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Gender Identity Predicts Autobiographical Memory Phenomenology

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Summary: Gender differences emerge regularly in autobiographical memory research. We suggest that gender differences in phenomenological self-report measures of autobiographical memory are rooted in gender identity rather than categorical gender. Reminiscing about the past is perceived as a female-typical activity, and therefore, gender-typical individuals will conform to these stereotypes. In this study, 196 participants, age 18–40, each rated the phenomenology of four event memories. Ratings of feminine gender identity, also completed by participants, consistently correlated with MEQ scores, indicating that greater endorsement of feminine gender norms predicted higher memory quality and valence. Masculine gender identity also correlated with MEQ scores, but these correlations were less consistent. Findings suggest that a focus on gender identity can both explain the source of some gender differences in autobiographical memory and potentially explain some inconsistencies in the current literature.

INTRODUCTION

Autobiographical recall is a critical component of creating a coherent and consistent sense of self over time (Conway, Singer, & Tagini, 2004; McAdams, 2001). In particular, the phenomenological experience of the personal past as vivid, detailed, and emotional creates a sense of re-living that emphasizes how the present is connected to the past (Fivush, 2011; Rubin, 2005) and may facilitate anticipating and planning for the future (Schacter, Addis, & Buckner, 2008). Intriguingly, this phenomenological experience may be gendered. As reviewed by Grysman and Hudson (2013), females' autobiographical memories are often more detailed, elaborated, relational, and emotionally expressive than males' across a variety of studies and methods. However, not all studies find gender differences, especially those employing self-report questionnaires as dependent variables. Grysman and Hudson (2013) argue that it may not be gender, per se, that relates to these autobiographical memory differences, but gender identity.

Gender identity, broadly defined, is the extent to which an individual defines the self as gender-typical (Perry & Pauletti, 2011; Spence & Helmreich, 1978). Importantly, gender identity has implications for both valuing one's gender and also striving to be consistent with one's gender typical characteristics (Bigler & Liben, 2007). Thus, like autobiographical memories, gender identity functions to help create a sense of consistency of self across time. Because gender differences in autobiographical recall conform to gender-typical dimensions, gender differences in autobiographical recall may be largely a function of gender identity rather than categorical gender. Paradoxically, although gender identity may help create self-consistency, it is simultaneously dynamic and flexible, changing both across the lifespan and across situational contexts (Deaux & Major, 1987; Diamond, 2012; Halim, Ruble, & Amodio, 2011; Martin & Ruble, 2010). Contexts that highlight gender as an important component of identity lead to greater gender differences (Deaux & Major, 1987; Liben & Bigler, 2002), and these contexts may be local situations or larger developmental periods (Diamond, 2012; Halim et al., 2011). Thus, in this study, we examined how both gender and gender identity might be related to the phenomenology of autobiographical recall, and we examined this as a function of both local context, by manipulating the type of event being recalled, and developmental context, by including both emerging adults (Arnett, 2007), age 18–29, and young adults, age 30–40, in our sample to enable analyses across this important age range. To place our specific hypotheses in context, we discuss each of these issues in more detail.

Gender and gender identity

Gender is a complex biosocial–cultural construct (Owen-Blakemore, Berenbaum, & Liben, 2009; Steensma, Kreukels, de Vries, & Cohen-Kettenis, 2013). Gender is among the earliest categories that infants become aware of, and from toddlerhood on, children categorize both themselves and others as female or male (refer to Martin & Ruble, 2010 and Tobin et al., 2010 for reviews). Importantly, these categories carry social and evaluative information as well (Bigler & Liben, 2007; Martin & Ruble, 2010). Tobin et al. (2010) have theorized five dimensions of gender identity: (i) knowledge of membership in a gender category; (ii) the centrality of gender to one's own self; (iii) how content one is with one's gender; (iv) felt conformity to one's gender; and (v) felt typicality to one's gender. Although most humans define themselves as members of a gender category, the extent to which they think these categories are important and valuable for their self-concepts varies, as well as the extent to which they think they conform, and value conforming, to gender-typed dimensions. Most important for our arguments is the extent to which individuals describe themselves as gender-typical.

Stereotypical female characteristics include nurturance, emotionality, relational orientation, gentleness, and warmth, among others, leading to an overall relational orientation (Gilligan, 1982). Stereotypically male characteristics include independence, autonomy, strength, and aggressiveness, among others, leading to an overall autonomous agentic orientation (Spence & Helmreich, 1978). Although gender

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roles have evolved over the past few decades, gender stereotypes remain surprisingly robust (Prentice & Carranza, 2002). In fact, Löckenhoff et al. (2014) assessed 3323 participants across 26 nations and found that both female and male participants largely conform to these gender stereotypes in describing personality traits of both others and themselves. Moreover, although with development, individuals start to have a more nuanced view of gender, and how it is defined and develops in social and cultural contexts (Martin & Ruble, 2010), even as adults, individuals revert to an essentialist view of gender as 'natural' when forced to make quick decisions (Eidson & Coley, 2014). Thus, stereotypical gendered personality characteristics remain entrenched in our world view. Moreover, individuals who define themselves as gender typical show higher levels of psychological well-being than those who do not (DiDonato & Berenbaum, 2013), most likely because individuals who define themselves as gender-typical also value being a member of that category and achieve self-esteem through a sense of belonging and 'being like' others in their group (DiDonato & Berenbaum, 2013; Bigler & Liben, 2007).

