviour, sociology, or gerontology have shown interest in the evocative qualities of objects (Belk 1988; Berntsen 2022; Brooker and Duce 2000; Cohen 2000; Epp and Price 2010). Research in these areas has explored how souvenirs and mementoes authenticate memories and support reminiscing of past experiences that might otherwise be forgotten (Grayson and Shulman 2000; Love and Sheldon 1998). Typical memory objects such as music collections, diaries, photographs, clothing, jewellery, or souvenirs, and the required processes to own them support the continuous sense of self by tying personal memories to the individual's environment (Belk 1988; Habermas 2011; Kleine and Baker 2004; Price *et al.* 2000; Steadman *et al.* 2019; Turley and O'Donohoe 2012). Especially in times when identity is uncertain or challenged, memory objects facilitate adaptation, development, and preservation of self-continuity (Bollas 1979; Buse and Twigg 2015; Schouten 1991) because the memory object itself helps individuals to remember their life stories and confirms past aspects of the self (Habermas 1999; Habermas and Paha 2002; Mehta and Belk 1991; Sundberg and

Kjellman 2017; Sweetman 1999). Moreover, memory objects point to specific characteristics of personal memories such as people, places, and times, and foster interconnections between these memory characteristics (Belk 1988). In this sense, objects and souvenirs serve as ‘touchstones of memory, evoking memories of places and relationships’ that concomitantly ‘materialize self-identity’ (Morgan and Pritchard 2005, pp. 41 & 30). In other words, memory objects help to engage in identity work, representing an extension of the self (Belk 1988), and providing potent sources of memory (Hallam and Hockey 2001). Memory objects worn on or against the body like clothes or jewelry seem particularly meaningful and emotionally charged for personal identity as these objects are physically connected to the person (Ash 1996; Lupton 1998) and moreover capture memories through their ‘sensuality and tactility’ (Woodward 2007, p. 5). In this regard, tattoos may not seem different even though the actual physical process of getting a tattoo and the lasting changes it makes to the body may distinguish them from other, more common and bodily-worn memory objects.

While some people claim that they get tattoos for purely aesthetic reasons, previous research shows that tattoos often relate to important life events (Oksanen and Turtiainen 2005; Sweetman 1999). In fact, tattoos can be understood as ‘a way of cutting into nature to create a living, breathing autobiography’ (Mifflin 1997, p. 178) and a form of public storytelling (Crossley 2006). The body thus becomes a medium, a vehicle of communication that serves to express identity, individual creativity, and one’s place in society or resistance to cultural practices and norms (Stirn 2007; Velliquette *et al.* 2006). Tattoos convey messages about oneself to oneself and others (Häusle-Paulmichl 2018).

Radical life changes, marriage, loss of a loved one, the search for a new goal in life, the end of a romantic relationship, death/birth or a family crisis are exemplary events which individuals deem worthy to embody in the form of tattoos (Oksanen and Turtiainen 2005; Steadman *et al.* 2019). Tattooed individuals also reported that the act of tattooing helped them to reconstruct themselves during a period of self-doubt (Keagy 2015) or to regain a sense of control in the face of dramatic and negative life experiences (Maxwell *et al.* 2019). For example, borderline patients use tattoos to cope with negative life experiences, indicating that the tattoos help them to regulate negative emotions and inner tension. Furthermore, they reported that their tattoos remind them of identity-forming life experiences and thus represent reassurance (Höhner *et al.* 2014). Indeed, Haubl (2000) considers identity formation to be the central motivation for getting a tattoo. Perpetuating important life events on the skin may give personal significance to particular life events and to one’s life story as a whole.

The present study

Although people around the world appear to collect and cherish memory objects and tattoos (e.g., Kosut 2000; Oksanen and Turtiainen 2005; Phillips 2016; Steadman *et al.* 2019; Sundberg and Kjellman 2017), research on autobiographical memory has barely investigated the mnemonic characteristics of memories associated with tattoos. However, as research on other material objects worn on or against the body shows (Ash 1996; Habermas 2011), such memory objects provide potent sources of autobiographical memory, triggered through their relationship to embodied practice. Since previous sociological studies have mainly used portraits from tattoo magazines or qualitative case reports to investigate tattoos and their associated importance for their holder (e.g., Oksanen and Turtiainen 2005; Steadman *et al.* 2019), the present study is one of the first to combine research on autobiographical memory and tattoos by investigating quantitatively the autobiographical background of tattoos in a larger sample. As people attribute the greatest sense of self to their own bodies (Baumeister 1999, 2011), tattoos as corporeal

expressions of the self may represent life events and thus serve as an embodied attempt to construct and maintain a continuous sense of self (Featherstone 1991; Sweetman 1999). Exploring this assumption, our first research question asked whether tattoos represent autobiographical memories, and if so, continued to investigate the mnemonic characteristics of important life events that motivated tattooing, i.e., of *tattoo events*.

Assuming that tattoo events are personally important events, we second explored whether the important life events of tattooed and non-tattooed individuals differ. For this purpose, we compared important life events of tattoo holders to important life events of non-tattoo holders in terms of content, normativity, age at the time of the event as well as stressfulness in the form of the need for readjustment/coping. This comparison might reveal if differences in the individuals' autobiographical experiences may influence their choice to represent certain memories in the form of tattoos.

Altogether, this study aims to better understand the phenomenon of tattooing, especially why certain events and experiences are chosen for this particular form of perpetuation and what might separate them from life events that are associated with none or other (bodily-worn) memory objects. By listening to the stories of individuals' tattoos and comparing important life events of tattooed and non-tattooed individuals, we hope to discover which life events weigh enough to break the skin barrier and become a permanent embodied image.

Method

Participants

The present work includes data from two different community samples. The first sample consists of participants with tattoos, while the second sample includes participants without tattoos. The tattooed subsample comprises data of 161 participants, of whom 68.9 per cent ($n = 111$) identified as female and 31.1 per cent ($n = 50$) as male. Tattooed participants ranged in age from 19 to 50 years ($M = 26.93$, $SD = 6.57$). The subsample of non-tattooed individuals includes data of 185 participants, of whom 80.0 per cent ($n = 148$) identified as female and 20.0 per cent ($n = 37$) as male. Non-tattooed participants ranged in age from 18 to 82 years ($M = 31.26$, $SD = 15.34$). The subsamples did not significantly differ in gender distribution; however, there were significantly more female than male participants in each subsample ($\chi^2(1, 346) = 5.590$, $p = .018$). Non-tattooed participants were significantly older than tattooed participants, $t(251.5) = -3.329$, $p < .001$.

Procedure

The study was approved by the Research Ethics Committee of Goethe University Frankfurt am Main (#2018-48). Participants were recruited via social media platforms and flyers distributed in different German universities and tattoo parlours. The requirement for participation was a minimum age of 18 years and the presence of at least one tattoo in the tattooed subsample and of no tattoo in the non-tattooed subsample.

Data from both subsamples were collected in two similarly constructed online surveys. Following providing consent and demographic information, participants were asked to report their seven most important life events (in the following called *Top 7 life events*) including the respective age at the time of the event. A total of 2393 Top 7 life events ($n_{\text{tattoo}} = 1125$; $n_{\text{non-tattoo}} = 1268$) were collected; 96.8 per cent ($n = 335$) of participants listed the requested seven life events.

Tattooed participants were moreover asked whether their tattoos were motivated by life events or served to remind them of life events. If applicable, participants were

requested to narrate the tattoo event with as much detail as possible. Specifically, tattooed participants were asked to report 'what happened, what impact did this event have on you and your life, why did you decide to eternize this event in the form of a tattoo, and what does the tattoo symbolize for you?'. Additionally, participants indicated their age at getting the tattoo, enabling us to compute the age of the tattoo at the time of participation in the study. Participants could provide up to three tattoo narratives. If participants had more than three tattoos, they were asked to write about their first, most important, and most recent tattoo. A total of $n = 333$ tattoo narratives were collected. All 161 participants provided at least one tattoo narrative, 110 participants (68.3 per cent) told two tattoo narratives, and 62 participants (38.5 per cent) provided three tattoo narratives.

Instead of tattoo narratives, participants of the non-tattooed sample were asked to provide reasons for not being tattooed and how they remember important life events. Participation in the study was not compensated.

Measures

Coding of content

Tattoo narratives and Top 7 life events of both subsamples were coded for content by two Bachelor's and Master's students blind to the hypotheses. Content coding schemes were based on previous event coding schemes developed by Berntsen and Rubin (2004) and Habermas (2007). Grounded in research on cultural life scripts representing the most common life events in a prototypical life in a certain culture (Bohn and Berntsen 2013), these coding schemes were originally created to categorize the content of life events in life stories and were used here to assign the content of tattoo narratives and Top 7 life events to overarching content categories, while fitting the North-European/German cultural context of our study. Given our focus on tattoos, we added the event category 'Getting a tattoo'. Our manual thus contained a total of 17 main event categories reflecting the following areas of life: (1) Birth/children/siblings, (2) Childhood memories, (3) School, (4) Puberty / adolescence, (5) Family / celebration, (6) Relationships, (7) Work, (8) Aging, (9) Death, (10) Conflicts, (11) Home / vacation, (12) Accident / disease, (13) History / politics, (14) Gaining / losing something, (15) Leisure activities, (16) non-specific events, (17) Getting a tattoo. Including subcategories within these 17 main categories, about 100 categories were available to categorize the content of Top 7 life events and tattoo narratives. Since some of the main categories (e.g., birth/children/siblings) cover very different kinds of events (own birth, birth of relative, siblings, having children, having grandchildren, see Table A1) that also happen at different ages in life, we separated some life script-relevant subcategories (e.g., having children, marriage) and analysed them separately. Only one category was assigned to each life event; in case of doubt, the higher-ranked category was selected (cf. Habermas 2007). A detailed list of all content (sub-)categories emerging in our sample can be found in Table A1 of the appendix.

