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Media Impacts on Women's Fertility Desires: A Prolonged Exposure Experiment

Media exposure may have implications for family planning, a public health issue of key importance. Drawing on social comparison theory (SCT) and social identity theory (SIT), a prolonged exposure experiment examined whether media portrayals of women's social roles affect fertility desires with 166 American non-student, never married, childless women, 21-35 years old. After signup and baseline sessions, participants viewed magazine pages five days in a row. Stimuli presented women either in mother/homemaker roles, beauty ideal roles, or professional roles. Three days later, participants again indicated number of desired children and time planned until first birth. Exposure to mother/homemaker and beauty ideal portrayals increased the number of desired children across time. Exposure to the professional portrayal increased the time planned until first birth compared to the beauty ideal portrayal—this impact was partially mediated by a shift towards more progressive gender norms (per SIT) and assimilation (per SCT).

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Can media shape personal health and life decisions such as sexual behaviors, choice of romantic partner, and family planning? Many countries treat family planning as a public health issue of utmost importance (WHO, 2011); hence, it is the key concept under investigation in the present work. The current study examines whether prolonged media exposure (e.g., Knobloch-Westerwick & Crane, 2012) influences preferences for how many children young women desire and when they want to have their first child. Specifically, we look at fertility desires among American women as they are influenced by portrayals of women in the mother/homemaker role, beauty ideal role, or professional role (Pingree, Hawkins, Butler, & Paisley, 1976). To disentangle relevant impacts, the investigation draws on social comparison theory (Festinger, 1954) and social identity theory (Tajfel, 1978). A prolonged magazine exposure experiment with delayed impact measures serves to test hypotheses.

Fertility Desires and Media Impacts

Widespread use of contraception in America (Mosher & Jones, 2010) has turned reproductive behavior into a matter of personal choice (Goldin & Katz, 2002). While some countries (e.g., India and China) aim to lower birth rates, other countries (e.g., Germany) have taken measures to encourage parenthood ("Baby Blues," 2012). Numerous studies evaluated family planning *interventions* (Mwaikambo, Speizer, Schurmann, Morgan, & Fikree, 2011). In contrast, the present investigation examines whether exposure to *non-intervention* media messages influences family planning preferences among women, as these messages could affect what women strive for in life regarding childbearing and beyond, which in turn impacts society and population development at large. It utilizes a prolonged exposure research design to capture at least a small section of cumulative effects of ongoing media exposure.

Because media portray women in different social roles, which likely affect women differently, our study utilizes messages on women in a mother/homemaker role, on female beauty ideals, and on female professionals. These three types are derived from general, culturally relevant social roles (Eagly, Wood, & Diekmann, 2000). Cultural norms are now thought to stress concurrently for women both traditional feminine ‘qualities’ of beauty and motherly dedication as well as conventional masculine role aspects of occupational attainments (Hart & Kenny, 1997). Nonetheless, media predominantly feature women in beauty and motherhood roles; displays of women in professional roles are much less common (Covert & Dixon, 2008; Smith & Granados, 2009).

Social Comparison Framework

Festinger’s (1954) social comparison theory (SCT) proposes that individuals compare their opinions and abilities with those of other individuals to evaluate themselves. Extending this to women’s social roles, female magazine readers may evaluate their own views through comparing them with values reflected in magazine portrayals of women. Individuals may either contrast to or assimilate with social comparison targets (e.g., Corcoran, Crusius, & Mussweiler, 2011). For an example of a contrasting social comparison, a woman with a strong career focus may view a homemaker’s portrayal, perceive herself as different from the portrayed woman, and thus not aspire to adopt her life path. On the other hand, the same person could feel connected with a successful female professional shown in an ad, as she hopes to achieve similar attainments in the future, and thus engage in assimilating social comparison. Whether contrasting or assimilating occurs, depends, for instance, on self-enhancement motivation such that individuals may seek to assimilate with high-status others and contrast with low-status others. Applying social comparison theory to media effect processes (e.g., Knobloch-Westerwick & Hastall, 2006;

Ward, 2003) implies that recipients perceive persons portrayed as *individuals*, as opposed to social group members or prototypes thereof. The next section offers an angle that lends itself to the view that recipients perceive these portrayals as representations of social groups.

Social Identity Theory

Given the great number of individuals portrayed in the media and magazines specifically, recipients may perceive them as group portrayals and engage in inter/intra group comparisons rather than inter-individual social comparisons. Therefore, social identity theory (SIT; Tajfel, 1978; 1979) applies to how women may derive perceptions of social norms from viewing these portrayals. SIT largely built on Festinger's (1954) SCT's notion of comparing socially, but instead emphasized inter-group processes. If an individual's personal, individual identity is more salient, he or she will engage in interpersonal social comparisons per SCT; if an individual's social identity as a group member is more salient, he or she will engage in inter-group comparisons per SIT. Hence, if social identity is salient, then an individual will assimilate to a perceived in-group prototype (which represents in-group norms). As a result, salient social identities shape behavior through group norms. Therefore, a given behavior is more likely performed if it aligns with the norms of a relevant group (Terry, Hogg, & White, 1999). For example, if a young adult female views mothers as a current/future in-group, she will likely reinforce the salience of the norms of being a good mother/wife upon viewing an ad featuring a mother. These considerations imply that, based on SIT, women's gender role norms may shift as a result of media exposure, which in turn should influence their behavior intentions.

