

## **Autobiographical memory in transsexual individuals who have undergone gender-affirming surgery: Vivid, self-focused, but not so happy childhood memories**

Veronika V. Nourkova\*, Anna A. Ivanova

*Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia*

\*Corresponding author. E-mail: Nourkova@mail.ru

**Background.** Whereas reciprocal relationships between autobiographical memory and self are broadly emphasized, there is no empirical research that examines how major life changing transitions affect the graphically expressed life story.

**Objective.** The paper focuses on the novel topic of autobiographical memory in transsexual individuals.

**Design.** Twenty-eight volunteers who had undergone gender-affirming surgery and 28 non-transgender participants were asked to produce a Life Line which required them to identify the most memorable events in their lives. The level of acquisition of affirmed gender-typed traits was measured by the Bem Sex-Role Inventory (BSRI).

**Results.** Compared to cisgender individuals, transsexual participants have self-focused Life Lines with a high proportion of vivid flashbulb-like memories and unhappy recollections of childhood. The emotional profile of autobiographical memory addressing childhood was more negative in transsexual participants who deviate from BSRI norms reflecting derogation of past gender category in favour of affirmed gender identity. Those with high acquisition of affirming gender-typed traits assigned more space on the timeline for childhood, revealing the process of self-continuity restoration that leads to an increase in the proportion of positive memories. Accordingly, transsexuals recollected fewer events relevant to their gender identity performing a psychological defence toward the topic of gender.

**Conclusion.** We interpreted the results by focusing on the utility of autobiographical memories as a cognitive resource for filling the gap between past and current selves and maintaining self-continuity across the lifespan.

**Keywords:** autobiographical memory, transsexualism, gender identity, self-continuity, Life Line, life story

## **Introduction**

One of the main rationales behind possessing autobiographical memory is to keep a sense of personal consistency over time throughout ongoing life changes and personal transformations. One commonly cited model of autobiographical memory is the self-memory system (SMS) model, which emphasises a reciprocal relationship between autobiographical memory and the self that supports self-coherence (Conway, Singer, Tagnini, 2004; Conway, 2005). Self-continuity is considered to be one of the three fundamental functions of autobiographical memory in conjunction with social bonding and directing behaviour (Bluck, Alea, Habermas, & Rubin, 2005; Bluck & Alea, 2008). It is equally important that autobiographical memory provides a database for self-concept and self-esteem; hence, it is worth note that we are what we remember about ourselves. In other words, people rely on their memories to understand who they are and formulate where they are going (Bluck, Alea, Habermas, Rubin, 2005).

The most popular life metaphor is a journey (Kövecses, 2005). Following this metaphor, we can say that in a journey of human life, a straight road one day might make a sharp turn. There appear to be life experiences that evoke character transformation in a way that one may feel “I am not who I was before”. This kind of event is termed “transitional”, that is, a type of event that “changes everything” (Brown, 2016). Coping with a transitional event, a person may change previously stable personality characteristics so that “old” autobiographical memories become unsuitable as an appropriate database for the “new” self. As a result, persons may become alienated from their past or alternatively may enhance their cognitive efforts in combining past and present to restore consistency. For the latter it is necessary to transform one’s life story in accordance with the consequences of transition. Quite similar, a study by Beike and Landoll (2000) proposed three types of mnemonic reaction to inconsistency between past and current selves: providing justifications for the inconsistency, recruiting additional specific events that oppose those recalled, and putting the event behind oneself. It seems that all the mechanisms mentioned above impact autobiographical memory after the transitional event. However, to our knowledge, there is no research on whether the same mechanisms are employed in cases of successful adaptation or maladaptation to a new situation.

The first possible reaction to transition consisting of estrangement or even derogation of a life period prior to transition is conceptualised in the theory of temporal self-appraisal (Ross & Wilson, 2000). According to this theory, by disparaging the past, people are able to enhance their current self-view, perceiving themselves as improving over time. The authors have demonstrated that the lower the subjective relevance of the past self is to the current self, the higher is the tendency to retrieve negative memories about the past self (Ross & Wilson, 2003).

An opposite prediction follows from the transition theory developed by Brown (2016). It contends that autobiographical memory is structured by significant life transitions. The examination of the temporal distribution of both word-cued autobiographical memories and memories put on a timeline revealed that they tend to “pile up” around transitions (Nourkova, Mitina, Yanchenko, 2005; Shi & Brown, 2016). Hence, transitions make temporally and thematically relevant memories

more accessible. This strategy seems helpful for coming to terms with the challenge of changes by autobiographical reasoning, that is, an attempt to make meaningful connections between the past self and the current self (McLean & Fournier, 2008).

As far as awareness of transition follows the transitional event, the modulation of autobiographical memories preceding the transition should be addressed for retrieval but not encoding. Memory researchers suggest that autobiographical memory is an extremely flexible, constructive process rather than a videotape-like chronicle of the past (Nourkova, Bernstein, Loftus, 2004; Loftus, 2005). It is widely accepted that autobiographical memory inaccuracy is not chaotic. On the contrary, it generally mirrors the current self's needs, attitudes, and construals (Ross & Wilson, 2003). Moreover, memory's malleability is positively biased toward self-consistent memories for achieving a gradual self-enhancement and, hence, increases psychological well-being. In this sense, this positive construction bias has an adaptive nature (Howe, 2011).

We can illustrate such proneness of autobiographical memory to retrospective transformation following a transitional event by a reference to moving one's residence from a rural place to a big city. Previous research was driven by the following concern: will someone who was born in a village and moved to a city recollect one's "country" past in the way one experienced it or through the lens of the current "urban" self? This issue was further examined through a series of interviews with 20 older adult females who were raised in a rural collectivistic culture but spent most of their adult lives in an individualistic urban one. It was found that they recalled their childhood and youth in a way that reflected their current individualistic orientation instead of their past collectivistic orientation (Nourkova, Dnestrovskaya, 2013).

In this paper, we focus on what happens to autobiographical memory if persons experiences a crucial challenge to their self-coherence due to "migration" not from one place to another, but from one body to another. For the first time, we examine the autobiographical memory of people who passed through the transformation of a basic human characteristic, the gender. We propose that it might dramatically affect their memory.

However, we need to make a distinction between the terms "transgender" and "transsexual" due to a wide range of definitions in the LGBTQ community, both in the scientific literature and mass media. Transgender is a complex term that refers to any individual whose gender does not fit into the binary of male and female genders — a powerful framework that structures social roles, behaviours, and expectations (Denny, Green, & Cole, 2007). Transsexuals are people who have gone through medical transition to better align their bodies with a gender other than the one they were assigned at birth, such as using hormone replacement therapy (HRT) or undergoing sex reassignment surgery (Crooks & Baur, 2011).

To develop an empirical hypothesis on how the self-memory system (also known as the autobiographical memory) may reflect the transsexual experience, we first have to take a closer look at the modern conceptualisation of the associations between gender and self.