Different coders rated the content of the tattoo narratives and the Top 7 life events of both tattooed and non-tattooed participants. To establish interrater reliability, coded sets were compared independently by means of Cohen's kappa. Once the coders established substantial independent agreement of Cohen's $\kappa \geq .80$, coders independently coded all remaining tattoo narratives or Top 7 events. Interrater reliability for the tattoo narratives was Cohen's $\kappa = .78$, based on 25 per cent of tattoo narratives. For the Top 7 events of tattoo holders, interrater reliability was Cohen's $\kappa = .85$, and for the Top 7 events of non-tattooed participants Cohen's $\kappa = .83$, based on 20 per cent of Top 7 life events. Once coding was completed, the remaining disagreements were resolved in a discussion with the authors.

Tattoo narratives assigned to the event category of non-specific events (main event category number 16; $n = 70$) were further analysed to capture their main topic. Based

on 25 per cent of the non-specific tattoo narratives ($n = 17$), we deduced the following main topics: (1) Loss of childhood innocence, (2) Relationship with significant others (parents, grandparents, siblings, friends, partner), (3) Relationships with animals/pets, (4) Professional success/achievement, (5) Values/beliefs (pop culture, current values/politics, spirituality), (6) Aesthetics of tattoos and body/covering scars, and (7) Not assignable. The remaining 75 per cent of non-specific tattoos narratives ($n = 53$) were assigned to one of these thematic content categories by the first and second authors in joined conversation. Because assigning the non-specific tattoo narratives to main topic categories was unambiguous, no interrater reliability was calculated.

Normativity of events

Following previous research (Berntsen and Rubin 2004; Habermas 2007), tattoo narratives and Top 7 life events were classified in either normative life events (e.g., social-normative age-graded life events like beginning school or entering college; developmental normative age-graded life events like begin walking, puberty or first love) or idiosyncratic life events (e.g., diseases, divorce, losses, other kinds of events like events during college, major achievements, leisure activities or non-specific non-normative life events) according to their respective content category. Since conducting analyses on the tattoo event or life event level could lead to a fault increase in sample size increasing the likelihood of getting significant results and since events are nested within participants and thus not independent from each other, we calculated an average normativity value for each person concerning the tattoos events as well as an average normativity score concerning the Top 7 events which could range between 0 and 1. Higher values represent a higher number of mentioned normative events per participant.

Stressfulness of life events

Considering the connection of negative life events with tattoos (Höhner *et al.* 2014; Keagy 2015; Maxwell *et al.* 2019), we used the revised Social Readjustment Rating Scale (SRRS-R) by Hobson and colleagues (1998) to assess tattoo events and Top 7 life events regarding their associated stressfulness. The SRRS-R contains 51 life events that are associated with a weighted measure of readjustment. For example, 'death of a spouse/mate' has a weighted score of 87 while the event 'getting married' has a score of 43 indicating that losing a spouse is more stressful and requires more readjustment than getting married. Matching tattoo events and Top 7 life events with the readjustment measure, we computed the total score of the relative level of stress that participants assumingly experienced in the aftermath of reported important stressful events. Only tattoo events and Top 7 life events that could be clearly attributed to one of the 51 SRRS-R items were assigned a stress score (cf. Appendix Table A1) and included in this further analysis. Similarly to normativity scores, we calculated an average readjustment score for each person concerning the tattoos events as well as an average readjustment score concerning the Top 7 events. We did so by forming a mean value of tattoo events or the Top 7 events for each individual.

Motivations for not getting a tattoo

Non-tattooed participants were asked to give reasons for not being tattooed. Since there has been no validated category system in the previous research to categorize the reasons for not getting a tattoo, categories were inductively derived from the open answers of the participants. First, initial preliminary categories based on 25 per cent of provided reasons

were created by the first and second authors and then tested to what extent the provisionally adopted categories were suitable for a clear categorization of all participants' statements. Discrepancies and ambiguities were discussed, leading to a revision of the categories. Ultimately, eight categories for motivations of not getting a tattoo emerged: (1) Permanence of tattoo intimidates, (2) Indecision of getting a tattoo, (3) Aesthetical dislike / no need, (4) Health risks or fear of pain, (5) Fear of social stigma, (6) Faith / religious prohibition, (7) Counter-trend, (8) Other (e.g., too high costs, change of taste). The remaining material was coded by the first and the second authors jointly which is why no interrater reliability was calculated.

Alternative ways of remembering of non-tattooed participants

Besides giving reasons for not being tattooed, the non-tattooed subsample was asked how they remember important life events. Because there has been no categorization of memory objects in previous research on autobiographical reminiscing, categories were again inductively derived from the open answers of the non-tattooed participants. First, the material was examined and initial preliminary categories were created by the first and second authors. In a first analysis, 25 per cent of the material was coded and it was tested to what extent the provisionally adopted categories were suitable for all answers. Discrepancies and ambiguities were discussed, leading to a revision of the categories. Ultimately, nine categories emerged: (1) Photos/Videos, (2) Mental Visual Imagery, (3) Shared reminiscing/Family stories, (4) Diaries/Letters/Documents, (5) Sensual and spatial stimuli such as smells, sounds, music, or places, (6) Bodily reminders such as scars, pain, or implants, (7) Anniversaries / Similar events, (8) Souvenirs, and (9) Other/Nothing. All of the remaining 75 per cent of the participants' answers were then assigned to one of these categories by the first and the second authors in joined conversation. Therefore, no interrater reliability was calculated.

Results

Results of this study will be reported in two main sections according to our two main research questions, which were (1) do tattoos represent autobiographical memories and (2) do important memories of tattooed and non-tattooed individuals differ. The statistical analyses were conducted using R-Studio (version 1.1.456) and IBM SPSS Statistics (version 28). Because the data did not show any outliers, all participants ($N = 346$) were included in the analyses.

Do tattoos represent autobiographical memories?

The first research question includes only tattoo narratives ($n = 333$) in which tattooed participants described the stories behind their tattoos. Tattoo narratives were analysed for content, normativity, age at the time of the event, and stressfulness of the event. Results will be reported in this order.

Content

Content categories of tattoo narratives were compared via frequency analyses. Overall, the vast majority (82.9 per cent) of tattoo narratives related to autobiographical memories, whereas only 17.1 per cent of the narratives concerned the mere body modification, either the event of getting the tattoo or the aesthetics of body and tattoo. [Figure 1](#) shows that tattoos predominantly embody autobiographical events such as family events, losses,

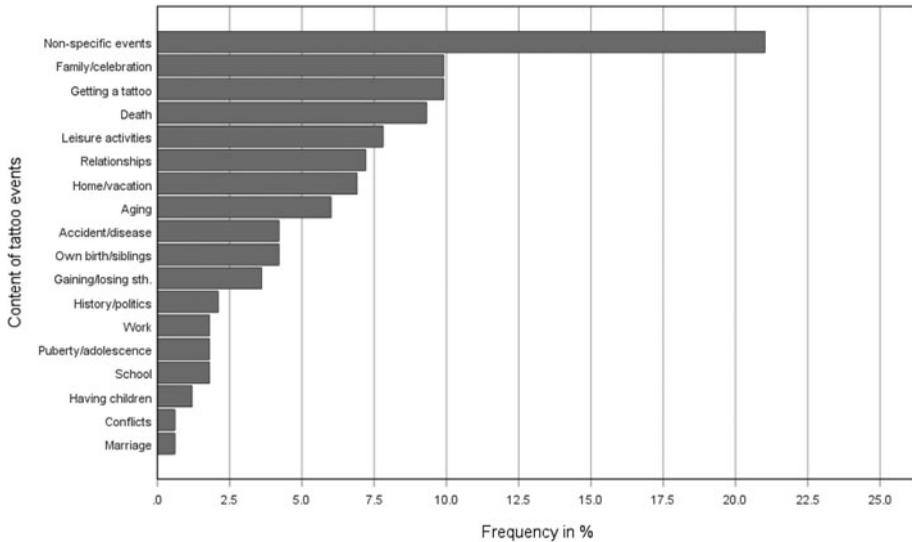


Figure 1. Relative frequency in the percentage of the main content categories of all tattoo events.

leisure activities or events, relationships, personal development and aging, diseases, or work-related events. A detailed list of all content (sub-)categories and corresponding frequencies among the tattoo events can be found in [Table A1](#) of the appendix.

About a fifth of the reported events were non-specific events that did not address actual events but rather whole life periods, abstract themes, people, animals, or attitudes. The additional coding of the main topic of the non-specific events revealed that these tattoo narratives mainly included aesthetics of the body (34.3 per cent), current values (21.4 per cent), spirituality (15.7 per cent), pop culture (8.6 per cent), and broad descriptions of relationships to significant others (8.6 per cent). The topic loss of childhood innocence only appeared rarely (1.4 per cent respectively), and the topic relationship to animals did not occur. About 10.0 per cent of the non-specific events could not be assigned to any main topic of the non-specific events (e.g., lost bet, drunk, wish).

Normativity

Excluding 15 participants reporting only narratives recounting the body modification, the average normativity for the remaining 146 tattooed participants was $M = 0.167$ ($SD = .310$), indicating that life events motivating a tattoo seem to be idiosyncratic rather than normative. Of the 146 participants, 72.6 per cent ($n = 106$) reported only idiosyncratic tattoo events, while 8.9 per cent ($n = 13$) reported only normative events.

In sum, participants' narratives showed that tattoos were most often motivated by autobiographical, mostly idiosyncratic rather than normative life events. Even if the tattoo related to a general topic instead of a specific event, it still reflected aspects of participants' lives such as personal values, beliefs, interests, or important relationships. Only the minority of tattoos appeared to aim for mere body beautification or modification. Therefore, we preliminarily conclude that most tattoos embody autobiographical memories.

Age at the time of tattoo event

Since most tattoo narratives were motivated by autobiographical life events, we consequently investigated the age at which participants got their first tattoo and the time

interval between tattoo and corresponding tattoo event. We limited this analysis to those first tattoos for which the motivating events were listed among the Top 7 events, because participants provided their age at event for these life events only, and to compare age at event across all tattooed participants without overrepresenting those with more than one tattoo. For this purpose, all narratives for first tattoos were jointly analysed by the first and the second authors and compared with the presented Top 7 events. Only tattoo narratives that could unambiguously be assigned to a Top 7 event were included in the analyses. In total, 60 (37.3 per cent) participants reported tattoo events that occurred among their Top 7.