Gender identity and autobiographical memory

Individuals who define themselves as more gender-typical are motivated to adhere to gendered stereotypes of behavior and to engage in more gender-typical activities. Both the process and content of autobiographical recall is gendered, and this gender differentiation creates a stereotype of autobiographical recall as a female-typical activity (Fivush & Zaman, 2014). Overall, as adults, female participants narrate more elaborated, emotionally expressive and relationally oriented autobiographical narratives than do male participants (refer to Grysman & Hudson, 2013 for a review). Gender differences in reminiscing emerge very early in development and seem to be socialized in family reminiscing contexts (refer to Fivush & Nelson, 2004; Fivush & Zaman, 2014 for reviews). Parents reminisce in more elaborated and emotionally expressive ways with daughters than sons from preschool through adolescence, and by early childhood, girls reminisce in more elaborated and emotionally expressive ways than boys. Thus, female participants are socialized to engage in and value reminiscing more than male participants. Indeed, female participants self-report engaging in reminiscing, both when alone and with others, to a greater extent than do male participants, and they report valuing this activity more than male participants (Alea & Bluck, 2003). Moreover, female participants report engaging in autobiographical recall to maintain and enhance relationships more than do male participants (Alea & Bluck, 2003), suggesting that the content of autobiographical recall, even when reminiscing alone, is gender-typed as relational.

Self-reports of the phenomenological quality of autobiographical recall support the idea that female participants report more vivid and emotional memories than do male participants, although again, we stress that not all studies find these differences (refer to Grysman & Hudson, 2013 for a review). We argue that because reminiscing about autobiographical memories is an activity that is engaged in and valued more by female participants than male participants, it becomes stereotypically associated with female participants and defined as gender-typical. Thus, individuals who describe themselves as more gender-typical would be more highly motivated to engage in stereotypically female autobiographical recall, and therefore, gender differences in autobiographical recall quality would be more apparent in individuals who are more highly gender-typed than those who are not. More specific to issues addressed in this study, we argue that individuals who identify with and value a feminine typical identity would self-report their phenomenological autobiographical memory recall as conforming to this female stereotype and thus self-report more vivid, emotional autobiographical memories than individuals who do not identify as gender-typical.

Local and developmental contexts

Gender identity is dynamic across situations and developmental time (Diamond, 2012; Martin & Ruble, 2010). Contexts that highlight gender as important will be more likely to activate gender identity, and therefore, we would expect greater differences because of gender identity in these contexts than in others. Although there are many aspects of the local context that might matter for activating gender (see, e.g., Grysman & Hudson, 2013 for a fuller discussion and examination), here we focus on the research context, and specifically, the prompts to recall autobiographical events typically used in memory studies that might be related to the extent to which we obtain gender differences (refer to Fivush & Grysman, in press for a full discussion). More specifically, three separate arguments regarding how specific event prompts interact with gender are possible. First, some prompts, such as one for a highly emotional event, may activate gender stereotypes, thus highlighting an individual's gender identity, more than other prompts, such as one based on a specific time range. Thus, we might expect greater gender differences when participants are prompted to retrieve an emotional event than not. Second, it is possible that when explicitly asked to recall a highly emotional or personally salient event, the event itself is so emotionally meaningful that gender differences would diminish. In support of this suggestion, gender differences are less consistent in studies of turning points (Grysman & Hudson, 2011; McLean & Pratt, 2006) or self-defining memories (e.g., McLean & Thorne, 2003; refer to Grysman & Hudson, 2013 for a discussion of these memories), although some studies still find gender differences in these types of events (Grysman, Merrill, & Fivush, under review; Merrill & Fivush, in prep). Third, it is possible that emotion-based prompts interact with gender identity via an inverted U-shaped curve, such that gender differences are strongest in events that elicit a moderate amount of emotion, but that both extremes are characterized by a drop in gender differences. We examined possible gender differences in autobiographical recall quality as a function of an open-ended memory prompt, as well as a series of highly emotional and salient memory prompts, using the standardized prompts in the field. Because of the competing predictions suggested by these approaches, examination of event prompt was exploratory in this study.