Tobin et al. (2010) proposed a model of gender self-socialisation incorporating 3 highly interdependent components: gender identity, gender stereotypes,

and self-perception of gender-typed attributes. By gender identity the authors mean the quality and strength of the affectively tagged cognitive connections that a person makes between the self and gender. Tobin's multidimensional perspective on gender identity consists of the knowledge of membership in a gender category; satisfaction with one's gender; the centrality of gender to one's own self; the importance of being similar to same-gender others; and the subjective gender typically referring to a summary judgment about gender. Gender stereotypes are defined as descriptive and prescriptive socially shared beliefs about how the genders differ. The male-typed and female-typed prescriptions might each address various aspects of lives: occupations (such as, science is for males, nursing is for females), preferences (that is, females prefer soap operas, males prefer crime thrillers), activities (such as, fishing is for males, cooking is for females), and personal traits (such as stereotypical female traits include nurturance, emotionality, and relational orientation, etc., while stereotypically male traits include independence, strength, and self-confidence, etc.). Quite paradoxically, in contrast to the expanding increase of gender equality and women's empowerment in modern societies, gender stereotypes appear to be surprisingly robust (Löckenhoff et al., 2014). The third component of the model, self-perception of gender-typed attributes, that is, the impact of referencing to gender stereotypes to global self, according to Tobin et al., is determined by the emulation principle. This principle specifies that the more personally important gender identity is, the more likely that gender-typed information will be viewed as a valuable part of self-perception.

Because there are many studies devoted to cisgender gender identity, we wanted to focus our research on people who had changed their gender assigned at birth to affirm their gender identity. As was found in interview-based studies, transsexual individuals face numerous obstacles and struggles across different social contexts in coping with substantial and systemic minority stressors but nevertheless are persistent in bringing their physical bodies in alignment with their internal sense of gender (Mason-Schrock, 1996; Levitt & Ippolito, 2014). Hence, we speculate that in these people, all 3 dimensions of gender identity mentioned above might be expressed more than in cisgenders. Accordingly, gender stereotypes in these people might be more elaborate and explicit. The emulation principle predicts that high personal importance of identity and stereotypes of affirmed gender taken together would establish a specific sensitivity to the presence of affirmed gender-typed traits in individuals. It was demonstrated in a general population that a high level of subjective gender typicality is associated with psychological well-being, presumably due to in-group favouritism mechanisms (DiDonato & Berenbaum, 2013). We expect that psychological well-being in transsexual individuals would require an adoption of gender-typed traits attributed to affirmed gender, even to the higher extent.

Previous research found significant differences between transgender and cisgender people in psychological variables such as anxiety, the level of depression, suicidal thoughts, and self-harm behaviour, which refers to emotional functioning (Reisner, 2015). According to Reisner, transgender participants (106 FtM, 94 MtF) had higher scores than cisgender individuals on those measures. In our opinion,

these results may be criticised for not taking into account how successful the affirmation of one's gender identity was. We consider the level of conformity to gender stereotypes to be a possible candidate to serve as an indicator of the successful adaptation to the affirmed gender. This is the rationale behind our empirical research. We have divided the sample of transsexual individuals into two subgroups with respect to the readiness to confirm the stereotypical attributes of affirmed gender as a part of one's self.

Although there are no studies devoted to the autobiographical memory of transsexual individuals, it seems quite evident that congruency of the self to a gender stereotype, not gender itself, predicts those autobiographical memory characteristics that are in line with common beliefs about gender differences in memory (Gryzman & Fivush, 2016). The authors indicated that the higher participants scored on the femininity scale, the more vivid, emotional, and easily shared with others their memories were, according to self-reports. In line with our speculation, a recent comparison of masculinity/femininity scores on the BSRI of transmen and transwomen with their cisgender siblings showed no significant differences (Factor & Rothblum, 2017). This means that self-perception of gender-typed attributes is similar and not relevant to the gender assigned at birth when acquired in the same family context.

The last but not least reason that conducting research on autobiographical memory in transsexual participants is meaningful is that there are very few psychological studies done in Russia on LGBTQ concerns (for an exception see, Horne, Ovrebo, Levitt, & Franeta, 2009 that also included transgender individuals).

### ***The current research***

The starting point of our empirical study was an assumption of the interdependence between autobiographical memory and self-identity. We assume that self rules accessibility and phenomenology of autobiographical memories while memories in turn serve as a database for the self. As M. Conway put it: "autobiographical memory and central aspects of the self form a coherent system in which the self is confirmed and supported by memories of specific experiences" (Conway, 2005, p.595).

The following hypotheses represent expected findings in line with the study aims:

- (1) Autobiographical memory in transsexual participants would include more vivid flashbulb-like memories than in cisgender participants due to the possibility of employing them as a resource for maintaining self-continuity. Retrieval of flashbulb-like memories evokes a sense of re-experiencing supporting relations between the past self and the current self.
- (2) Autobiographical memory in transsexual participants would reflect non-typical experiences due to obstacles they may have encountered.
- (3) Autobiographical memories in transsexual participants would promote a more individualistic self-view due to both social (isolation, that is, having to stay alert to the majority) and psychological (subjective uniqueness, that is, self-determined identity construction) reasons.

- (4) Autobiographical memory in transsexual participants with high acquisition of affirming gender-typed traits would be similar to autobiographical memory in cisgender participants.
- (5) The emotional profile of autobiographical memory addressing childhood would be more negative in transsexual participants, reflecting the derogation of the past gender category in favour of affirmed gender identity. Those with high acquisition of affirming gender-typed traits would assign more space on the timeline for childhood, indicating the process of self-continuity restoration, which leads to an increase in the proportion of positive memories.
- (6) Transsexual participants with low acquisition of affirming gender-typed traits would not recall the events related to their gender identity.

## **Method**

### ***Participants***

Data were collected from 28 transsexuals (all had gone through surgery to change their sex assigned at birth and were living as their affirmed gender). Eighteen were female-to-male and 10 male-to-female, with an average age of 26 (7.3). All had a secondary education, and 27 were permanently employed. They were recruited via a “snowball sampling” methodology (other informants referred or recommended by the initial respondents were subsequently invited or contacted for inclusion in the study if they met the research criteria and were interested in transgender issues) and via the Internet (search and ad placement in various forums and groups in social networks). Potential participants contacted researchers via email and ran through the protocol described below. Interviews lasted between 2 and 3 hours. The control group consisted of 28 participants with cisgender identity (people whose gender was congruent with their sex assigned at birth): 18 females and 10 males, with an average age of 24 (5.6). All participants volunteered to take part in the study and received no compensation.

### ***Measures***

The major method of assessing autobiographical memory in our study is drawing a personal Life Line. A Life Line makes it possible to visualise an entire life story and take a holistic perspective toward the personal past (Rappaport, Eurich, & Wilson, 1985; Assink & Schroots, 2010; Nourkova & Bernstein, 2010; deVries, 2013; Nourkova & Brown, 2015). At the outset of this task, each participant was presented with a sheet of white paper with a horizontal arrow line printed across. They then received the following instructions: Consider this Line as representing your entire life, recall the most important events from your life, locate them on the timeline, and indicate the valence and intensity of emotion associated with each recalled event by the distance from the arrow to the top (positive) on to the bottom (negative).

All obtained Life Lines were coded with the following 6 variables: the total number of recollections put on a Life Line, the percentages of positive (if situated above the timeline) and negative (if situated below the timeline) recollections, the



percentages of positive childhood memories, the length of the timeline segment expressing the subjective time passed from birth to the age of 12, and the mean graphical expression of emotional intensity for positive and negative recollections separately estimated (in mm.).