On average, events that motivated first tattoos and were listed among the Top 7 life events took place when participants were $M = 19.27$ years old ($SD = 7.48$, range 0–36 years). Around two and a half years later, when participants were on average $M = 21.78$ years old ($SD = 4.72$, range 16–37 years), these events were perpetuated in the form of tattoos.

Stressfulness

In total, 20 per cent of the tattoo events could be matched with a stressful life event listed by Hobson and colleagues (1998) and hence assigned a measure of readjustment (cf. Appendix Table A1). For 65.2 per cent of participants ($n = 105$), no readjustment score could be calculated and were thus defined as missing, since they were not included in Hobson and colleagues' (1998) list. The remaining 34.8 per cent of participants ($n = 56$) described stressful tattoo events corresponding to Hobson and colleagues' (1998) criteria. The mean stress score across the 56 participants and respective tattoo events was $M = 36.11.7$ ($SD = 20.39$) with a range from 8.67 to 87.00, indicating that life events motivating a tattoo seem to be experienced as little to moderately stressful.

Do important life events of tattooed and non-tattooed individuals differ?

Addressing the second research question involves the Top 7 life events provided by both subsamples. We compared the Top 7 life events of tattooed participants to those of non-tattooed participants regarding content, normativity, age at the time of the event, and stressfulness of the event. Again, results will be reported in this order of mnemonic characteristics. Additionally, we report non-tattooed participants' reasons for being untattooed and their memory objects.

Because non-tattooed participants were significantly older than tattooed participants and because the experience of normative life events depends on age (e.g., graduating from university or having children), the groups were not directly comparable as a whole. We therefore split the sample in different age groups along 5-year intervals. We chose semi-decades to account for greater change and development at younger ages. Accordingly, 14 age groups were formed in our data spanning 15–82 years of age. Only semi-decade age groups that comprised a sufficiently high and comparable number of tattooed and non-tattooed individuals were included in further analyses. Informed by a Pearson's chi-square test ($\chi^2(12, N = 337) = 73.353, p < .001$) comparing the number of tattooed and non-tattooed people in the respective age groups showed that the age group 20–24 years comprised a comparable number of tattooed ($n = 67$) and non-tattooed ($n = 69$) individuals, and likewise all 5-year intervals spanning 30–54 years ($n_{\text{tattoo}} = 37, n_{\text{non-tattoo}} = 33$) which is why these semi-decades were joint into one larger age group. Hence, we compared the Top 7 life events of tattooed and non-tattooed participants in the age group 20–24 years, and the larger age group 30–54 years. All other 5-year intervals did not comprise a comparable number of tattooed and non-tattooed participants and

were hence excluded from this analysis. Age group 20–24 years provided 946 Top 7 life events ($n_{\text{tattoo}} = 469$, $n_{\text{non-tattoo}} = 477$). Age group 30–54 years listed 482 Top 7 life events ($n_{\text{tattoo}} = 257$, $n_{\text{non-tattoo}} = 225$).

Frequency analyses, independent samples *t*-tests, and Pearson's chi-square tests were computed. Significant chi-square tests indicate a dependency of mnemonic characteristics on the subsample. In the case of significant chi-square tests, we conducted the chi-square post-hoc pairwise comparisons using Bonferroni correction (MacDonald and Gardner 2000) and considered the odds ratio and the Φ -coefficient as a measure of effect size (Eid *et al.* 2017). If the expected frequencies were less than five, Fisher's exact tests instead of Pearson's chi-square tests were calculated. In case of significant Fisher's exact tests, we conducted Fisher's post-hoc pairwise comparisons using Bonferroni correction (MacDonald and Gardner 2000).

Content

Looking at the content categories of Top 7 life events for participants between the age of 20 and 24 years in both subsamples, Fisher's exact test revealed a significant relationship between the content of the Top 7 life events and subsample ($p < .001$). Figure 2 displays the relative frequency of the main content categories of Top 7 life events of tattooed and non-tattooed individuals in this age group. The Fisher's post-hoc test showed that the tattooed participants mentioned work-related events significantly more often among their seven most important memories than non-tattooed individuals ($p = .001$), especially settling on a career ($p = .049$). Furthermore, the event of getting the tattoo became very important for some of the tattooed individuals, which is why they listed this event among their Top 7 life events, obviously more often than their non-tattooed fellows ($p = .004$). No other differences in content could be found between the groups. Participants of both subsamples

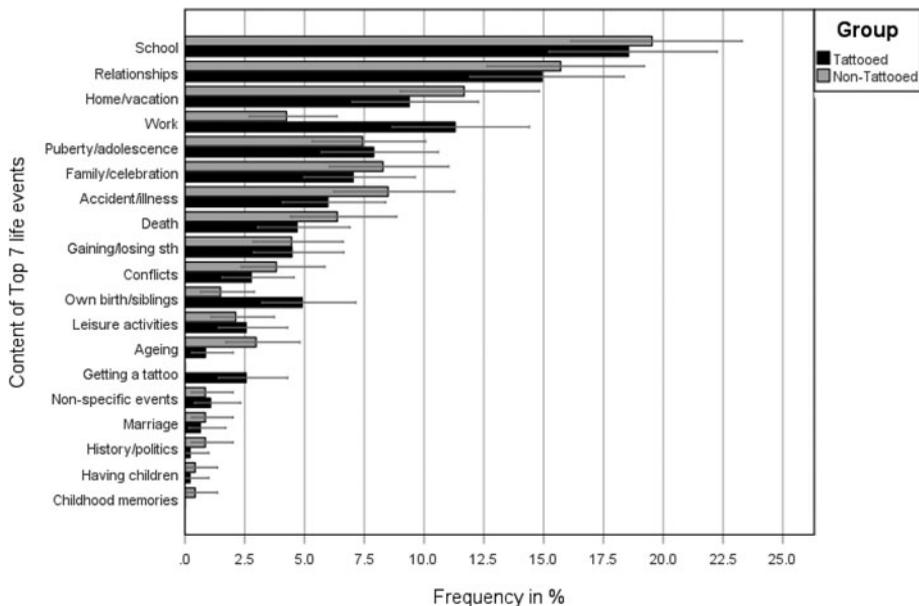


Figure 2. Relative frequency in the percentage of the main content categories of all 946 Top 7 life events of tattooed ($n = 469$) and non-tattooed participants ($n = 477$) aged 20–24 years.

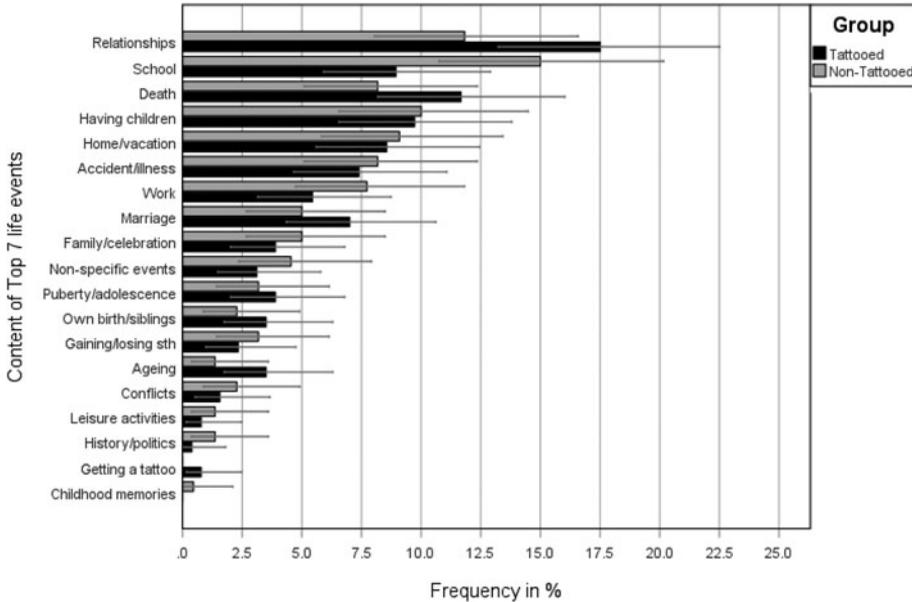


Figure 3. Relative frequency in the percentage of the main content categories of all 482 Top 7 life events of tattooed ($n = 257$) and non-tattooed participants ($n = 225$) aged 30–54 years.

reported school events (tattooed: 18.6 per cent, non-tattooed: 19.5 per cent) as well as relationship events (tattooed: 14.9 per cent, non-tattooed: 15.7 per cent) most often among their Top 7 memories (Figure 2).

Looking at the content categories of Top 7 life events for participants between the age of 30 and 54 years in both subsamples, Fisher's exact test revealed no significant relationship between the content of the Top 7 life events and subsample, $p = .401$. Figure 3 displays the relative frequency of the main content categories of Top 7 life events of tattooed and non-tattooed individuals in this age group. Tattooed participants in this age category reported relationship events (17.5 per cent) and deaths (11.7 per cent) most often among their Top 7 memories. Non-tattooed participants named mostly school (15.0 per cent) and relationship (11.8 per cent) events among their Top 7 life events.

Normativity

Excluding the 12 cases (1.3 per cent) recounting the mere body modification, the average normativity of the age group 20–24 years was $M = .392$ ($SD = .210$) for the 67 tattooed participants and $M = .302$ ($SD = .210$) for the 69 non-tattooed participants. According to an independent t -test, this mean difference between both subsamples was significant, $t(134) = -2.499$, $p = .014$, *Cohen's* $d = .429$. Thus, tattooed participants aged 20–24 years reported more normative Top 7 life events than non-tattooed participants of the same age group.

For participants aged 30–54 years, when excluding the two cases (0.4 per cent) recounting the mere body modification, the average normativity was $M = .413$ ($SD = .253$) for the 37 tattooed participants and $M = .416$ ($SD = .293$) for the 33 non-tattooed participants. According to an independent t -test, both subsamples did not significantly differ in the normativity of Top 7 life events, $t(68) = -.038$, $p = .970$, *Cohen's* $d = -.009$.

Age at the time of the event

Comparing the age at the time of Top 7 events of participants aged 20–24 years between the subsamples by a series of independent samples *t*-tests revealed differences only for non-specific but no other events (Table 1).