Developmental context also matters. Gender identity develops in predictable ways in childhood, from gender constancy to more complex schematic representations of gender, and developing individual differences in subscription to stereotyped gender roles and behaviors (refer to Martin & Ruble, 2010 for a review). Adolescence and emerging adulthood are critical developmental periods in this process, as gender identity becomes more complicated (Diamond, 2012; Perry & Pauletti, 2011). At this developmental period, we often see a lessening of self-stereotyping, likely because of two reasons: first, during emerging adulthood, individuals are often focused on professional development, and therefore, life concerns may lead both women and men to focus on autonomy and achievement aspects of their identity, especially in western industrialized cultures (Arnett, 2015; Kroger, 2003). Second, and really a methodological artifact, most psychology studies include college students as participants, and college students are likely the least gender-stereotyped of any population because of their focus on education and professional development (Arnett, 2015; Kroger, 2003). With the transition to early adulthood, gender identity becomes more entangled with parenting and family issues and gender identity becomes more differentiated (Katz-Wise, Priess, & Hyde, 2010; Lachance-Grzela & Bouchard, 2010). Thus, although aspects of gender identity remain individually stable, we also expect developmental shifts with changing life concerns (refer also to Halim et al., 2011 for similar arguments during childhood and adolescence), with increasing gender differences across emerging and early adulthood, from age 20 through 40.

The present study

This study was designed to examine gender and gender identity in the phenomenological qualities of autobiographical memory in a sample that was not limited to college students, and in doing so, considered two additional potential sources of variability: age of participants and the types of event memories elicited (Grysman & Hudson, 2013). Thus, self-report measures were used across four narrative conditions and across two age groups. It was hypothesized that gender differences in subscription to feminine gender-typed characteristics would vary by age and that self-reported ratings of phenomenological properties of memory would be predicted by subscription to feminine gender identity more than by categorical gender. Finally, as stated earlier, the role of event type was considered exploratory; four event types were used to vary the extent to which events highlighted emotionality and personal salience: any event from the last two years, a highly positive event (*high point*; McAdams, 1997), a highly negative event (*low point*; McAdams, 1997), and a self-defining memory (Singer & Salovey, 1993).

METHOD

Participants

Participants were recruited via the internet using Amazon's Mechanical Turk and limited to US residents. Data were collected from 196 participants (98 women, 98 men), age 18–40. Mean reported age was 29.05 ($SD = 6.25$) for women and 29.04 ($SD = 6.01$) for men. Data from three additional participants were not included in the analyses because these participants self-identified as 'transgender'. Participants were specifically recruited to be evenly split between emerging adults (age 18–29, $M = 23.83$, $SD = 3.18$, 49 men, 49 women) and early adults (age 30–39, $M = 34.27$, $SD = 3.15$, 49 men, 49 women). Reported ethnicity was 142 White, 12 African-American, 18 Asian-American, 14 Hispanic/Latino, 2 Native American, 1 Middle Eastern, 6 Bi-racial, and 1 'other'. Reported highest level of education included 22 participants with a high school diploma, 63 with some college, 85 with a Bachelor or Associate's degree, and 26 with an advanced degree (Master's or PhD). Finally, when asked about annual household income, 88 participants reported earning $20 000 or less, 47 reported earning $20–40 000, 33 reported earning $40–60 000, 11 reported earning $60–80 000, and 17 reported earning $80 000 or higher.

Procedure

These data were collected as part of a larger study that included multiple memory and individual difference measures.[1] Data were collected in two sessions. Participants were recruited via the Internet using Amazon's Mechanical Turk and offered $.55 to complete a half-hour survey. Demographic information was collected in the first session. Participants who consented to be re-contacted completed a second session between one and seven days after the first survey and were paid an additional $1, for a total of $1.55 for one hour of work, in line with rates commonly paid on this web site (Buhrmester, Kwang, & Gosling, 2011). Breaking the 1-hour session into two 30-minute sessions insured higher quality and reliability of data (Goodman, Cryder, & Cheema, 2013). In addition, foil items were included in both phases; only participants who correctly answered the foil items at both sessions were included in the analyses. Three hundred forty-two participants completed the first session. Twenty-eight answered at least one foil item incorrectly, 16 did not provide complete data, and 3 self-identified as 'transgender'. Additionally, memory narrative were screened to ensure that participants followed instructions for the memory provided (after screening foil items), but no participants were removed for lack of appropriate narratives. Of those invited back, 70% (203/292) completed the second session, and seven of these participants were excluded from analyses for not answering foil items correctly on the second survey. Data collection was pre-planned to collect data from 200 participants in order to enable mixed model analyses with multiple variables (Grysman, Fivush, Merrill, & Graci, under review), and this was confirmed as sufficient to enable the ANCOVAs reported here with high power (0.90) to capture medium effects using the analysis tool G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007). After the rejections were made to arrive at 196, this was considered sufficient.