The contents of the memories included in the Life Lines were classified into the following categories: life script events, typical events, memories about other people, and flashbulb-like memories. According to Thomsen and Berntsen (2008), life script events are the most expected life events in a prototypical life course. Life script events are the elements of the cultural life script, that is, a cognitive structure containing knowledge of a normative life schedule with the prevalence of socially desirable achievements (for example, permanent employment, marriage, having a child, etc.). The typicality of recollections was assessed by comparing with the pool of the most frequently mentioned memories obtained by Life Line procedures in the general Russian population (Nourkova, Dnestrovskaya, Mikhailova, 2012). Memories were attributed to “memories about other people” in case the focus of the memory description was shifted to another person. Flashbulb memories were distinguished by their phenomenological properties such as extraordinary vividness, high intensity of emotions, feeling of re-experiencing the original event during recall, field perspective (seen through one’s own eyes), a high degree of confidence, and documenting short-lived but nearly momentous events (Talarico & Rubin, 2007). All memories were also coded in terms of life themes and the number of themes per person was counted. We also looked for specific recollections related to gender identity.

To assess the level of accessibility of gender-specific memories, we used a modification of the classic Autobiographical Memory Test (AMT; Williams & Broadbent, 1986) Participants were presented with 20 neutral cue words in a random order (for example, “book”, “radio”, “window”) and were asked to respond by recalling a specific autobiographical memory. The instructions informed participants that the retrieved memory had to be directly related to the cue word and that it had to be at least 1 year old.

The level of acquisition of affirming gender-typed traits was measured using the BSRI (Bem, 1974) modified and adopted for the Russian population by Dvoryanchikov (2011). This adaptation consisted of 21 gender-typed traits (7 masculine, 7 feminine, 7 neutral) that the participants had to reveal to themselves and to assess the trait on the severity. Although findings suggest (Donnelly & Twenge, 2016) that since the 1990s, the least educated women have become less likely to endorse feminine traits as self-representative (although it is possible that the scale items do not match modern gender stereotypes), because of the reasons described above, we consider this instrument suitable for the purpose of our research.

## Results

With respect to the BSRI, 14 of the 28 participants from the target group differed significantly from the predefined norms for the Russian population (Dvoryanchikov, et al., 2011). In the male-to-female subgroup, 3 participants scored lower on masculinity and higher on femininity (the norm was defined as 13–18

for the masculinity scale and 15–21 for the femininity scale), 1 scored higher on femininity only, and 1 scored higher on masculinity only. In the female-to-male subgroup, 6 participants scored lower on femininity only (the norm was defined as 14–19 for the femininity scale), 1 scored higher on femininity only, 1 scored higher on masculinity only (the norm was defined as 14–20 for the masculinity scale), and 1 scored lower on masculinity only. Because of the mixed nature of deviations from the norm and the limited sample size, we decided to allocate 14 participants whose scores fell below or above the cut-offs to the low acquisition of affirming gender-typed traits group (LAGTT), while the rest of the sample (14) was allocated to the high acquisition of affirming gender-typed traits group (HAGTT). Participants with cisgender identity were included in the analysis as controls.

Table 1 displays descriptive data (the medians, means, and standard deviations) for the three groups combined with statistics for intergroup differences in the entire life story graphically expressed in the Life Lines.

**Table 1.** Descriptive data for the three groups combined with statistics for intergroup differences.

	HAGTT — group 1		LAGTT — group 2		Cisgender — group 3	
	Mdn	Mean (SD)	Mdn	Mean	Mdn	Mean
Total number of recollections	17* <sup>2</sup>	28.00 (22.8)	9* <sup>1,*3</sup>	11.86 (7.8)	15* <sup>2</sup>	16.32 (6.9)
Positive childhood memories (%)	33.33** <sup>3</sup>	37.23 (31.0)	25.00** <sup>3</sup>	25.09 (26.6)	70.00** <sup>1,*2</sup>	66.87 (25.9)
Memories about other people (%)	5.00** <sup>3</sup>	5.04 (5.1)	2.90* <sup>3</sup>	10.68 (19.9)	13.66** <sup>1,*2</sup>	19.24 (16.3)
Life script events (%)	17.40** <sup>3</sup>	17.46 (12.2)	23.20** <sup>3</sup>	25.78 (16.2)	58.57** <sup>1,*2</sup>	59.40 (17.4)
Typical memories (%)	31.35** <sup>3</sup>	31.10 (15.6)	33.05** <sup>3</sup>	32.71 (12.3)	70.89** <sup>1,*2</sup>	72.06 (18.5)
Flashbulb-like memories (%)	18.30** <sup>3</sup>	19.80 (12.9)	11.10* <sup>3</sup>	10.79 (10.1)	0.00** <sup>1,*2</sup>	4.04 (10.2)
Timeline segment from the birth to the age of 12 (mm)	94 <sup>t2</sup>	87.21 (53.7)	62* <sup>3,t1</sup>	57.64 (37.0)	88* <sup>2</sup>	88.86 (42.4)
Emotional intensity for positive recollections (mm)	42 <sup>t3</sup>	39.75 (12.7)	45	42.27 (13.5)	49 <sup>t1</sup>	49.18 (13.4)
Emotional intensity for all recollections (mm)	37* <sup>3</sup>	35.82 (11.7)	38 <sup>t2</sup>	39.52 (11.7)	46* <sup>1,t3</sup>	47.75 (14.3)
Transsexual memories (n)	3** <sup>2</sup>	4.21 (2.5)	1** <sup>1</sup>	1.93 (2.2)		

Mdn — the median, SD — the standard deviation. \*\*p ≤ .005; \*p < .05; †p < .10.

\*\*<sup>1</sup>, \*<sup>1</sup>, †<sup>1</sup> — significant or marginal level differences with group 1 (HAGTT), \*\*<sup>2</sup>, \*<sup>2</sup>, †<sup>2</sup> — significant differences with group 2 (LAGTT), \*\*<sup>3</sup>, \*<sup>3</sup>, †<sup>3</sup> — significant differs with group 3 (cisgenders).



The Mann-Whitney test for non-normally distributed data revealed that cisgender controls performed significantly higher than all transsexual participants in the following components of their Life Lines: the percentage of positive recollections about childhood ( $U = 114.5$ ,  $Z = -3.998$ ,  $p < .000$ ,  $r = .53$ ); the percentage of recollections about other people ( $U = 194$ ,  $Z = -3.301$ ,  $p = .001$ ,  $r = .44$ ); the percentage of recollections referring to life script events ( $U = 35$ ,  $Z = -5.851$ ,  $p < .000$ ,  $r = .78$ ); the percentage of recollections that are the most frequent in the general Russian population ( $U = 32$ ,  $Z = -5.901$ ,  $p < .000$ ,  $r = .79$ ), and the mean graphical expression of emotional intensity for all life events mostly are positive ( $U = 233$ ,  $Z = -2.606$ ,  $p = .009$ ,  $r = .35$  /  $U = 275.5$ ,  $Z = -1.909$ ,  $p = .056$ ,  $r = .26$ ). In contrast, in transsexuals, the percentage of flashback-like recollections was higher than in cisgender participants ( $U = 154$ ,  $Z = -4.111$ ,  $p < .000$ ,  $r = .55$ ). AMT responses to neutral cue words in the transsexual group were more specific than in the controls ( $t = 2.758$ ,  $p = 0.011$ ), while both had normative scores (Griffith, et al., 2009).