Comparing the age at the time of Top 7 events of participants aged 30–54 years between the subsamples revealed differences only for the content category illness/accident (Table 2). Non-tattooed participants seemed to be significantly younger when having experienced an illness or accident. No other significant differences between the subsamples could be found.

Stressfulness of event

Regarding the stressfulness of events, 48.4 per cent ($n = 227$) of Top 7 life events of tattooed and 42.9 per cent ($n = 207$) of Top 7 life events of non-tattooed participants aged 20–24 years could be assigned an associated readjustment score (see Appendix Table A1).

Analysing the data at person level, the mean readjustment score for the age group 20–24 years was $M = 41.48$ ($SD = 11.62$, range 26.00–78.00) for the 67 tattooed participants and $M = 48.95$ ($SD = 13.68$, range 26.00–78.00) for the included 68 non-tattooed participants aged 20–24 years. An independent samples *t*-test revealed a significant difference between the readjustment scores in the tattooed and non-tattooed subsamples, $t(133) = -3.420$, $p < .001$, Cohen's $d = -.589$). Non-tattooed participants aged 20–24 years listed more stressful Top 7 life events in this age group than tattooed participants.

About 58.3 per cent ($n = 151$) and 54.1 per cent ($n = 125$) of Top 7 life events of tattooed and non-tattooed participants aged 30–54 years could be classified as stressful life events and assigned an associated readjustment score (see Appendix Table A1). The mean readjustment score for the included 37 tattooed participants was $M = 50.50$ ($SD = 12.68$, range 27.20–83.00) and for the 32 included non-tattooed participants $M = 48.73$ ($SD = 11.57$, range 28.00–72.25). The independent samples *t*-test revealed no significant difference between the readjustment scores in the tattooed and non-tattooed subsample aged 30–54 years, $t(67) = .600$, $p = .550$, Cohen's $d = .145$.

Altogether, the life events that tattooed and non-tattooed individuals aged 20–24 years considered important were somewhat different in content, normativity, and stressfulness but not in the timing of the event. More specifically, tattooed individuals aged 20–24 years named different and more normative, but slightly less stressful life events among their Top 7 life events compared to non-tattooed individuals of the same age. For tattooed and non-tattooed individuals aged 30–54 years, no differences were found regarding the mnemonic characteristics of life events. Nevertheless, tattooed individuals decided to embody some of these important events in the form of tattoos, while the non-tattooed individuals in these age groups did not do so. It seems as if the choice to perpetuate some important life events in the form of a tattoo is driven by other, probably more personal motivations rather than mnemonic characteristics of important life events.

Alternative ways of remembering

We therefore explored the reasons of why non-tattooed individuals did not (yet) have a tattoo at the time of data collection. The most frequently reported reasons were the aesthetical dislike (34.1 per cent), the intimidating permanence of tattoos (27.4 per cent), but also the still ongoing decision process or the saving of the necessary money (21.8 per cent) that had prevented non-tattooed participants to get a tattoo by the time of our study. Other, less frequently mentioned reasons were health risks or the

Table 1. Mean and standard deviation of age at the time of the event of Top 7 life events compared between tattooed and non-tattooed participants aged 20–24 years

Event category	N_{tattoo}	$N_{\text{non-tattoo}}$	Age at the time of the event				t	df	P	Cohen's d
			Tattooed		Non-tattooed					
			M	SD	M	SD				
Own birth/siblings	23	7	12.78	7.57	12.86	5.34	-.024	28.00	.490	-.010
Having children	1	2	20.00	–	18.50	.71	1.732	1.00	.333	2.121
Childhood memories	0	2	–	–	4.50	.71	–	–	–	–
School	87	92	18.13	4.11	16.32	5.58	2.467	165.36	.015*	.368
Puberty/adolescence	37	35	17.54	2.47	17.26	2.95	.443	70.00	.659	.104
Family/celebration	33	39	16.66	5.18	16.92	3.42	-.247	66.00	.806	-.060
Relationships	70	74	16.09	4.780	16.63	4.66	-.677	139.00	.500	-.114
Marriage	3	4	20.33	1.15	21.00	2.58	-.410	5.00	.699	-.313
Work	53	20	19.43	2.49	19.55	2.23	-.185	69.00	.853	-.049
Ageing	4	14	19.25	2.50	18.29	2.73	.633	16.00	.536	.359
Death	22	30	14.00	5.52	14.93	5.13	-.621	49.00	.537	-.176
Conflicts	13	18	16.00	4.14	16.44	4.25	-.268	26.00	.791	-.878
Home/vacation	44	55	16.15	5.65	15.87	5.71	.237	91.00	.813	.050
Accident/illness	28	40	13.93	5.35	15.82	5.33	-1.418	64.00	.161	-.848
History/politics	1	4	19.00	–	17.25	7.68	.204	3.00	.851	.228
Gaining/losing sth.	21	21	14.50	5.85	15.67	3.94	-.745	33.09	.462	-.235
Leisure activities	12	10	14.92	4.78	12.60	7.68	.866	20.00	.397	.371
Non-specific events	5	4	0.00	.00	19.00	3.37	-11.288	3.00	.001**	-7.98
Getting a tattoo	12	–	19.08	2.54	–	–	–	–	–	–

Notes: * $p < .05$, ** $p < .003$ Bonferroni corrected.

Table 2. Mean and standard deviation of age at the time of the event of Top 7 life events compared between tattooed and non-tattooed participants aged 30–54 years

Event category	N_{tattoo}	$N_{\text{non-tattoo}}$	Age at the time of the event				t	df	p	Cohen's d
			Tattooed		Non-tattooed					
			M	SD	M	SD				
Own birth/siblings	9	5	25.89	8.92	32.90	27.99	-.545	4.457	.612	-.395
Having children	25	22	28.56	7.67	28.10	4.77	.234	43.00	.816	.070
Childhood memories	0	1	–	–	23.00	–	–	–	–	–
School	23	33	22.04	8.71	20.94	10.10	.425	54.00	.672	.116
Puberty/adolescence	10	7	20.40	3.69	18.86	4.71	.759	15.00	.460	.374
Family/celebration	10	11	25.10	11.79	24.10	9.04	.213	18.00	.834	.095
Relationships	45	26	23.51	9.34	25.38	10.79	-.769	69.00	.445	-.189
Marriage	18	11	29.17	6.74	32.27	10.56	-.970	27.00	.340	-.371
Work	14	17	29.46	8.23	30.18	8.95	-.224	28.00	.824	-.083
Ageing	9	3	27.89	10.97	24.33	4.04	.535	10.00	.605	.356
Death	30	18	22.13	9.31	24.00	12.93	-.580	46.00	.565	-.173
Conflicts	4	5	14.75	2.63	13.60	3.21	.576	7.00	.582	.387
Home/vacation	22	20	27.80	5.28	22.90	10.40	1.879	28.18	.071	.594
Accident/illness	19	18	28.05	9.20	17.12	10.95	3.256	34.00	.003**	1.087
History/politics	1	3	27.00	–	34.33	8.33	-.763	2.00	.525	-.881
Gaining/losing sth.	6	7	26.17	5.71	24.14	11.68	.385	11.00	.708	.214
Leisure activities	2	3	40.00	12.73	26.33	9.87	1.373	3.00	.263	1.253
Non-specific events	8	10	28.25	9.11	19.20	10.24	1.535	12.00	.151	.908
Getting a tattoo	2	–	21.00	7.07	–	–	–	–	–	–

Notes: * $p < .05$, ** $p < .003$ Bonferroni corrected.

fear of pain (7.3 per cent), the fear of social stigma (3.9 per cent), the wish to go against the trend of tattooing (1.1 per cent), or religious constraints (0.6 per cent).

Subsequently, we asked non-tattooed participants for their ways to remember important life events. Non-tattooed participants mainly use photos and videos (56.6 per cent) as well as mental visual imagery (20.6 per cent) to remember their important life events. Other, less frequent ways to reminisce were souvenirs (5.7 per cent), conversations with others (5.1 per cent), sensual or spatial stimuli (4.6 per cent), anniversaries or similar or consequential events (2.3 per cent), diaries and letters (1.1 per cent), and bodily reminders such as scars, pain, or implants (0.6 per cent). Only 3.4 per cent of non-tattooed participants indicated to have other or no ways to remember their important memories.

Discussion

Our study explored the potential function of tattoos to embody autobiographical memories. Results showed that around 80 per cent of tattoos related to autobiographical background, thus joining the findings of previous small case studies (e.g., Kosut 2000; Oksanen and Turtiainen 2005; Steadman *et al.* 2019; Velliquette *et al.* 2006). Apparently, tattoos are not only a fashion phenomenon, but also have autobiographical meaning for the tattooed individual. A tattoo represents almost always a narrative of its holder and contains personal meaning (Kosut 2000; Patterson 2018; Wohlrab *et al.* 2007).

Accordingly, we further aimed to understand which events have such significance in a person's life that they get perpetuated in the form of tattoos. Previous research on tattoos and their relationship to life events suggested that both idiosyncratic and normative life events are depicted in tattoos (see Oksanen and Turtiainen 2005; Steadman *et al.* 2019). Approximately more than two-thirds of the life events that motivated a tattoo in our study were idiosyncratic and referred mostly to family events, losses, leisure activities or events, relationships, personal development and aging, diseases, or non-specific events like current values or spirituality (Figure 1). This finding appears to be coherent with motivations for tattoos according to which tattoos serve foremost to mark individuality and to display the self (Höhner *et al.* 2014; Tiggemann and Hopkins 2011). The life events that motivated a tattoo are hence those that distinguish the individual rather than those that identify the person as part of a society or culture.

Tattoos in this study represented autobiographical memories, which individuals considered unique and personally important to their lives and identity. Because a tattoo remains for a lifetime, independent of potential changes in body, skin, attitudes, or relationships, it appears as if these individuals aim to perpetuate the idiosyncratic parts of their life stories in a manner that is inseparable from the self. In this regard, the tattoo can also take on the function of a personal object that helps holding on to personal memories that should not get lost and will keep meaning for a lifetime (Çili 2023; Habermas 2011). Reminding of past experiences and selves, tattoos can thus serve as extensions of the self that converge body and autobiography (Csikszentmihalyi and Rochberg-Halton 1981; Dittmar 1992; Miller 2008, 2010; Van den Hoven *et al.* 2021) just as other material possessions can become a 'personal archive or museum' (Belk 1988, p. 159). In (post)modern age with changing life conditions, unstable values, constant demands of flexibility, and with very few stable cultural norms for guidance (e.g., Giddens 1991), tattoos seem particularly suited to express and stabilize one's identity and may strengthen one's self. Rohr (2019) therefore also interprets tattoos as a form of 'autoinitiation'. By consciously deciding on a motif and its expressiveness, tattoos seem specifically linked to important life events in similar ways as other memory objects and become tools for identity formation (Martin 2018).