[1] Other parts of this data set are reported in Grysman et al. (under review) as well as Grysman et al. (under review). In those papers different parts of the data set and different analyses address different theoretical questions, but some of the data specifically on PAQ-F and PAQ-M scales are the same.

Data for two events were collected in the first session, the open-ended event (a specific event that occurred in the past two years) and the 'high point' event, and two in the second session, the 'low point' event and the 'self-defining' event. Prompts for the high and low point events were adopted from the life story interview (McAdams, 1997), and the self-defining memory from Singer and Salovey's (1993) self-defining event prompt. Because one argument about event type was that making participants aware of the self-reflective aspects of an event may interfere with gender differences, the same order was maintained throughout so that self-defining memories would always be last and the open-ended event always first. Additionally, the order of high points at the end of the first session and low points at the beginning of the second session remained constant so that the first session did not end on the low point event. All narratives were screened to ensure that participants indeed recalled events that matched the prompts for each event, and word-length minimums were not imposed, as the narratives themselves were not analyzed in this study.

After nominating each event type, participants were asked to write a brief narrative and then to complete a shortened version of the Memory Experiences Questionnaire (MEQ; Sutin & Robins, 2007), as shortened by Grysman, Prabhakar, Anglin, and Hudson (2013). The MEQ is a self-report measure of the phenomenological quality of the memory and includes 63 questions, each rated on a 5-point Likert scale. There are 10 subscales, comprising of 5–8 items each (the shortened scale includes 3–5 items): *vividness*, *coherence*, *accessibility*, *time perspective*, *sensory details*, *visual perspective*, *emotional intensity*, *sharing*, *distancing*, and *valence* (for examples, refer to Sutin & Robins, 2007 or Grysman et al., 2013 for the shortened version used in this study). The shortened version was used to retain participant attention and engagement while completing this scale after each of the four narratives. Luchetti and Sutin (2015) have since validated a shortened version of the MEQ, but the data reported in these studies were collected before this shortened scale was available. However, Luchetti and Sutin (2015) shortened the MEQ to 31 items, compared with 33 items by Grysman et al. (2013), and 22 of those items are identical, suggesting substantial overlap between the two. Additionally, given that Luchetti and Sutin (2015) found Pearson's correlations between each shortened subscale in their short form and the full length MEQ of r's = .87–.96, these shortened scales can be considered comparable.

Sutin and Robins (2007) suggested that the MEQ's 10 subscales be theoretically conceptualized as comprising two main factors: quality (*vividness*, *coherence*, *accessibility*, *time perspective*, *sensory details*, *visual perspective*, and *emotional intensity*) and valence (*sharing*, *distancing*, and *valence*). However, in their psychometric evaluations, they found that a 10-factor model was more consistent with data. Thus, all 10 subscales were analyzed as separate dependent variables, but these two theoretical factors should be considered when interpreting results.

At the end of the second session, participants completed two additional questionnaires relevant to gender identity, detailed in the succeeding texts. Final demographic information was collected, and participants were thanked and paid via the Mechanical Turk web site.

Personal Attributes Questionnaire short form (feminine subscale and masculine subscale)

This scale, developed by Spence and Helmreich (1978), divides into three 8-item subscales, two of which were used in these analyses. The Personal Attributes Questionnaire feminine subscale (PAQ-F) includes eight-trait terms (*emotional*, *devotes self*, *gentle*, *helpful*, *kind*, *understanding*, *aware of feelings*, and *warm*) that are socially desirable among both sexes but more common among women, and broadly reflects interpersonal and expressive traits (Helmreich, Spence, & Wilhelm, 1981). The PAQ-F demonstrated good reliability, Cronbach's $\alpha = .79$. The PAQ masculine subscale (PAQ-M) includes eight trait terms (*competitive*, *active*, *independent*, *decisive*, *never gives up*, *self-confident*, *feels superior*, and *stands up under pressure*) that are socially desirable among both sexes but more common among men, including goal-oriented and instrumental traits (Helmreich et al., 1981) and also demonstrated good reliability, Cronbach's $\alpha = .78$. All scores are reported on a 1–9 scale, with higher scores indicating that the trait terms are more self-descriptive.

RESULTS

Results are presented in four sections. Given our theoretical emphasis on gender identity, descriptive statistics of gender identity measures are presented first. Second, a multivariate analysis for the study is presented. The third and fourth sections include follow-up analyses based on results in the multivariate analysis, with a focus first on gender identity and then on the remaining effects.

Gender identity

Regression analyses were performed on each gender identity scale, with gender and age as predictors. Of note, Grysman et al. (under review) and Grysman et al. (under review) conducted similar preliminary analyses in relation to other parts of this larger dataset, but using ANOVA with age group as a grouping factor.