Thus, according to their drawings, while cisgender participants in general have positively biased memories related to other people and a script-driven entire life story that predominantly consists of schematic memories, transsexuals have more self-focused and individualistic life stories with a higher proportion of vivid memories and less positive memories about childhood.

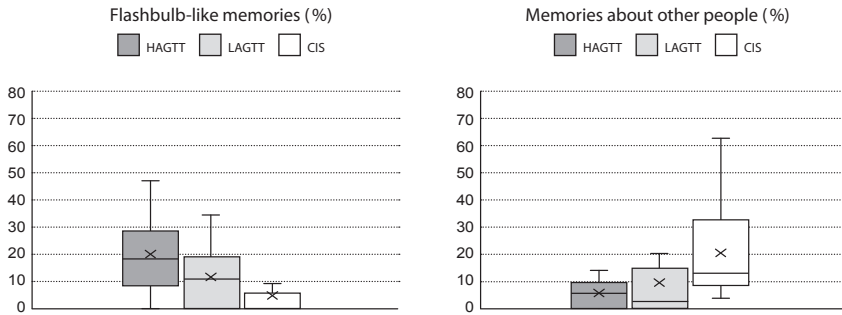
The results of transsexual Life Lines described above were more articulated in the high acquisition of gender-typed traits (HAGTT) participants. Namely, the effect size for the percentage of flashback-like recollections was bigger in HAGTTs ( $r = .66$ ) than in the low acquisition of gender-typed traits (LAGTT) group ( $r = .41$ ). There were no variables that were found to be equivalent for LAGTTs and cisgenderers and they were significantly different in HAGTTs.

Focus on the LAGTT group indicated that they put fewer memories on their Life Lines than both the HAGTT and cisgender participants; these differences were statistically equivalent ( $U = 44$ ,  $Z = -2.484$ ,  $p = .012$ ,  $r = .47$ ;  $U = 121$ ,  $Z = -2.004$ ,  $p = .046$ ,  $r = .38$ ). Additionally, as reflected by the length of the timeline segment from birth up to age 12, LAGTT group participants appeared to perceive their childhoods as shorter than those of cisgenderers ( $U = 114.5$ ,  $Z = -2.175$ ,  $p = .028$ ,  $r = .34$ ) and HAGTTs, although at a marginal level of significance ( $U = 60$ ,  $Z = -1.747$ ,  $p = .085$ ,  $r = .33$ ).

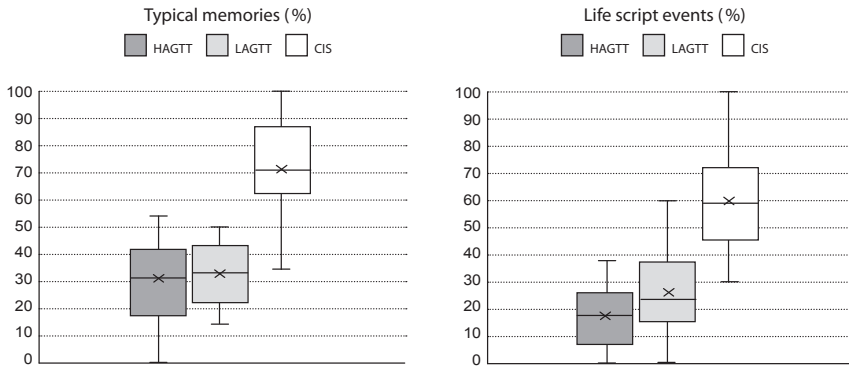
Intergroup comparisons between LAGTTs and HAGTTs detected unique differences in the number of recollections related to gender identity. HAGTTs included more recollections related to gender identity in their Life Lines ( $U = 38.5$ ,  $Z = -2.774$ ,  $p = .005$ ,  $r = .52$ ).

Thus, HAGTTs, that is, transsexual participants who did not differ from the BSRI norms assessing their “real self” in affirming gender-typed traits, had the same number of events associated with childhood as cisgender participants. Whereas LAGTTs, that is, transsexual participants who differed from the BSRI norms, recollected fewer events and perceived their childhoods as shorter than both cisgender and HAGTT participants.

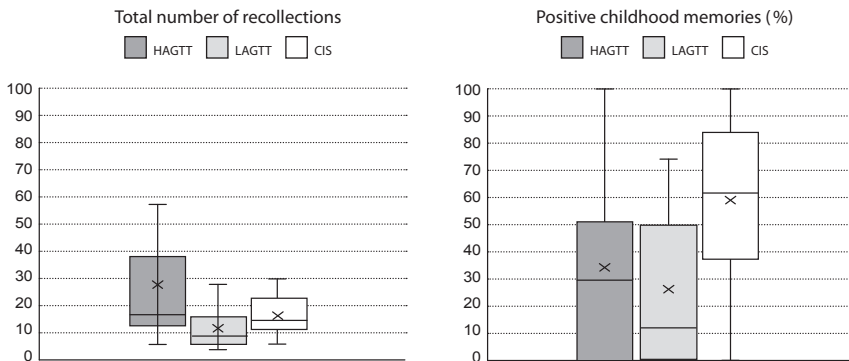
Figure 1, Figure 2, and Figure 3 represent the main findings of the study.



**Figure 1.** Descriptive statistics for the percentage of flashbulb-like memories and memories about other people. The top of the box represents the 75th percentile, the bottom of the box — the 25th percentile, and the line in the middle — the median. The whiskers mark the highest and lowest values. Crosses mark the averages

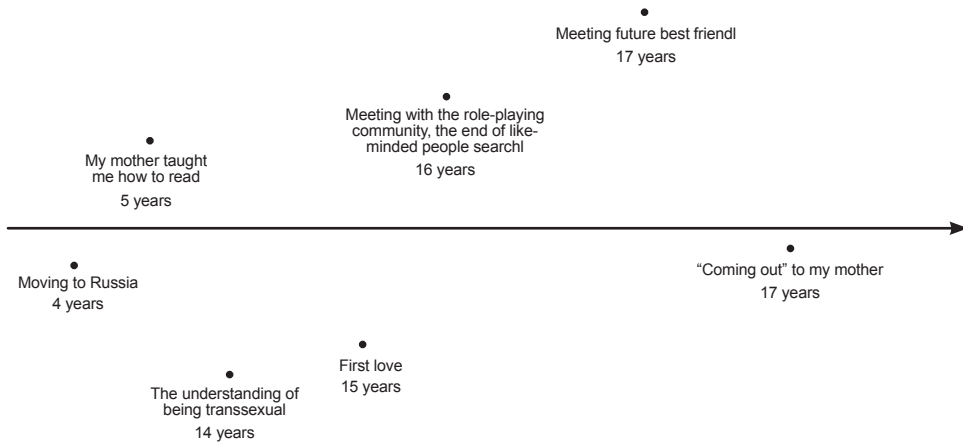


**Figure 2.** Descriptive statistics for the percentage of typical memories and life script events. The top of the box represents the 75th percentile, the bottom of the box — the 25th percentile, and the line in the middle — the median. The whiskers mark the highest and lowest values. Crosses mark the averages