However, our findings also demonstrate that tattoos are not only worn to express individuality but to emphasize social connections and togetherness since various relationships with significant others were the most prominent content categories among the tattoo narratives. These social connections may be with family, kin, friends, groups of like style, and political or religious points of view. Thus, even if the appearance of the tattoo is unique and individual, reasons to wear and possess it may also be social. Just like Ahde-Deal (2013) and Habermas (2011) found for jewelry, both personal memories and social connections play important roles in how tattoos become meaningful.

To get a better idea of why some people choose to perpetuate life events in the form of tattoos and others do not, we further explored whether the important life events of tattooed and non-tattooed individuals differ. When comparing the mnemonic characteristics of important life events of young tattoo holders (20–24 years of age) to those of their fellow non-tattoo holders, significant differences in content, normativity, and stressfulness, but not in age at the time of the event emerged. Tattooed individuals aged 20–24 years more often mentioned work-related events, especially settling on a career, than their fellow non-tattooed participants. Additionally, some of the tattooed individuals in this age group named the event of getting a tattoo among their Top 7 life events indicating that the tattoos have obviously taken on an important meaning in the life stories of their holders. However, possible reasons why the story of tattoo acquisition became so meaningful were not investigated in this study and therefore remain the subject of future research.

Although young tattooed individuals named normative events more frequently among their most important life events than non-tattooed individuals, they tended nevertheless to perpetuate mostly non-normative events in their tattoos. This might be because any other person of their culture could have experienced a normative event in a similar way as normative events structure life (Bohn and Habermas 2016; Brown 2016). While normative transitions such as leaving school/starting college or marriage are very important to most people, they do not distinguish them from other people. Indeed, the average normativity of Top 7 events of the tattooed subsamples in both age groups (20–24 years and 30–54 years) was almost three times higher than the mean normativity of their tattoo events. Both age groups seemed to dedicate tattoos to events they perceive as more unique, emphasizing the tattoos' function to express individuality (Höhner *et al.* 2014; Tiggemann and Hopkins 2011). This seems to be especially true for young adults, since no differences in the mnemonic characteristics of the Top 7 life events could be found between tattooed and non-tattooed individuals later in life (30–54 years of age).

The need to express individuality found in the younger age group fits moreover the psychosocial urge of exploring identity which is characteristic for emerging adulthood (Arnett 2007). This phase is considered a particularly critical period for ego identity development as emerging adults are expected to explore and eventually commit to various identity domains such as work, love, religion, morality, and values. Later into young adulthood, individuals are compelled to find a healthy balance between intimacy and egocentricity (Erikson 2017), which could also affect the content of tattoo narratives and the ways in which tattoos become meaningful. Unfortunately, we were not able to compare participants for the age group 25–29 years due to significantly different numbers of tattooed and non-tattooed individuals. However, defining and committing to an autonomous adult identity constitutes a psychosocial crisis that is often accompanied by identity distress (Camia *et al.* 2022; Merrill *et al.* 2016). Hence, memory objects and tattoos could be especially helpful in the phase of emerging and young adulthood to ground identity and provide a sense of continuity and interpersonal relatedness (Habermas 1999; Habermas and Paha 2010). Indeed, it may be the notion of permanence that appeals emerging and young adults to perpetuate life events and hence stabilize identity in the form of

tattoos as our content analysis showed that tattoo events were mostly associated with highly identity-relevant events and relationships (e.g., important family situations or relationship events, losses or diseases, leisure activities, personal development). Whether this attempt at self-definition is successful in the long run remains to be answered by further investigations.

Although research suggests that individuals use tattoos not only to remind themselves of their past, but also to regulate and cope with their emotions (Höhner *et al.* 2014; Keagy 2015; Maxwell *et al.* 2019; Stirn 2003), our results did not confirm that tattooed individuals experience more stressful life paths than non-tattoo holders. In contrast, we observed less stressful Top 7 events in tattooed individuals aged 20–24 years than in the non-tattooed individuals of the same age, and equal stressfulness among the Top 7 events of participants in the older age group (ages 30–54). However, these results should be interpreted with great caution. Although the SRRS-R is a practical and valid tool for measuring levels of readjustment after experiencing stressful events (Arric *et al.* 2011; McGrath and Burkhart 1983; Scully *et al.* 2000), only 20 per cent of our content categories for tattoo events and around 50 per cent of Top 7 life events could be matched with the list provided by Hobson and colleagues (1998). Future studies should consider rather participants' self-ratings of the stressfulness of events to better understand the stressfulness of tattoo vs. non-tattoo events.

Despite the mnemonic differences in important memories of tattooed and non-tattooed individuals aged 20–24 years, it might also be personal preference determining the decision of embodying particular memories in the form of tattoos. Especially with increasing age, mnemonic characteristics of events seem to become less relevant and personal motivations appear to play a bigger role in the question of why certain people get tattoos for an important life event and others do not. Other factors such as personality traits (e.g., extraversion, sensation seeking, need for uniqueness), values, concerns, culture, or other highly individual motivations (e.g. self-expression) need to be considered when investigating the decision for and the importance of a tattoo (Swami 2012; Swami *et al.* 2012; Tate and Shelton 2008; Wohlrab *et al.* 2007). Motivations for which people get tattoos are often multiple and can change over time for the same individual. There is no specific profile of tattooed individuals but a rather wide spectrum of different types (Kluger, 2015). This highlights the heterogeneity of tattooed people and the need for future research on tattoos as an expression of personality and autobiographical memories.

As much as the permanence of tattoos and the associated permanent change of the body are appealing for tattooed individuals, for non-tattooed participants, it is one of the main reasons for not getting or disliking tattoos. Our non-tattooed participants indicated to mainly use photos or non-material ways like visual imagery to remember important life events. The latter is not surprising since mental imagery is considered a crucial component of vivid remembering (Greenberg and Rubin 2003; Huijbers *et al.* 2011; Rasmussen and Berntsen 2014; Rubin *et al.* 2003), and a defining characteristic of episodic memory (Tulving 2002; Wheeler *et al.* 1997). Visual imagery can be used to invoke details about an event and to make memories feel more vivid (Greenberg and Rubin 2003; Robinson 1992; Rubin *et al.* 2003).

However, Habermas (1999) argues that sensually present objects convey a better sense of reality and a higher degree of liveliness than mere thoughts. Especially objects worn on or against the body are potent memory objects due to their sensuality and tactility and carry a great emotional charge (Ash 1996; Habermas 2011; Lupton 1998; Woodward 2007). Similarly, a tattoo might fulfil the need to create a tangible memory that is moreover the most closely connected to the physical personality (Simmel, 2023). Anecdotally, one of our participants confirmed this notion by stating 'I would never forget what

happened, but I want to keep the memory as close as possible'. In this regard, tattoos could be considered the most individualized memory objects because the individuals take an active role in the creation of their tattoos and because tattoos are inalienable and irremovable, cannot be put on or taken off according to the situation or inner state, unlike jewelry or clothes (Habermas 2011; Simmel 2023). Nevertheless, it is highly likely that tattooed individuals use all the same mnemonic aids as non-tattooed participants *in addition* to their tattoos, which we missed to ask for in this study. Future studies should therefore not only consider differences between tattooed and non-tattooed individuals, but also compare life events associated with different or no memory objects between and within tattooed and non-tattooed samples.

In conclusion, tattoos communicated individuals' life stories, confirming previous case studies (e.g., Kosut 2000; Oksanen and Turtiainen 2005; Steadman *et al.* 2019; Velliquette *et al.* 2006). As much as memory objects are part of individuals' reality, tattoos appear to be one of the rare forms to literally embody autobiographical memories. It seems thus worthwhile to consider memory objects and tattoos as valid research tools in research on autobiographical memory.

Data availability statement. To protect confidentiality of participants, none of the narrative material is publicly available and numerical data is available only upon reasonable request

Acknowledgements. We thank Julia Bloß and Elisabeth F. Burkhardt for the help with data collection and narrative coding. We also thank Pius Reuling and Annika Hensel for the help with narrative coding.

The present study was not preregistered in any independent, institutional registry.

Author contributions. CC and SR designed the study and collected the data. KK and CC prepared the data, conducted statistical analyses, and wrote the manuscript, for which SR gave feedback. KK and CC finalized the manuscript.

Funding statement. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interest. Kristina Klug, Christin Camia, and Sonja Rohrmann declare that they have no conflict of interest.