As expected, main effects of gender emerged on both scales, with men reporting higher scores than women on the PAQ-M, $\beta = -.34$ ($SE = .09$), $t = -3.81$, $p < .001$, and women reporting higher scores than men on the PAQ-F, $\beta = .20$ ($SE = .07$), $t = 2.86$, $p = .005$. However, on the PAQ-F, this main effect was qualified by a gender by age interaction, $\beta = .04$ ($SE = .01$), $t = 3.40$, $p = .001$. An analysis of simple slopes was conducted separately for men and for women. As can be seen in Figure 1, this analysis showed that for men, increasing age corresponded to lower scores on the PAQ-F, $t = -2.19$, $p = .029$; conversely, for women, increasing age corresponded to higher scores on the PAQ-F, $t = 2.63$, $p = .009$. As can be seen in Figure 1, such a finding results in no mean difference on PAQ-F between men and women at younger ages, but that, with age, differences on this variable increasingly diverge, with women scoring higher on this measure than men.

In addition to comparing gender identity by age, examination of gender identity by income, education, and ethnicity was also conducted. Univariate ANOVAs using gender and

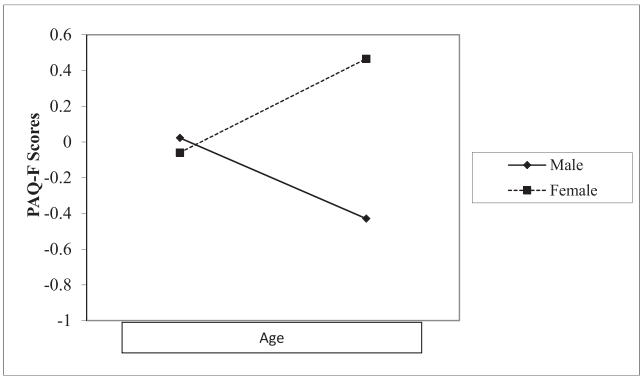

Figure 1. Scores on PAQ-F (centered around 0) by gender and age

each of these three demographic factors as independent variables were conducted for PAQF and PAQM scores. Only one significant effect emerged in these analyses, namely that individuals with higher incomes reported higher scores on the PAQM, $F(5, 184) = 2.98$, $p = .013$, $\eta_p^2 = .075$. However, because of many very small groups, meaningful interpretation of these demographic factors or of these null findings cannot be obtained.

Preliminary multivariate analysis

Using scores from the 10 MEQ subscales for each narrative condition as dependent variables, a 2 (gender) × 4 (narrative condition: open-ended event, high point, low point, and self-defining memory) repeated measures MANCOVA was conducted with gender as a between groups predictors, narrative condition as a within groups predictor, and age, PAQ-F and PAQ-M scores as covariates. Multivariate tests revealed four main effects and one interaction. Notably, no main effect of gender was present. Between-subjects main effects emerged for PAQ-M scores, *Wilk's* λ $(10, 182) = .79$, $p < .001$, $\eta_p^2 = .21$; PAQ-F scores, *Wilk's* λ $(10, 182) = .77$, $p < .001$, $\eta_p^2 = .23$, and for age, *Wilk's* λ $(10, 182) = .88$, $p = .009$, $\eta_p^2 = .12$. A within-subjects main effect emerged for narrative condition, *Wilk's* λ $(30, 162) = .56$, $p < .001$, $\eta_p^2 = .44$. Finally, an interaction emerged between PAQ-M and narrative condition, *Wilk's* λ $(30, 162) = .73$, $p = .003$, $\eta_p^2 = .27$. Because tests of gender identity were central to predictions and to this study's design, results are presented first for the two main effects of gender identity and the interaction by narrative condition. Main effects of age group and narrative condition are presented second.

Gender identity analyses

Because analyses were conducted with PAQ-F and PAQ-M scores as covariates, follow-up analyses include correlations between these scales and the 10 MEQ ratings. Additionally, because of the interaction by narrative condition for PAQ-M scores, these correlations are presented separately by narrative condition, whereas PAQ-F did not show an interaction with narrative condition, and thus, correlations are presented as summed across the four narrative conditions. As can be seen in Table 1, PAQ-F scores correlated significantly with every subscale of the MEQ except *coherence*, with the strongest correlations found for *sharing*, *emotional intensity*, *visual perspective*, and *time coherence*. PAQ-M scores predicted MEQ ratings most commonly on *sensory detail*, *vividness*, and *visual perspective* across narrative conditions. Follow-up one-way ANOVAs indicated that the interactions between PAQM scores and narrative condition were significant on 5 subscales: *coherence*, *accessibility*, *vividness*, *valence*, and *distancing*. As can be seen in Table 1, for 4 of these subscales, PAQM scores correlated with the MEQ subscale in only one of the four conditions; for vividness, correlations emerged in 3 of the 4, but not in high point events. Additionally, significant correlations between the PAQM and MEQ ratings were more common in the self-defining event (6 out of 10), and more common in the *sensory detail*, *visual perspective*, and *vividness* subscales, but were inconsistent throughout comparisons as a whole, emerging in only 3 of 10 correlations for the open-ended and the low-point narratives, and only 4 of the 10 high point events.