**Figure 3.** Descriptive statistics for total number of recollections and the percentage of positive childhood memories. The top of the box represents the 75th percentile, the bottom of the box — the 25th percentile, and the line in the middle — the median. The whiskers mark the highest and lowest values. Crosses mark the averages





**Figure 5.** Life Line protocol, participant B (FtM) from LAGTT group

Consider this space as representing your entire life, recall the most important events from your personal past, locate them with respect to the timeline, and indicate valance and intensity of emotion associated with each recalled event by distance from the arrow to the top (positive) or to the bottom (negative)

## Discussion

In our opinion, this pattern of results may be interpreted either through the transsexual's unique life experience or through restoring the self-continuity process. We also proposed that analysis of differences between transsexuals with low or high levels of gender-typed traits may uncover an important resource of autobiographical memory in transsexual psychological well-being. Fig.4 and Fig 5. provide the examples of Life Line protocols.

### *High proportion of flashbulb-like vivid memories*

It has been widely established that the reduced specificity of autobiographical memories is associated with depressed mood states and low self-esteem (see for review, Summer, Griffith, Mineka, 2010). There are rare exceptions, such as when depressed adolescents with a history of parasuicidal behaviour were found to recall vivid and detailed traumatic memories (Swales, Williams, Wood, 2001). As described above, the AMT did not show an increase of overgeneral cued autobiographical memories in the transsexual sample. In contrast, we found that numerous vivid memories of single episodes were put in the transsexuals' Life Lines, including unique circumstances at the moment with associated sensory images and feelings. Examples of this kind of memory include: "stole a purse from my mother's drawer. Well...they didn't give me any money and hadn't given me any all the time I was at school before that day but still, it's a horrible crime of me to have done that"; "the public page 'Children-404' published my letter that I wrote from my female identity. That was the moment I felt that I am in a cage and played too long"; and "once, my mother threatened to send me to an orphanage due to educational reasons." Hence, there was no evidence of depression symptoms in the transsexuals' Life Lines due to the absence of overgenerality phenomenon. It should be emphasised that there was

no difference in proportion of positive and negative memories in transsexual and control individuals.

We speculate that the reason behind the preponderance of flashbulb-like memories in the transsexuals' Life Lines is an intense need to maintain self-continuity. While people with no history of gender change automatically keep a basic level of self throughout life, transitioning challenges a sense of sameness in a fundamental way. This challenge to self-continuity requires special efforts to overcome a concern about being "the same person." Autobiographical flashbulb-like memories are a critical resource in achieving and maintaining self-continuity (Addis & Tippet, 2010). The retrieval of rich sensory details from flashbulb-like memories provides mental time travel that involves a sense of re-experience and confidence in the past (Schacter, Addis, Buckner, 2007). In this way, the high accessibility of flashbulb-like autobiographical memories may assist in preserving self-continuity despite a significant transitional gap between past and present selves.

### ***Low proportion of cultural life script events***

The term "cultural life script" can be defined as the semantic knowledge of socially required and anticipated life events, their normative "schedule," emotional valence, and probability (Rubin & Berntsen, 2003; Berntsen & Rubin, 2004). Adolescents adopt cultural life scripts from older generations through various social practices; hence, cultural life scripts precede the real experience with the main aim of structuring the way people perceive their lives and the way they remember them (Berntsen, Bohn, Boyer, & Wertsch, 2009). Cultural life scripts serve to motivate youth to follow a socially sanctioned path representing an idealised life and differing from a typical life (Haque & Hasking, 2010). It has been shown that the priority in encoding and retrieval is given to events that are congruent to cultural life scripts. Consistency of personal memories and cultural life scripts may serve as an indicator of the successful acquisition of social norms and expectations. For instance, elements of the life story that deviate from the life script correlated with measures of depression and PTSD symptoms (Rubin, Berntsen, Hutson, 2009).

We discovered that transsexuals put fewer cultural life script events and typical events on their Life Lines than did the cisgender controls. This finding made transsexual life stories more individual. This possibly indicates that this group is living a different life from that which is culturally prescribed (Umanath & Berntsen, 2013). On the other hand, we hypothesise that observed deviations from the common script could not be exclusively attributed to life circumstances. This suggestion is based on the fact that vast majority of control participants (25/28) similarly to the transsexual participants were not married and did not have children. Perhaps the deviations indirectly express one's identification with the LGBTQ subculture; the nature of that identification implies highlighting the differences from the majority, not the similarities.

### ***Self-focused life story***

Although autobiographical memory by definition deals with self-experienced events, other people may be represented in individuals' life stories as being in the background, as co-actors, or even as protagonists. Sometimes memories of specific

events that a person knew that happened to others are put into their own life story, such as, “my sister bought an apartment” (see also Thomsen, & Pillemer, 2016). Studies confirm that the extent of others’ presence in one’s life stories reflects culturally dominant self-focus (the related-self for people from collectivistic societies and the autonomous-self for people from individualistic societies). For example, participants raised in the United States reported twice as many self-focused memories as participants raised in China and the Chinese reported memories centred on collective activities and general routines. Furthermore, an examination of self-defining memories (memories of events that shape one’s personality) indicated that Australians and Germans generally recalled autonomous events and that Chinese, Japanese, Taiwanese, Koreans, and Indians generally recalled relatedness events (Wang, 2016).

In our study, we found an underrepresentation of events consisting of collaborative activities with other people and no cases of main character replacement in the transsexuals’ Life Lines. However, we cannot classify the transsexuals’ Life Lines as totally self-focused, since some memories included others close to them: “for the first time I found a close friend, who accepted me for who I am”; “started dating N; he was the love of my life”; “a trip with my mother to Volgograd. I remember how she was away more than once to the nearest city, and did not tell anyone about it, travelled and wandered alone for the time it was pretty radical, the USSR lived another 12 years”; “together with my best friend we rented an apartment, where she worked a lot.”

In our opinion, it may be assumed that the decrease in the proportion of other-focused events in comparison to the cisgender controls may account for individual characteristics. We suppose that the highly individualistic orientation of the transsexuals’ Life Lines may rise from personal individualism. In spite of the fact that we did not assess individualism in our participants directly, we consider such a possibility as credible because of the decision to go through all stages of transitioning demands a high level of autonomy and an ability to resist social pressure. Additional support of our view can be found in work focusing on the importance of the ability to resist social pressure and gender stereotypes based on in-depth interviews of transsexuals. Transsexual individuals provide information about the power dynamics of gender and the possibility of resistance to the binary gender system’s encroachment (Gagné, Tewksbury, 1998). However, this result may also be related to social isolation, which is considered common for transgender people (American Psychological Association, 2015).