References

- Ahde-Deal P (2013) Women and Jewelry. A Social Approach to Wearing and Possessing Jewelry. [Doctoral Thesis, Aalto University]. Aalto University School of Arts, Design and Architecture.
- Arnett JJ (2007) Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives* 1(2), 68–73. <https://doi.org/10.1111/j.1750-8606.2007.00016.x>
- Arric L, Young K, Harris S and Farrow V (2011) An analysis of stress levels of female graduate students in an online program. *Advancing Women in Leadership* 31, 144–152. <https://doi.org/10.21423/awlj-v31.a70>
- Ash J (1996) Memory and objects. In Kirkham P (ed.), *The Gendered Object*. Manchester: Manchester University Press, 219–224.
- Atkinson M (2003) *Tattooed: The Sociogenesis of a Body Art*. Toronto, Canada: University of Toronto Press. <https://doi.org/10.3138/9781442680364>
- Baumeister RF (1999) The nature and structure of the self: An overview. In Baumeister R (eds), *The Self in Social Psychology*. Philadelphia, PA: Psychology Press, 1–21.
- Baumeister RF (2011) Self and identity: A brief overview of what they are, what they do, and how they work. *Annals of the New York Academy of Sciences* 1234, 48–55. <https://doi.org/10.1111/j.1749-6632.2011.06224.x>
- Belk RW (1988) Possessions and the extended self. *Journal of Consumer Research* 15, 139–168. <https://doi.org/10.1086/209154>
- Berntsen D (2022) *The Reminiscence Bump and Involuntary Autobiographical Memories in Ageing and Dementia* [Keynote Speech]. Autobiographical Memory in Ageing and Dementia 2022, Aarhus University, Denmark. <https://psy.au.dk/en/research/research-centres-and-units/conamore/autobiographical-memory-in-ageing-and-dementia/programme>
- Berntsen D and Rubin DC (2004) Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition* 32, 427–442. <https://doi.org/10.3758/BF03195836>

- Bluck S and Liao HW** (2013) I was therefore I am: Creating self-continuity through remembering our personal past. *The International Journal of Reminiscence and Life Review* 1, 7–12. <http://143.95.253.101/~radfordojs/index.php/IJRLR>
- Bohn A and Berntsen D** (2013) Cultural life scripts and the development of personal memories. In Bauer PJ and Fivush R (eds), *The Wiley Handbook on the Development of Children's Memory*. Hoboken, NJ/Oxford: John Wiley & Sons Lt, 626–644.
- Bohn A and Habermas T** (2016) Living in history and living by the cultural life script: How older Germans date their autobiographical memories. *Memory* 24(4), 482–495. <https://doi.org/10.1080/09658211.2015.1019890>
- Bollas C** (1979) The transformational object. *The International Journal of Psychoanalysis* 60(1), 97–107.
- Brooker D and Duce L** (2000) Wellbeing and activity in dementia: A comparison of group reminiscence therapy, structured goal directed group activity and unstructured time. *Aging & Mental Health* 4, 354–358. <https://doi.org/10.1080/713649967>
- Brown NR** (2016) Transition theory: A minimalist perspective on the organization of autobiographical memory. *Journal of Applied Research in Memory and Cognition* 5(2), 128–134. <https://doi.org/10.1016/j.jarmac.2016.03.005>
- Buse C and Twigg J** (2015) Materialising memories: Exploring the stories of people with dementia through dress. *Ageing and Society* 1, 1–21. <https://doi.org/10.1017/S0144686X15000185>
- Camia C, Motiani S and Waters TE** (2022) On the way to adult identity: An evaluation of identity status and narrative identity models of development. *Journal of Research in Personality* 101, 104304. <https://doi.org/10.1016/j.jrp.2022.104304>
- Çili S** (2023) Personal objects and dress as instruments for anchoring the self, remembering the past, and enhancing well-being. In Slater A, Atkin S and Kealy-Morris E (eds), *Memories of Dress: Recollections of Material Identities*. London: Bloomsbury Publishing, 23–35.
- Cohen GD** (2000) Two intergenerational interventions for Alzheimer's disease patients and families. *American Journal of Alzheimer's Disease* 15, 137–142. <https://doi.org/10.1177/153331750001500304>
- Conway MA, Singer JA and Tagini A** (2004) The self and autobiographical memory: Correspondence and coherence. *Social Cognition* 22(5), 491–529. <http://dx.doi.org/10.1521/soco.22.5.491.50768>
- Crossley N** (2006) *Reflexive Embodiment in Contemporary Society: The Body in Late Modern Society*. Maidenhead, UK; New York: Open University Press.
- Csikszentmihalyi M and Rochberg-Halton E** (1981) *The Meaning of Things: Domestic Symbols and the Self*. Cambridge: Cambridge University Press.
- Dittmar H** (1992) *The Social Psychology of Material Possessions: To Have Is To Be*. New York: St. Martin's Press.
- Eid M, Gollwitzer M and Schmitt M** (2017) *Statistik und Forschungsmethoden: Mit Online-Materialien [Statistics and Research Methods: With Online Material]* (5., korrigierte Auflage). Weinheim: Beltz.
- Epp A and Price L** (2010) The storied life of singularized objects: Forces of agency and network transformation. *Journal of Consumer Research* 36(5), 820–837. <https://doi.org/10.1086/603547>
- Erikson EH** (2017) *Identität und Lebenszyklus: Drei Aufsätze (K. Hügél, Trans.; 28. Auflage) [Identity and Life Cycle: Three Essays. 28th ed.]*, Vol. 16. Berlin: Suhrkamp-Taschenbuch Wissenschaft. Suhrkamp. (Original work published 1959)
- Featherstone M** (1991) The body in consumer culture. In Featherstone M, Hepworth M and Turner B (eds), *The Body: Social Process and Cultural Theory*. London: Sage, 170–196.
- Giddens A** (1991) *Modernity and Self-Identity: Self and Society in the Late Modern Age*. Cambridge, UK: Polity Press. <https://doi.org/10.1016/j.apnr.2004.02.006>.
- Grayson K and Shulman D** (2000) Indexicality and the verification function of irreplaceable possessions: A semiotic analysis. *Journal of Consumer Research* 27, 17–30. <https://doi.org/10.1086/314306>
- Greenberg DL and Rubin DC** (2003) The neuropsychology of autobiographical memory. *Cortex* 39, 687–728. [https://doi.org/10.1016/S0010-9452\(08\)70860-8](https://doi.org/10.1016/S0010-9452(08)70860-8)
- Habermas T** (1999) *Geliebte Objekte: Symbole und Instrumente der Identitätsbildung [Personal Objects: Symbols and Instruments of Identity-formation]*. Frankfurt a.M.: Suhrkamp.
- Habermas T** (2007) How to tell a life: The development of the cultural concept of biography. *Journal of Cognition and Development* 8(1), 1–31. <https://doi.org/10.1080/15248370709336991>
- Habermas T** (2011) Diamonds are a girl's best friend? The psychology of jewellery as beloved objects. In Lindemann W (ed.), *Thinking Jewellery - Towards a Theory of Jewellery*. Stuttgart: Arnoldsche Verlagsanstalt, 95–108.
- Habermas T and Bluck S** (2000) Getting a life: The emergence of the life story in adolescence. *Psychological Bulletin* 126, 748–769. <https://doi.org/10.10371/0033-2909.126.5.748>
- Habermas T and Köber C** (2015) Autobiographical reasoning is constitutive for narrative identity. In McLean KC and Syed M (eds), *The Oxford Handbook of Identity Development*. Oxford, UK: Oxford University Press, 149–165. <https://doi.org/10.1093/oxfordhb/9780199936564.013.010>

- Habermas T and Paha C** (2002) Souvenirs and other personal objects: Reminding of past events and significant others in the transition to university. In Webster JD and Haight BK (eds), *Critical Advances in Reminiscence Work*. New York: Springer, 123–138.
- Habermas T and Paha C** (2010) Souvenirs and other personal objects. Reminding of past events and significant others in the transition to university. In JD Webster and Haight BK (eds), *Critical advances in reminiscence work: From theory to application*. Springer, 123–139.
- Hallam E and Hockey J** (2001) *Death, Memory and Material Culture*, 1st Edn. London: Routledge. <https://doi.org/10.4324/9781003085164>
- Haubl R** (2000) Bedingte Emotionen. Über identitätsstiftende Objekt-Beziehungen. In Hartmann HA and Haubl R (eds), *Von Dingen und Menschen. Funktion und Bedeutung Materieller Kultur [Of Things and People. The Function and Significance of Material Culture]*. Wiesbaden: Westdeutscher Verlag, 13–36.
- Häusle-Paulmichl G** (2018) *Der tätowierte Leib [The Tattooed Body]*. Wiesbaden: Springer Fachmedien.
- Heywood W, Patrick K, Smith AMA, Simpson JM, Pitts MK, Richters J, et al.** (2012) Who gets tattoos? Demographic and behavioral correlates of ever being tattooed in a representative sample of men and women. *Annals of Epidemiology* 22, 51–56. <https://doi.org/10.1016/j.annepidem.2011.10.005>
- Hobson CJ, Kamen J, Szostek J, Nethercut CM, Tiedmann JW and Wojnarowicz S** (1998) Stressful life events: A revision and update of the Social Readjustment Rating Scale. *International Journal of Stress Management* 5(1), 1–23. <https://doi.org/10.1023/A:1022978019315>
- Höhner G, Teismann T and Willutzki U** (2014) Tattoos and piercings: Motive für Körpermodifikationen bei Frauen mit borderline-symptomatik [Tattoos and piercings: Motives for body modifications in women with borderline symptoms]. *Psychotherapie, Psychosomatik, Medizinische Psychologie* 64(2), 63–69. <https://doi.org/10.1055/s0033-1347255>
- Huijbers W, Cyriel MA, Rubin DC and Daselaar SM** (2011) Imagery and retrieval of auditory and visual information: Neural correlates of successful and unsuccessful performance. *Neuropsychologia* 49, 1730–1740. <https://doi.org/10.1016/j.neuropsychologia.2011.02.051>
- Janet P** (1928) *L'Evolution de la mémoire et de la notion du temps [The Evolution of Memory and of the Notion of Time]*. Paris: Cahine.
- Keagy CD** (2015) *Healing Marks: Body Modification in Coping with Trauma, Identity, and its Ramifications for Stigma and Social Capital*. UC San Francisco Electronic Theses and Dissertations. <https://escholarship.org/uc/item/1vc6j77m>
- Kleine S and Baker S** (2004) An integrative review of material possession attachment. *Academy of Marketing Science Review* 1, 1–35.
- Kluger N** (2015) Epidemiology of tattoos in industrialized countries. *Current Problems in Dermatology* 48, 6–20. <https://doi.org/10.1159/000369175>
- Kosut M** (2000) Tattoo narratives: The intersection of the body, self-identity and society. *Visual Sociology* 15(1), 79–100. <https://doi.org/10.1080/14725860008583817>
- Lemma A** (2010) *Under the Skin: A Psychoanalytic Study of Body Modification*. London; New York: Routledge/Taylor & Francis Group.
- Love LL and Sheldon PS** (1998) Souvenirs: Messengers of meaning. *Advances in Consumer Research* 25, 170–175.
- Lupton D** (1998) *The Emotional Self. A Sociocultural Exploration*. London: Sage.
- MacDonald PL and Gardner RC** (2000) Type I error rate comparisons of post hoc procedures for I x J chi-square tables. *Educational and Psychological Measurement* 60(5), 735–754. <https://doi.org/10.1177/00131640021970871>
- Martin CW** (2018) *The Social Semiotics of Tattoos: Skin and Self*. London: Bloomsbury Publishing.
- Maxwell D, Thomas J and Thomas S** (2019) Cathartic ink: A qualitative examination of tattoo motivations for survivors of sexual trauma. *Deviant Behavior* 41, 1–18. <https://doi.org/10.1080/01639625.2019.1565524>
- McGrath R and Burkhart B** (1983) Measuring life stress: A comparison of the predictive validity of different scoring systems for the social readjustment rating scale. *Journal of Clinical Psychology* 39(4), 573–581. [https://doi.org/10.1002/1097-4679\(198307\)39:4<573::aid-jclp2270390419>3.0.co;2-1](https://doi.org/10.1002/1097-4679(198307)39:4<573::aid-jclp2270390419>3.0.co;2-1)
- Mehta R and Belk RW** (1991) Artifacts, identity, and transition: Favorite possessions of Indians and Indian immigrants to the United States. *Journal of Consumer Research* 17, 398–411. <https://doi.org/10.1086/208566>
- Merrill N, Waters TE and Fivush R** (2016) Connecting the self to traumatic and positive events: Links to identity and well-being. *Memory* 24(10), 1321–1328. <https://doi.org/10.1080/09658211.2015.1104358>
- Mifflin M** (1997) *Bodies of Subversion: A Secret History of Women and Tattoo*. Sheffield, UK: Juno Books.
- Miller D** (2008) *The Comfort of Things*. Cambridge, UK: Polity Press.
- Miller D** (2010) *Stuff*. Cambridge, UK: Polity Press.
- Morgan N and Pritchard A** (2005) On souvenirs and metonymy: Narratives of memory, metaphor and materiality. *Tourist Studies* 5(1), 29–53. <https://doi.org/10.1177/1468797605062714>