Table 1. Pearson's correlations between the ten shortened MEQ subscales and PAQ-F scores (summed across the four narrative conditions) and PAQ-M scores for each of the four narrative conditions

	PAQ-F	PAQ-M			
MEQ subscale		Open-ended	High point	Low point	Self-defining
Coherence	.13	.14	.04	.09	.21**
Accessibility	.18*	.08	-.04	.03	.21**
Sensory detail	.21**	.19**	.15*	.26**	.31***
Emotional intensity	.37***	-.00	.07	.07	.11
Vividness	.19**	.17*	.07	.21**	.27***
Visual perspective	.32***	.12	.23***	.23***	.25***
Time coherence	.25***	.14	.16*	.14	.23***
Sharing	.27***	.01	.07	-.05	.11
Valence	.19**	.20**	.10	-.04	.10
Distancing	.16*	.05	.23***	-.09	.13

Correlations are presented in separate formats for these two scales of gender identity because an interaction by narrative condition emerged for PAQ-M but not PAQ-F scores.
*$p < .05$.
**$p < .01$.
***$p < .001$.

Effects of age and narrative

Although exploratory in this study, main effects of narrative condition and age were found in multivariate analyses. Follow-up ANCOVAs were performed on each of the ten MEQ subscales. Small effects of age emerged on two subscales, including *coherence*, $F(1, 191) = 5.95$, $p = .016$, $\eta_p^2 = .03$, and *distancing*, $F(1, 191) = 6.04$, $p = .015$, $\eta_p^2 = .03$, with age positively correlating with ratings on these subscales.

A follow-up within-subjects ANCOVA indicated effects of narrative condition on three MEQ subscales, including *valence*, $F(3, 573) = 12.46$, $p \leq .001$, $\eta_p^2 = .06$; *accessibility*, $F(3, 573) = 2.73$, $p = .043$, $\eta_p^2 = .01$; and *distancing*, $F(3, 573) = 4.79$, $p = .003$, $\eta_p^2 = .02$, although only distancing and valence effects were significant after correcting for multiple comparisons. Valence effects are not surprising, with high point events rated as substantially more positive than all other events and low point events as substantially less

positive, with open-ended and SDM events in the middle. Similarly, participants rated low points as more distant than other events.

Summary of results

This study was designed with the hypothesis that stereotypical feminine gender identity would predict self-reported ratings of memory phenomenology. Indeed, this was found to be the case. No predictions were made about stereotypical masculine gender identity, and this construct also emerged as a predictor of memory phenomenology, although findings were less consistent across MEQ subscales and across narrative conditions. Finally, some effects emerged regarding age and narrative condition on isolated subscales of the MEQ, but these were minor compared with the effects of gender identity.

DISCUSSION

This study was conceptualized in an effort to better understand and substantiate the theoretical link between gender identity and autobiographical memory phenomenology. In doing so, we examined gender identity itself, as well as methodological factors that may underlie the lack of consistency reported in the literature regarding gender and autobiographical memory. Thus, using self-report measures, data were collected across two age groups and four events. Results point to a consistent effect of feminine gender identity across age groups and event types, lending important theoretical and methodological insight. After discussing this central finding, peripheral findings, including effects of masculine gender identity, age, and event type, are considered as well.

Feminine gender identity predicts memory phenomenology

As predicted, feminine gender identity, assessed with the PAQF, consistently predicted self-reported memory phenomenology. It should be noted that this finding was not confined to subscales that reflect stereotypically feminine aspects of recall, such as emotional intensity (Davis, 1999) and sharing (Fivush & Zaman, 2014), but emerged on 9 of the 10 MEQ subscales, including 6 of the 7 quality-focused and all three valence-focused subscales. Additionally, the relation of feminine gender identity to these elements of memory phenomenology was consistent across event types and age.