### ***Low proportion of happy childhood memories***

Since Alfred Adler’s conceptualisations, it has been quite common to state that childhood memories are more about one’s current self-view and concerns than about real events experienced as a child. Adler postulated that individuals unconsciously select to remember only those childhood memories that illuminate their adult personality (Adler, 1931). As he posits it: “A person’s true attitude toward life can be discerned from his earliest recollected experiences, proving that such memories are also constructed according to a planful procedure” (cit. in Ansbacher, 1973). Mixed



data were obtained on the normative proportion of happy and unhappy memories in non-clinical samples. For instance, McCabe, Capron, and Peterson (1991) compared narratives about childhood and adolescence and found that the former were significantly more negative, with a ratio of 60 % vs 38 %. According to a study by Nourkova and Masolova (2009), among the most important childhood memories, there were 71.4 % positive, 8 % negative, and 20 % neutral. However, there is an assumption that happy childhood memories have a valuable impact on psychological well-being in adults. Positive correlations were found between positivity of childhood memories and the looking-glass self and self-acceptance scores (Nourkova & Masolova, 2009). Freeman, Templer, and Hill (1999) revealed that more than one-third of participants who reported that they were unhappy as adults had a pessimistic view of their childhood and only one-tenth insisted that they had a happy childhood.

In our study, we detected a low proportion of happy childhood memories in transsexual participants. At the same time, HAGTT participants differed from LAGTT participants assigning typical space for childhood on their Life Lines. Our interpretation of the low proportion of happy childhood memories on the transsexuals' Life Lines is associated with the employment of the derogation of the past self in favour of the current self — a mechanism described above. In spite of this mechanism appearing to be quite common, it is not productive, contradicting the positive construction in autobiographical memory. In our opinion, the more mature strategy of overcoming life story discontinuity is to establish meaningful connections between the past and current selves. The enlargement of Life Line segment allocated to childhood memories in the HAGTT group makes it possible to fill it with positive memories in the future. Hence, we consider this step as an opportunity to achieve a self-coherent life story incorporating all periods of life.

### ***Fewer gender identity relevant memories in LAGTT group***

There were diverse recollections in transsexual Life Lines that were classified as expressing gender identity, for example: “I realised that I am not a boy”; “adapted to the male role”; “started hormone replacement therapy”; “body correction operation”; “the first experiments with the female way (paint, dress, pretty little things are different) surprised the adults a bit”; and “changing ID.” In AMT data, this life theme was also presented in response to neutral cue words, for example, “When I hear the word ‘chair’ I remember a luxurious white chair on which I was sitting while I was acting as ‘living book’ on the transgender day. It happened when I realised being a transgender”; “when I hear the word ‘bag’ I remember how my friend and I bought me a female bag. Accidentally, spontaneously. I came to visit her at work. There was a handbag store on that floor. We were choosing me one, a shopping assistant (a friend of hers) helped. And I...well, obviously looked not like a girl. It didn't matter to me but my friend suddenly made up a story that we were choosing a bag for my hypothetical girlfriend. It was silly, of course, and strange, because we spent a long time choosing, arguing, and my friend criticised my style. I think that the seller was tired of us. In the end, we had chosen a compromise but closer to my friend's taste. But no regrets, very nice bag, not too flashy and not simple, and still serves. Thanks to my friend.”

LAGTT participants, that is, the transsexuals who deviated in BSRI scores from the predefined norms, put fewer events relevant to their gender identity on their Life Lines. We attributed the effect to mechanisms of psychological defence, suppression, and repression, which are contradictory to productive coping with traumatic experiences (Prunas, et al., 2014; Petraglia, et al., 2009).

## **Conclusion**

The objective of the present study was to examine autobiographical memory of the entire past in a transsexual sample. There is no research on representations of the events that compose transsexuals' life stories; we focused on the data graphically expressed in the Life Lines. Following Tobin et al.'s gender self-socialisation model emphasising that the self-perception of gender-typed stereotypes is under the influence of personal importance of belonging to a gender category and the level of elaboration of gender stereotypes, we proposed that the highly subjective significance of the latter to transsexual people would make the former a suitable candidate for assessing a psychological comfort in the affirmed gender. According to their BSRI scores, transsexual participants were assigned into 2 groups: those who did not differ from the norms for their affirmed gender into the high acquisition of gender-typed traits group (HAGTT) and those who deviated significantly into the low acquisition of gender-typed traits group (LAGTT). We expected that HAGTTs would be more similar to cisgender controls in the way they represented their past.

As revealed by the Life Line drawings, cisgender participants in general had positively biased toward other people and script-driven entire life stories that predominantly consists of schematic memories and happy memories of childhood; transsexuals had self-focused, singular entire life stories with a high proportion of vivid flashbulb-like memories and unhappy memories of childhood. We interpreted the unusually high proportion of vivid recollections from the functional perspective. Flashbulb-like memories are known as triggers of re-experiencing past events with confidence and a feeling of mental time travel; we considered these types of memories critical resources for maintaining self-continuity in spite of significant transitions. We attributed the fact that transsexual participants' Life Lines followed the cultural life script less than the cisgender participants partly due to life circumstances and partly because of a tendency to highlight the differences from the majority. Transsexual Life Lines demonstrated highly individualistic patterns of recollections with few references to other people. We associated this self-focused orientation to the necessity of being self-determined to confront social pressure against transition. Transsexuals had decidedly low proportions of happy childhood memories in their autobiographical memories. This contrasted with the widespread belief that the positive emotional profile of recollected childhood is solely important for psychological well-being. We speculated that this was not the case for our transsexual sample. To interpret the result, we first adapted Ross and Wilson's assumption that the common way people support a positive view of the current self is to depreciate memories that are relevant to the past self. We hypothesised that after achieving an affirmed gender despite numerous obstacles and social pressures, transsexuals might accentuate negative childhood experiences to raise

the value of their new gender identity. Although HAGTT and LAGTT were equal in a low proportion of happy childhood memories, the former appeared to assign an equal segment of the childhood timeline as cisgender people. In our opinion, this may indicate the more mature stage of adaptation to an affirmed gender, that is, a switch to coming to terms with the past and current selves. We expect that in the future, HAGTT participants would enrich their childhood memories with positive content as they already have a space to do so.

Finally, in accordance with our predictions, HAGTTs, transsexual participants who did not differ from the BSRI norms assessing their “real self” in affirmed gender identity, also recollected more events related to gender identity than did LAGTTs, transsexual participants who differed from the BSRI norms. We attributed this pattern to a mechanism of psychological defence reflecting problems in adaptation to a new gender role.

In our opinion, the results of the present study opened a new avenue to broaden understanding of the interrelations between autobiographical memory, identity, and personality after major life changes. Although our view on the process of coping with disruption of self-coherence after transitional events is a conjunction of hypotheses deriving from prior theories, it also features novel elements. Namely, we view a derogation of the past self and establishing a connection with the past self as 2 consecutive stages aimed at adapting to life after transition. Once the results of future studies in this field are combined, it may be beneficial to take into account autobiographical memory as a cognitive resource for fulfilling the gap between desired and achieved identities with keeping a feeling of self-continuity across the lifespan.

### Limitations

Some of our study limitations ought to be underscored. First, the study would benefit from assessing the extent of self-perception in terms of gender-typed traits in cisgender participants group. Second, our sample size was relatively small. Future work with larger groups will allow to look more carefully at possible differences in male-to-female and female-to male subgroups. Third, to support our hypothesis on two-stage process of adaptation to transition via autobiographical memory transformation is quite inconclusive without longitudinal data. So longitudinal study should be conducted to assess whether an increase of positive memories of childhood would accompany an ongoing adaptation to affirmed gender identity.