- Mun JM, Janigo KA and Johnson KKP (2012) Tattoo and the self. *Clothing and Textiles Research Journal* 30(2), 134–148. <https://doi.org/10.1177/0887302X12449200>
- Oksanen A and Turtiainen J (2005) A life told in ink: Tattoo narratives and the problem of the self in late modern society. *Auto/Biography* 13(2), 111–130. <https://doi.org/10.1191/0967550705ab021oa>
- Patterson M (2018) Tattoo: Marketplace icon. *Consumption Markets & Culture* 21(6), 582–589. <https://doi.org/10.1080/10253866.2017.1334280>
- Phillips BJ (2016) The scrapbook as an autobiographical memory tool. *Marketing Theory* 16(3), 325–346. <https://doi.org/10.1177/1470593116635878>
- Pitts V (2003) *In the Flesh: The Cultural Politics of Body Modification*. New York: Palgrave Macmillan.
- Prebble SC, Addis DR and Tippett LJ (2013) Autobiographical memory and sense of self. *Psychological Bulletin* 139, 815–840. <https://doi.org/10.1037/a0030146>
- Price LL, Arnould EJ and Curasi CF (2000) Older consumers' disposition of special possessions. *Journal of Consumer Research* 27(2), 179–201. <https://doi.org/10.1086/314319>
- Rasmussen KW and Berntsen D (2014) "I can see clearly now": The effect of cue imageability on mental time travel. *Memory & Cognition* 42, 1063–1075. <https://doi.org/10.3758/s13421-014-0414-1>
- Robinson JA (1992) First experience memories: Contexts and functions in personal histories. In Conway MA, Rubin DC, Spinnler H and Wagenaar WA (eds), *Theoretical Perspectives on Autobiographical Memory*. London: Kluwer Academic Publishers, 223–239.
- Rohr E (2019) Piercings und Tattoos – Ritualisierte Erinnerungsspuren auf der Haut? Zur Sozialpsychologie eines Phänomens [Piercings and tattoos – ritualised traces of memory on the skin? On the social psychology of a phenomenon]. In Decker O and Türcke C (eds), *Ritual*. Gießen: Psychosozial-Verlag, 77–92. <https://doi.org/10.30820/9783837974362-77>
- Rubin DC (1986) *Autobiographical Memory*. Cambridge: Cambridge University Press.
- Rubin DC, Schrauf RW and Greenberg DL (2003) Belief and recollection of autobiographical memories. *Memory & Cognition* 31, 887–901. <https://doi.org/10.3758/BF03196443>
- Sanders CR and Vail DA (2008) *Customizing the Body: The Art and Culture of Tattooing*. Philadelphia: Temple University Press.
- Schouten JW (1991) Selves in transition: Symbolic consumption in personal rites of passage and identity reconstruction. *Journal of Consumer Research* 17, 412–425. <https://doi.org/10.1086/208567>
- Scully JA, Tosi H and Banning K (2000) Life event checklists: Revisiting the social readjustment rating scale after 30 years. *Educational and Psychological Measurement* 60, 864. <https://doi.org/10.1177/00121640021970952>
- Shelton J and Peters C (2006) Actions speak as loud as products: Disposition as a self-perceptive method of identity incorporation. *Consumption Markets & Culture* 9(3), 207–233. <https://doi.org/10.1080/10253860600772248>
- Shilling C (1993) *The Body and Social Theory*. London: Sage. <https://doi.org/10.4135/9781473914810>
- Simmel G (2023) Psychologie des Schmuckes [Psychology of jewellery]. In Lichtblau K (ed.), *Soziologische Ästhetik. Klassiker der Sozialwissenschaften [Sociological Aesthetics. Classics of the Social Sciences]*. Wiesbaden: Springer, 113–119. https://doi.org/10.1007/978-3-658-40939-5_13
- Steadman C, Banister E and Medway D (2019) Ma(r)king memories: Exploring embodied processes of remembering and forgetting temporal experiences. *Consumption Markets & Culture* 22(3), 209–225. <https://doi.org/10.1080/10253866.2018.1474107>
- Stirn A (2003) Kunstvolles tätowieren und piercing als selbstfürsorgliche handlung [Ornate tattooing and piercing as an act of self-care]. *Psychoanalyse, Texte zur Sozialforschung* 7, 133–143.
- Stirn A (2007) "My body belongs to me" – cultural history and psychology of piercings and tattoos. *Revue Therapeutique* 64(2), 115–119. <https://doi.org/10.1024/0040-5930.64.2.115>
- Sundberg K and Kjellman U (2017) The tattoo as a document. *Journal of Documentation* 74, 18–35. <https://doi.org/10.1108/JD-03-2017-0043>
- Swami V (2012) Written on the body? Individual differences between British adults who do and do not obtain a first tattoo. *Scandinavian Journal of Psychology* 53, 407–412. <https://doi.org/10.1111/j.1467-9450.2012.00960.x>
- Swami V, Pietschnig J, Bertl B, Nader IW, Stieger S and Voracek M (2012) Personality differences between tattooed and non-tattooed individuals. *Psychological Reports* 111, 97–106. <https://doi.org/10.2466/09.07.21.PR0.111.4.97-106>
- Sweetman P (1999) Anchoring the (postmodern) self? Body modification, fashion and identity. *Body & Society* 5(2–3), 51–76. <https://doi.org/10.1177/1357034X99005002004>
- Tate JC and Shelton BL (2008) Personality correlates of tattooing and body piercing in a college sample: The kids are alright. *Personality and Individual Differences* 45, 281–285. <https://doi.org/10.1016/j.paid.2008.04.011>
- Tiggemann M and Hopkins LA (2011) Tattoos and piercings: Bodily expressions of uniqueness? *Body Image* 8(3), 245–250. <https://doi.org/10.1016/j.bodyim.2011.03.007>

- Tulving E** (2002) Episodic memory: From mind to brain. *Annual Review of Psychology* **53**, 1–25. <https://doi.org/10.1146/annurev.psych.53.100901.135114>
- Turley D and O'Donohoe S** (2012) The sadness of lives and the comfort of things: Goods as evocative objects in bereavement. *Journal of Marketing Management* **28**(11–12), 1331–1353. <https://doi.org/10.1080/0267257X.2012.691528>
- Van den Hoven E, Orth D and Zijlema A** (2021) Possessions and memories. *Current Opinion in Psychology* **39**, 94–99. <https://doi.org/10.1016/j.copsyc.2020.08.014>
- Velliquette A, Murray J and Evers D** (2006) Inscribing the personal myth: The role of tattoos in identification. *Research in Consumer Behaviour* **10**, 35–70. [https://doi.org/10.1016/S0885-2111\(06\)10003-4](https://doi.org/10.1016/S0885-2111(06)10003-4)
- Wheeler MA, Stuss DT and Tulving E** (1997) Toward a theory of episodic memory: The frontal lobes and autonoetic consciousness. *Psychological Bulletin* **121**, 331–354. <https://doi.org/10.1037/0033-2909.121.3.331>
- Wohlrab S, Stahl J and Kappeler PM** (2007) Modifying the body: Motivations for getting tattooed and pierced. *Body Image* **4**(1), 87–95. <https://doi.org/10.1016/j.bodyim.2006.12.001>
- Woodward S** (2007) *Why Women Wear What They Wear*. Oxford: Berg. <https://doi.org/10.2752/9781847883483>

Open practices statement. To protect the confidentiality of participants, none of the narrative material is publicly available and numerical data is available only upon reasonable request. The study was not preregistered.

Kristina Klug (Goethe University Frankfurt) has been working as a research assistant and PhD student in the Department of Differential Psychology and Psychological Diagnostics at the Goethe University Frankfurt since August 2019. In her research, she focuses mainly on autobiographical memory, life stories as well as body modifications (specifically on tattoos as a form of embodied AM).

Christin Camia (Zayed University Abu Dhabi), *PhD*, has been appointed Assistant Professor of Psychology in the College of Natural and Health Sciences in Zayed University in 2019. Her areas of competence are developmental, social and cognitive psychology as well as personality and identity theory. In her research, she mainly focuses on the role of autobiographical memory and life story for people's identity development.

Sonja Rohrmann (Goethe University Frankfurt), *PhD*, is head of the Department of Personality Psychology and Psychological Diagnostics at the Goethe University Frankfurt. In her research she mainly focuses on personality, stress, and emotions.