This finding supports a model that emphasizes the broader gendered nature of autobiographical remembering. Specifically, the relational orientation typified by women cross-culturally (Löckenhoff et al., 2014) is related to autobiographical memory phenomenology. We suggest that the more one endorses traits relating to this orientation, the more one is likely to engage in autobiographical reminiscing and value such interactions surrounding this practice. The relation between these constructs can be understood when placed in the context of sociocultural models of autobiographical memory development. Nelson and Fivush (2004) have shown that parents support children's reminiscing in early childhood, and the effects of maternal reminiscing style have been found to influence children's later memory skills (Reese, Haden, & Fivush, 1996), with evidence of this influence extending as far as adolescence (Reese, Jack, & White, 2010). Fivush and Zaman (2014) noted that parents reminisce in more elaborated and emotionally expressive ways with daughters than with sons; this practice may reflect expectations for stereotypically feminine orientations towards relational reminiscing among these families. Our findings extend beyond this framework by showing that the influence on adults' memory phenomenology depends more on the endorsement of female-typical characteristics than on the fact of one's categorical gender identification. In other words, it is not simply knowing culturally defined female-typical behavior, but the degree to which one defines oneself as female-typical, that predicts autobiographical memory phenomenology. Early childhood conversations are just the beginning of constructing an identity that emphasizes interrelatedness with others and that uses autobiographical reminiscing as a means of fostering those relationships (Bluck, Alea, Habermas, & Rubin, 2005). This identity leads to greater engagement in such reminiscing and heightens the phenomenological experience of those events by recalling events more often in conversation and by placing more value on and putting more effort into remembering.

Our findings further suggest that the inconsistency in past findings on gender in autobiographical memory may be both a methodological artifact and a developmental trajectory. Gender identity, and not gender, appears more important for phenomenological qualities of autobiographical memory, and gender identity shows predictable developmental changes. As expected theoretically, emerging adults, perhaps especially college students who are focusing on professional identity, endorsed gender-typical dimensions to a lesser extent than young adults, for whom family and parenting are commonly more salient. Thus, past inconsistencies in gender differences on numerous forms of self-report data (Grysman & Hudson, 2013) may be linked to samples that were not sufficiently differentiated on this aspect of feminine gender identity, especially because of the common practice of collecting data from college student participants. This explanation is supported by the effect size found of $\eta_p^2 = .22$, which is in stark contrast to the small gender effects commonly reported in autobiographical memory studies (Grysman, 2014). If gender effects reported in the literature are proxies for the traits and stereotypes underlying the effects, it is possible that a larger effect is being overshadowed by measuring categorical gender instead of gender identity, and further research is needed to examine this possibility. We emphasize that our focus here was on the phenomenological aspects of autobiographical memory. It is an intriguing question as to the extent that we might see similar effects on actual narratives of past experiences. Given the socialization arguments earlier, we might expect that gender and gender identity play somewhat different roles on narrative recall, which is a more implicit measure of gendered identity, as compared with phenomenological self-report, inasmuch as participants reporting memory narratives may be less self-reflective about gender typical responses and may be less aware of the variables of interest to researchers than those

completing self-report questionnaire measures; analyses of other aspects of this data set currently underway suggest that this is the case (refer to Grysman et al., under review for a full discussion)

Finally, the effect of feminine gender identity rises above event type and age as the most prominent factor predicting phenomenological autobiographical memory in a diverse, large sample, remaining consistent across the four events and 9 of 10 subscales of the MEQ. The various subscales of the MEQ measure a diverse array of phenomenological properties, including memory quality processes such as the episodic experiential component of recall (e.g., visual perspective and sensory detail) and the process of retrieval (accessibility and coherence), but also valence domains, such as the sense of distance between the current self and the memory and the degree to which it is shared with others. The consistency of the role of gender identity across these domains suggests a unity of the experience of recall for individuals with a highly relational orientation: events are reported as remembered in more detail, felt more vividly and simultaneously shared more and considered closer to the current self. Thus, the unity of self in time that is created via autobiographical recall is strengthened in conversation with others and is gendered to the degree that gender typical characteristics are incorporated into the sense of self.

The role of masculine gender identity

MEQ rating scores were also positively predicted by masculine gender identity, as measured by the PAQM, a measure of trait terms relating to autonomy or instrumentality. This relation was not anticipated and should be interpreted with caution. The results emphasize, first, that masculine and feminine gender identities should not be viewed as opposites, as long argued by Bem (1981) and Spence and Helmreich (1978), and thus, this finding does not contradict the findings of the PAQ-F. Of note, this effect was less consistent than the PAQF across the MEQ subscales and the various event types. In terms of event type, the most consistent relations were with the self-defining event. It is possible that higher scores on independence may correlate with higher self-esteem (Hooberman, 1979), and thus that people with higher self-esteem would better remember their own self-defining events as opposed to other events. In terms of dimensions, relations emerged somewhat consistently across event type on *sensory detail*, *visual perspective*, and *vividness* subscales, but not on the others. Thus, it should be noted that the MEQ subscales that were most commonly linked to PAQM were the ones emphasizing the sensory experience (sensory details and visual perspective), as opposed to details about temporal and emotional information, the ease (accessibility) and unity (coherence) of recall, or of the valence and self-related aspects of remembering expressed in the final three subscales.