### References

- Addis, D.R., Tippett, L. (2010). The contribution of autobiographical memory to the content and continuity of Identity. A social-cognitive neuroscience approach. In Fabio Sani (ed.), *Self-continuity: Individual and collective perspective* (pp. 71–84). Psychology Press.
- Adler, A. (1931). *What life should mean to you*. Boston: Little, Borun.
- American Psychological Association. (2015). Guidelines for psychological practice with transgender and gender nonconforming people. *American Psychologist*, 70(9), 832–864. doi: 10.1037/a0039906

- Ansbacher, H.L. (1973). Adler's interpretation of early recollections: Historical account. *Journal of Individual Psychology*, 29(2), 135–145.
- Assink, M., & Schroots, J.F.F. (2010). *The dynamics of autobiographical memory: Using the LIM | life-line interview method*. Boston: Hogrefe Publishing.
- Beike, D.R. & Landoll, S.L. (2000). Striving for a consistent life story: Cognitive reactions to autobiographical memories. *Social Cognition*, 18(3), 292–318. doi: 10.1521/soco.2000.18.3.292
- Bem, S.L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, 42, 155–162. doi: 10.1037/h0036215
- Berntsen, D., & Rubin, D.C. (2004). Cultural life scripts structure recall from autobiographical memory. *Memory & Cognition*, 32(3), 427–442. doi: 10.3758/BF03195836
- Berntsen, D., & Bohn, A. (2009). Cultural life scripts and individual life stories. In P. Boyer & J.V. Wertsch (Eds.), *Memory in Mind and Culture*. (pp. 62–82). Cambridge : Cambridge University Press
- Bluck, S., & Alea, N. (2008). Remembering being me: the self-continuity function of autobiographical memory in younger and older adults. In F. Sani (Ed.), *Self continuity: individual and collective perspectives* (pp. 55–70). New York: Psychology Press. doi: 10.1080/09658211.2011.590500
- Bluck, S., Alea, N., Habermas, T., & Rubin, D.C. (2005). A tale of three functions: The self-reported uses of autobiographical memory. *Social Cognition*, 23(1), 91–117. doi: 10.1521/soco.23.1.91.59198
- Brown, N.R. (2016). Transition theory: A minimalist perspective on the organization of autobiographical memory. *Journal of Applied Research in Memory and Cognition*, 5(2), 128–134. doi: 10.1016/j.jarmac.2016.03.005
- Conway, M.A. (2005). Memory and the self. *Journal of Memory & Language*, 53, 594–628. doi: 10.1016/j.jml.2005.08.005
- Conway, M.A., Singer, J.A., & Tagini, A. (2004). The self and autobiographical memory: Correspondence and coherence. *Social Cognition*, 22, 491–529. doi: 10.1521/soco.22.5.491.50768
- Crooks, R., & Baur, K. (2011). Gender issues. In R. Crooks & K. Baur (Eds.), *Our sexuality* (11th ed.; pp. 128–134). Belmont, CA: Wadsworth, Cengage Learning.
- de Vries, B. (2013). Lifelines: A review of content and context. *The International Journal of Reminiscence and Life Review*, 1(1), 31–35.
- Denny, D., Green, J., & Cole, S. (2007). Gender variability: Transsexuals, crossdressers, and others. In M. Tepper & A. F. Owens (Eds.), *Sexual health: State-of-the-art treatments and research* (Vol. 4, pp. 153–187). Westport, CT: Praeger/Greenwood.
- DiDonato, M.D., & Berenbaum, S.A. (2013). Predictors and consequences of gender typicality: The mediating role of communality. *Archives of Sexual Behavior*, 42(3), 429–436. doi: 10.1007/s10508-012-9955-1
- Donnelly, K., & Twenge, J.M. (2016). Masculine and feminine traits on the Bem Sex-Role inventory, 1993–2012: A cross-temporal meta-analysis. *Sex Roles*, 1–10.
- Dvoryanchikov, N.V., Nosov, S.S., Salamova, D.K. (2011). *Polovoe samosoznanie i metody ego diagnostiki* [Sexual identity and methods of diagnosis]. Saint Petersburg, Russia: Nauka.
- Factor, R.J., & Rothblum, E.D. (2017). A comparison of trans women, trans men, genderqueer individuals, and cisgender brothers and sisters on the Bem sex-role inventory: Ratings by self and siblings. *Journal of Homosexuality*, 1–18.
- Freeman, L.J., Templer, D.I., & Hill, C. (1999). The relationship between adult happiness and self-appraised childhood happiness and events. *The Journal of Genetic Psychology*, 160(1), 46–54. doi: 10.1080/00221329909595379
- Gagné, P., & Tewksbury, R. (1998). Conformity pressures and gender resistance among transgendered individuals. *Social Problems*, 45(1), 81–101. doi: 10.1525/sp.1998.45.1.03x0158b

- Griffith, J.W., Sumner, J.A., Debeer, E., Raes, P., Hermans, D., Mineka, S., Zinbarg, R. & Craske, M.G. (2009). An item response theory/confirmatory factor analysis of the Autobiographical Memory Test. *Memory*, 17(6), 609–623. doi: 10.1080/09658210902939348
- Gryzman, A., & Fivush, R. (2016). Gender identity predicts autobiographical memory phenomenology. *Applied Cognitive Psychology*, 30(4), 613–621. doi: 10.1002/acp.3235
- Haque, S., & Hasking, P.A. (2010). Life scripts for emotionally charged autobiographical memories: A cultural explanation of the reminiscence bump. *Memory*, 18(7), 712–729. doi: 10.1080/09658211.2010.506442
- Horne, S.G., Ovrebø, E., Levitt, H.M., & Franeta, S. (2009). Leaving the herd: The lingering threat of difference for same-sex desires in postcommunist Russia. *Sexuality Research and Social Policy*, 6(2), 88–102. doi: 10.1525/srsp.2009.6.2.88
- Howe, M.L. (2011). The adaptive nature of memory and its illusions. *Current Directions in Psychological Science*, 20, 312–315. doi: 10.1177/0963721411416571
- Kövecses, Z. (2005). *Metaphor in culture: Universality and variation*. New York: Cambridge University Press. doi: 10.1017/CBO9780511614408
- Levitt, H.M., & Ippolito, M.R. (2014). Being transgender: Navigating minority stressors and developing authentic self-presentation. *Psychology of Women Quarterly*, 38(1), 46–64. doi: 10.1177/0361684313501644
- Löckenhoff, C.E., Chan, W., McCrae, R.R., De Fruyt, F., Jussim, L., De Bolle, M., ... & Pramila, V.S. (2014). Gender stereotypes of personality: Universal and accurate? *Journal of Cross-Cultural Psychology*, 1–20. doi: 10.1177/0022022113520075
- Loftus, E.F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning and Memory*, 12, 361–366. doi: 10.1101/lm.94705
- Mason-Schrock, D. (1996). Transsexuals' narrative construction of the "true self". *Social Psychology Quarterly*, 176–192. doi: 10.2307/2787018
- McCabe, A., Capron, E., & Peterson, C. (1991). The voice of experience: The recall of early childhood and adolescent memories by young adults. In A. McCabe & C. Peterson (Eds.), *Developing narrative structure* (pp. 137–174). Hillsdale, NJ: Erlbaum.
- McLean, K.C., & Fournier, M.A. (2008). The content and processes of autobiographical reasoning in narrative identity. *Journal of Research in Personality*, 42(3), 527–545. doi: 10.1016/j.jrp.2007.08.003
- Nourkova, V.V. & Masolova, G.U. (2009). Kharakteristiki vospominanii o detstve i psikhologicheskii oblik vzroslogo [Childhood memories and psychological profile of adult]. *Psikhologicheskaya nauka i obrazovanie [Psychological Science and Education]*, 4, 1–16.
- Nourkova, V.V., & Bernstein, D.M. (2010). Why historical becomes personal: Spontaneous historical content of individual autobiographical memory. *Psychology in Russia: State of the Art*, 3, 257–277. doi: 10.11621/pir.2010.0013
- Nourkova, V.V., Bernstein, D.M., & Loftus, E.F. (2004). Biography becomes autobiography: Distorting the subjective past. *The American Journal of Psychology*, 117(1), 65–80. doi: 10.2307/1423596
- Nourkova, V.V., & Brown, N.R. (2015). Assessing the impact of "the collapse" on the organization and content of autobiographical memory in the former Soviet Union. *Journal of Social Issues*, 71(2), 324–337. doi: 10.1111/josi.12113
- Nourkova, V.V., & Dnestrovskaya, M.V. (2013). Dynamics of autonomy and relatedness across lifespan in autobiographical narratives: Semantic and susceptibility. *Procedia — Social and Behavioral Sciences*, 86(10), 475–481. doi: 10.1016/j.sbspro.2013.08.600
- Nourkova, V.V., Dnestrovskaya, M.V., & Mikhailova, K.S. (2012). Kulturnyj zhiznennyj scenarij kak dinamicheskaya semanticheskaya struktura (re)organizacii individualnogo zhiznen-