Appendix

Cite this article: Klug K, Camia C and Rohrmann S (2024). Tattoos embody autobiographical memories. *Memory, Mind & Media* **3**, e9, 1–27. <https://doi.org/10.1017/mem.2024.6>

Table A1. Absolute *N* (and relative frequency) of all event categories of tattoo events and Top 7 life events of tattooed and non-tattooed participants

Main category 1	Event category 2	Tattoo events (<i>N</i> = 333)	Top 7 age group 20–24 years		Top 7 age group 30–54 years		Readjustment score
			Tattoo (<i>n</i> = 469)	Non-tattoo (<i>n</i> = 477)	Tattoo (<i>n</i> = 257)	Non-tattoo (<i>n</i> = 225)	
Birth/children/siblings	Own birth	1 (0.3%)	2 (0.4%)	–	–	–	
	Birth of relative	–	19 (4.1%)	7 (1.4%)	8 (3.1%)	4 (1.7%)	33
	Siblings	13 (3.9%)	2 (0.4%)	–	1 (0.4%)	–	
	Having children	4 (1.2%)	1 (0.2%)	2 (0.4%)	25 (9.7%)	22 (9.5%)	41
	Grandchildren	–	–	–	–	1 (0.4%)	33
Childhood memories	Learn to swim/ride bike	–	–	2 (0.4%)	–	1 (0.4%)	
School	Begin daycare	–	–	–	–	2 (0.9%)	
	Begin school	–	5 (1.1%)	5 (1.0%)	2 (0.8%)	3 (1.3%)	26
	Go to school	–	5 (1.1%)	12 (2.5%)	1 (0.4%)	1 (0.4%)	
	End of grade school	–	2 (0.4%)	3 (0.6%)	1 (0.4%)	2 (0.9%)	
	Leave school. start college	2 (0.6%)	57 (12.2%)	56 (11.6%)	12 (4.6%)	15 (6.5%)	26
	College	3 (0.9%)	10 (2.1%)	11 (2.3%)	1 (0.4%)	3 (1.3%)	43/26 ^c
	Academic degree	1 (0.3%)	8 (1.7%)	1 (0.2%)	6 (2.3%)	7 (3.0%)	26
Puberty/adolescence	Puberty	–	1 (0.2%)	–	–	–	
	First kiss	–	2 (0.4%)	1 (0.2%)	–	1 (0.4%)	
	First rejection	2 (0.6%)	2 (0.4%)	11 (2.3%)	–	1 (0.4%)	
	First sex	–	–	1 (0.2%)	–	–	

(Continued)

Table A1. (Continued.)

Main category1	Event category2	Tattoo events (N = 333)	Top 7 age group 20–24 years		Top 7 age group 30–54 years		Readjustment score
			Tattoo (n = 469)	Non-tattoo (n = 477)	Tattoo (n = 257)	Non-tattoo (n = 225)	
	Decide about own appearance	1 (0.3%)	2 (0.4%)	1 (0.2%)	–	–	
	Able xto cook for oneself	–	–	1 (0.2%)	–	–	
	Go dancing	–	4 (0.9%)	3 (0.6%)	1 (0.4%)	–	
	First vacation without parents	1 (0.3%)	5 (1.1%)	4 (0.8%)	–	2 (0.9%)	
	Driver's licence	–	7 (1.5%)	4 (0.8%)	3 (1.2%)	3 (1.3%)	
	Leave home	2 (0.6%)	14 (3.0%)	8 (1.7%)	6 (2.3%)	–	40
Family/ celebration	Baptism	–	–	–	1 (0.4%)	–	
	Confirmation	–	1 (0.2%)	1 (0.2%)	–	–	
	Birthday	–	–	3 (0.6%)	–	2 (0.9%)	
	Enter adulthood	2 (0.6%)	3 (0.6%)	1 (0.2%)	1 (0.4%)	–	
	Activities with family member	6 (1.8%)	5 (1.1%)	5 (1.0%)	2 (0.8%)	1 (0.4%)	
	Family situation	22 (6.6%)	3 (0.6%)	10 (2.1%)	2 (0.8%)	1 (0.4%)	
	Major achievement	3 (0.9%)	16 (3.4%)	12 (2.5%)	4 (1.5%)	7 (3.0%)	
	Celebration	–	5 (1.1%)	7 (1.4%)	–	–	
Relationships	Having peers	10 (3.0%)	6 (1.3%)	12 (2.5%)	2 (0.8%)	1 (0.4%)	
	First contact	–	10 (2.1%)	6 (1.2%)	7 (2.7%)	2 (0.9%)	
	First friend	–	–	1 (0.2%)	–	–	
	Fall in love/first partner	–	3 (0.6%)	6 (1.2%)	1 (0.4%)	2 (0.9%)	

	Serious relationship	8 (2.4%)	20 (4.3%)	23 (4.8%)	12 (4.6%)	7 (3.0%)		
	Marriage	2 (0.6%)	3 (0.6%)	4 (0.8%)	18 (6.9%)	11 (4.8%)	43	
	Separation	4 (1.2%)	10 (2.1%)	13 (2.7%)	8 (3.9%)	12 (5.2%)	66	
	Divorce	–	1 (0.2%)	–	5 (1.9%)	–	71	
	Separation of parents	2 (0.3%)	20 (4.3%)	12 (2.5%)	10 (3.9%)	2 (0.9%)		
Work	First job	–	1 (0.2%)	1 (0.2%)	1 (0.4%)	4 (1.7%)	32	
	Settle on career	6 (1.8%)	18 (3.8%) ⁴	3 (0.6%) ⁴	5 (1.9%)	3 (1.3%)	43	
	Earn first money	–	1 (0.2%)	1 (0.2%)	–	–	32	
	Internship	–	22 (4.7%)	8 (1.7%)	1 (0.4%)	–		
	Summer job	–	–	–	–	–		
	Work events	–	10 (2.1%)	7 (1.4%)	7 (2.7%)	8 (3.5%)	64/48/37/33/32 ^c	
	First time jobless	–	–	–	–	1 (0.4%)	64	
	Career failure	–	–	–	–	1 (0.4%)	64	
	Parent loses job	–	1 (0.2%)	–	–	–		
	Ageing	Personal development	20 (6.0%)	4 (0.9%)	14 (2.9%)	9 (3.5%)	3 (1.3%)	
	Death	Own death	3 (0.9%)	–	–	–	–	
Suicide-attempt		2 (0.6%)	–	–	2 (0.8%)	–	78	
Parents' death		4 (1.2%)	3 (0.6%)	2 (0.4%)	5 (1.9%)	3 (1.3%)	79	
Partner's death		2 (0.6%)	–	–	1 (0.4%)	–	87	
Others' death		19 (5.7%)	19 (4.1%)	28 (5.8%)	21 (8.1%)	14 (6.1%)	79/61 ^c	
Abortion		1 (0.3%)	–	–	1 (0.4%)	1 (0.4%)	51	
Conflicts	Quarrel	2 (0.6%)	8 (1.7%)	8 (1.7%)	2 (0.4%)	4 (1.7%)	69/37 ^c	
	First time soft drugs	–	2 (0.4%)	3 (0.6%)	1 (0.4%)	–		

(Continued)

Table A1. (Continued.)

Main category1	Event category2	Tattoo events (N = 333)	Top 7 age group 20–24 years		Top 7 age group 30–54 years		Readjustment score
			Tattoo (n = 469)	Non-tattoo (n = 477)	Tattoo (n = 257)	Non-tattoo (n = 225)	
	Conflict with law	–	1 (0.2%)	1 (0.2%)	–	–	76/22 ^c
	Sexual assault	–	2 (0.4%)	6 (1.2%)	1 (0.4%)	1 (0.4%)	69
Home/vacation	Accommodation	–	–	–	2 (0.8%)	–	35
	Buy apartment/house	–	1 (0.2%)	–	–	–	35
	Relocation	1 (0.3%)	12 (2.6%)	10 (2.1%)	3 (1.2%)	4 (1.7%)	35
	Migration	7 (2.1%)	2 (0.4%)	1 (0.2%)	5 (1.9%)	6 (2.6%)	
	Vacation/trip	15 (4.5%)	29 (6.2%)	44 (9.1%)	12 (4.6%)	10 (4.3%)	
Accident/illness	Serious disease	3 (0.9%)	12 (2.6%)	9 (1.9%)	11 (4.2%)	8 (3.5%)	78
	Serious psych. Disease	10 (3.0%)	6 (1.3%)	4 (0.8%)	1 (0.4%)	1 (0.4%)	78
	Not severe illness or accident	–	2 (0.4%)	3 (0.6%)	–	3 (1.3%)	
	Illness/accident of significant others	1 (0.3%)	8 (1.7%)	24 (5.0%)	7 (2.7%)	6 (2.6%)	72
History/politics	Historical event	–	–	3 (0.6%)	–	2 (0.9%)	
	War memories	2 (0.6%)	–	–	1 (0.4%)	–	59
	Political discussions	5 (1.5%)	1 (0.2%)	1 (0.2%)	–	1 (0.4%)	
Gaining/losing sth.	Acquiring or losing object	–	6 (1.3%)	5 (1.0%)	–	1 (0.4%)	
	Animals	12 (3.6%)	15 (3.2%)	16 (3.3%)	6 (2.3%)	6 (2.6%)	
Leisure activities	Leisure activity	21 (6.3%)	5 (1.1%)	5 (1.0%)	1 (0.4%)	2 (0.9%)	
	Sports	3 (0.9%)	5 (1.1%)	4 (0.8%)	1 (0.4%)	1 (0.4%)	

Learn to play an instrument	2 (0.6%)	2 (0.4%)	1 (0.2%)	–	–
Other	–	–	3 (0.6%)	–	2 (0.9%)
No specific event	70 (21.0%)	5 (1.1%)	4 (0.8%)	9 (3.5%)	10 (4.3%)
Getting a tattoo	33 (9.9%)	12 (2.6%) ⁴	– ⁴	2 (0.8%)	–

¹Only content categories that were mentioned by the sample are listed here.

²Normative events in bold.

³Stress score according to Hobson *et al.* (1998) depending on individual narrative.

⁴ $p < .05$.