Notably, Pohl, Bender, and Lachmann (2005) elicited a series of autobiographical memories and found that a measure of assertiveness predicted memory quality, but only among men and not among women, for whom a measure of empathy predicted memory quality. They argued that assertiveness reflects a social skill that is more commonly emphasized among men than women, and hence may be more relevant to men than women regarding autobiographical memory. The overlap between that finding and our own is intriguing, although our study finds the link between gender identity and memory phenomenology regardless of gender and employs different measures.

Finally, in contrast to our findings on the PAQF subscale, the findings on the PAQM were not theoretically motivated and did not emerge with the same consistency. They do, however, suggest that although feminine gender identity is the most prominent, other links between gender identity and autobiographical memory are possible and warrant attention in future studies.

Event type and age

Because of conflicting findings in the literature, examination of different event types was considered exploratory. Grysman and Hudson (2013) suggested that some event types may be less likely to elicit gender differences than others. This study found inconsistency by event type for masculine but not feminine gender identity. This might suggest that reminiscing as a female-typical behavior overshadows nuances of event type. If reminiscing is stereotyped as a female-typical behavior, individuals who subscribe to a female orientation may approach this task consistently regardless of prompt. For those who subscribe to a male-typical orientation, prompt may play a larger role on eliciting specific forms of phenomenological recall. A strong conclusion about the context created by different event types cannot be made. We further emphasize that unlike most of the research in the literature that relies on college student participants, we sampled from a larger age range, which very likely varies more in gender identity than average college students, as suggested by gender identity patterns in this sample. How this may affect relations among gender identity, event prompt, and phenomenological experience need to be further explicated.

LIMITATIONS

The data in this paper come from self-report measures both for gender identity and for autobiographical memory phenomenology, and we have argued elsewhere (Fivush & Grysman, in press; Grysman et al., under review) that self-report and narrative data vary substantially, especially with respect to gender identity. When relying on self-report, concerns regarding social desirability or impression management may be relevant (Bradburn, Rips, & Shevell, 1987; Edwards, 1957), especially for gender identity, which many may be motivated to self-report in line with or counter to a particular identity. The potential for social desirability to drive memory phenomenology ratings is considered minimal, especially regarding a self-selected episode, because remembering an event with less detail is not likely to be considered negative by most people, whereas a flashbulb memory may come with an implicit sense that the event should be remembered in vivid detail (Pezdek, 2003). Furthermore, the anonymity of online data collection limits concerns of social desirability. However, we argue further that because

our argument rests on the connection between memory and identifying as gender-typical, that effects of social desirability would simply reflect a desire to see oneself as more or less gender typical, supporting what is being measured in the scale and how we are interpreting it here.

Another limitation concerns the ethnic diversity of the sample. Although MTurk participants are more diverse than some college campuses, they still do not commonly reflect the ethnic diversity of the USA. Specifically, Berinsky, Huber, and Lenz (2012) reported that MTurk samples tend to include higher proportions of Asian users and lower proportions of Hispanic and African-American users than the general population. Especially considering the cross-cultural effects on patterns of gender differences across samples (Grysman & Hudson, 2013) ethnicity should be examined more closely in analyses of the complex interplay between gender identity and autobiographical memory. A descriptive analysis of ethnicity was attempted in this sample, but in a sample that was 72% Caucasian, groups of other ethnicities (especially once separated by gender) were not sufficiently large to enable meaningful comparisons. The same limitation applied to comparisons based on income and education, and although this sample is more diverse in terms of education than a college student sample, it is still characterized by nearly 90% of participants with at least some college schooling. The fact remains that most findings regarding gender and autobiographical memory are limited to predominantly White, middle class samples, and that closer analyses of the roles of class, race, and culture will deepen an understanding of the constructs of gender and gender identity as they relate to autobiographical memory.

SUMMARY AND CONCLUSIONS

Gender differences emerge sporadically in studies of autobiographical memory that use self-report measures, and we argue that this is due, in part, to a lack of theoretical focus on gender identity. A theoretical approach to understanding gender and autobiographical memory suggests that societal stereotypes reinforce a perception of reminiscing about the past as female-typical, and this association may be related to women's preferential endorsement of characteristics that define the self in relational and interconnected terms. The findings reported in this study emphasize the usefulness of measuring gender identity as a means of understanding gender differences in autobiographical memory as it relates to gender stereotypes and to self-definition regarding gender-typicality. Specifically, stereotypical feminine gender identity regarding interrelatedness consistently predicted memory phenomenology across gender, age groups, and event types. Importantly, we found little difference in gender-typicality between female and male emerging adults, the population most frequently studied in the autobiographical memory literature. That there are few gender-identity differences in this population, perhaps especially among college students of this age, suggests that one reason for inconsistent gender findings in the literature is the focus on this population, and gender as a categorical variable rather than on the identity underlying the differences. This further suggests that future studies of autobiographical memory need to study more diverse samples in order to obtain a more complete understanding of the gendered aspects of autobiographical memory.

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