- nogo opyta [Cultural life script as a dynamic semantic structure of autobiographical experience (re)organization]. *Psichologicheskie issledovaniya [Psychological Studies]*, 5. Retrieved from: <http://psystudy.ru>
- Nourkova, V.V., Mitina, O.V., & Yanchenko, E.V. (2005). Avtobiograficheskaya pamyat': "Sgushcheniya" v subektivnoj kartine proshlogo [Autobiographical memory: "condensation" in the subjective picture of past], *Psikhologicheskii Zhurnal*, 26(2), 22–32.
- Petraglia, J., Thygesen, K.L., Lecours, S., & Drapeau, M. (2009). Gender differences in self-reported defense mechanisms: A study using the new Defense Style Questionnaire-60. *American Journal of Psychotherapy*, 63(1), 87.
- Prunas, A., Vitelli, R., Agnello, F., Curti, E., Fazzari, P., Giannini, F., ... & Bini, M. (2014). Defensive functioning in MtF and FtM transsexuals. *Comprehensive Psychiatry*, 55(4), 966–971. doi: 10.1016/j.comppsy.2013.12.009
- Rappaport, H., Enrich, K., & Wilson, A. (1985). Relation between ego identity and temporal perspective. *Journal of Personality and Social Psychology*, 48, 1609–1620. doi: 10.1037/0022-3514.48.6.1609
- Reisner, S.L., Veters, R., Leclerc, M., Zaslow, S., Wolfrum, S., Shumer, D., & Mimiaga, M.J. (2015). Mental health of transgender youth in care at an adolescent urban community health center: A matched retrospective cohort study. *Journal of Adolescent Health*, 56(3), 274–279. doi: 10.1016/j.jadohealth.2014.10.264
- Ross, M., & Wilson, A.E. (2000). Constructing and appraising past selves. In Daniel L. Schacter & Elaine Scarry (Eds.), *Memory, brain, and belief* (pp. 231–258). Cambridge, MA: Harvard University Press.
- Ross, M., & Wilson, A.E. (2003). Autobiographical memory and conceptions of the self: Getting better all the time. *Current Directions in Psychological Science*, 12, 66–69. doi: 10.1111/1467-8721.01228
- Rubin, D.C. & Berntsen, D. (2003). Life scripts help to maintain autobiographical memories of highly positive, but not highly negative, events. *Memory & Cognition*, 31(1), 1–14. doi: 10.3758/BF03196077
- Rubin, D.C., Berntsen, D., & Hutson, M. (2009). The normative and the personal life: Individual differences in life scripts and life story events among USA and Danish undergraduates. *Memory*, 17(1), 54–68. doi: 10.1080/09658210802541442
- Schacter, D.L., Addis, D.R., & Buckner, R.L. (2007). Remembering the past to imagine the future: The prospective brain. *Nature Reviews Neuroscience*, 8, 657–661. doi: 10.1038/nrn2213
- Shi, L., & Brown, N.R. (2016). The effect of immigration on the contents and organization of autobiographical memory: A transition-theory perspective. *Journal of Applied Research on Memory and Cognition*, 5(2), 135–142. doi: 10.1016/j.jarmac.2016.03.002
- Summer, J.A., Griffith, J.W., & Mineka, S. (2010). Overgeneral autobiographical memory as a predictor of the course of depression: A meta-analysis. *Behaviour Research and Therapy*, 48(7), 614–625. doi: 10.1016/j.brat.2010.03.013
- Swales, M.A., Williams, J.M.G., & Wood, P. (2001). Specificity of autobiographical memory and mood disturbance in adolescents. *Cognition and Emotion*, 15(3), 321–331. doi: 10.1080/02699930125869
- Talarico, J.M., & Rubin, D.C. (2007). Flashbulb memories are special after all; in phenomenology, not accuracy. *Applied Cognitive Psychology*, 21(5), 557–578. doi: 10.1002/acp.1293
- Thomsen, D.K., & Berntsen, D. (2008). The cultural life script and life story chapters contribute to the reminiscence bump. *Memory*, 16(4), 420–435. doi: 10.1080/09658210802010497
- Thomsen, D.K., & Pillemer, D.B. (2016). I know my story and i know your story: Developing a conceptual framework for vicarious life stories. *Journal of Personality*. doi:10.1111/jopy.12253



- Tobin, D.D., Menon, M., Menon, M., Spatta, B.C., Hodges, E.V., & Perry, D.G. (2010). The intraphysic of gender: A model of self-socialization. *Psychological Review*, *117*(2), 601. doi: 10.1037/a0018936
- Umanath, S., & Berntsen, B. (2013) Personal life stories: Common deviations from the cultural life script. *Nordic Psychology*, *65*(2), 87–102, doi: 10.1080/19012276.2013.807662
- Wang, Q. (2016). Remembering the self in cultural contexts: a cultural dynamic theory of autobiographical memory. *Memory Studies*, *9*(3), 295–304. doi: 10.1177/1750698016645238
- Williams, J.M.G., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, *95*, 144–149. doi: 10.1037/0021-843X.95.2.144

*Original manuscript received February 14, 2017*

*Revised manuscript accepted May 10, 2017*

*First published online June 30, 2017*