Current Study

The present study applies these theoretical frameworks to examine how media exposure may affect fertility desires. Magazine pages serve as particular stimuli to illustrate these media

effects, as prior work has established that magazine exposure is connected to many related attitudes among women: sexual attitudes (Kim & Ward, 2004, 2012) and preferences (Taylor, 2008), sexual health knowledge, efficacy and behaviors (Walsh & Ward, 2010), attitudes towards women (MacKay & Covell, 1997), as well as women's leadership self-perceptions and aspirations (Simon & Hoyt, 2013). Building off SCT and SIT, we anticipate that exposure to portrayals of women in line with traditional gender norms of being beautiful or being a devoted mother will increase fertility desires, as being a mother is a traditional norm for women. The importance of motherhood is known to be correlated with fertility intentions among American women (McQuillan, Greil, Shreffler, & Bedrous, 2015) and should be rendered more salient through exposure to related portrayals (per H1). Further, women's physical attractiveness is known to be associated with long-term relationship satisfaction, having more long-term partners, and number of children (Buss, 1994; Jokela, 2009; Meltzer, McNulty, Jackson, & Karney, 2014; Rhodes, Simmons, & Peters, 2005), and women's beauty magazines often discuss finding a romantic partner and maintaining a relationship as goals which require the strategies provided in their content (Gill, 2009). Thus, exposure to female beauty ideals likely increases fertility desires (per H2). Further, work focus is thought to decrease fertility intentions (Hakim, 2003), which suggests that viewing women in professional roles reduces the desire for children. Hence, the following hypotheses on fertility desires, pertaining to both the number of desired children and timing of first birth, are put forth:

H1: Among unmarried, childless women, prolonged exposure to positive media portrayals of women in the role of mother/homemaker (a) increases the desire for children and (b) makes them want to have their first child sooner compared to women exposed to positive media portrayals of women in the role of professional.

H2: Among unmarried, childless women, prolonged exposure to positive media portrayals of female physical beauty ideals (a) increases the desire for children and (b) makes them want to have their first child sooner compared to women exposed to positive media portrayals of women in the role of professional.

H3: Among unmarried, childless women, prolonged exposure to positive media portrayals of women in the role of professional decreases the desire for children. Additionally, it (in line with H1b) makes them want to have their first child later compared to women exposed to positive mother/homemaker role portrayals and (in line with H2b) compared to women exposed to positive beauty ideal portrayals.

SCT leads to the same hypotheses listed above as SIT. Yet its propositions are based on the assumption that female readers of women's magazines will perceive the portrayed women as *individuals* that are relevant social comparison targets and will assimilate (per SCT), instead of viewing the portrayals as relevant in-group *prototypes* that may lead to shifts in perceived group norms (per SIT). In an effort to establish the mechanism through which the suggested impacts occur, the present investigation will examine mediating factors. If social identity impacts on group norms account for exposure impacts on fertility desires, then the influence should be mediated by a shift in gender role norms, whereas SCT proposes that media portrayals largely foster adoption of portrayed behaviors of media characters through assimilation. Therefore, the two hypotheses below will be tested. Further, impacts on fertility desires may depend on the *type* of portrayal, such that the more recipients engage in assimilation, traditional gender portrayals (beauty ideal or mother/homemaker) foster fertility desires even more, and counter-stereotypical (professional) portrayals reduce fertility desires even more; a research question¹ will examine this pattern.

H4: The impacts suggested in H1-3 occur through shifts in gender role norms.

H5: The impacts suggested in H1-3 occur through assimilation.

RQ: Do exposure impacts on fertility desire suggested in H1 and H2 depend on the type of portrayal?

Method

Overview

Adult women ($N = 166$) participated in an online prolonged exposure experiment. Respondents completed (session 1) a signup for a study allegedly concerned with magazine journalism and advertising, with a question about their desire for children embedded in other demographic questions, then (session 2) a baseline session on a Friday, (sessions 3-7) five sessions with exposure to media messages on the following weekdays, and (session 8) a post-test session on the following Monday. During five exposure sessions, three experimental groups viewed magazine pages featuring either female *mother/homemaker* portrayals, female *beauty ideal* portrayals, or female *professional* portrayals in work contexts, with evaluation questions interspersed to enforce the cover story.

Respondents

A total of 166 White, never married, childless women that were not enrolled in undergraduate courses completed all sessions and were considered in analyses. The experimental groups were roughly of the same size upon study completion—59 for beauty, 54 for homemaker, and 53 for professional. Attrition during the study week was equivalent in the three groups (13, 14, and 15%, respectively). The groups also did not differ significantly in age (Range = 21-35, $M = 25.55$, $SD = 3.04$), relationship status (35% single, 5% dating, 66% steady relationship), educational attainment (7% high-school/associate's degree, 63% bachelor's degree, 25%

masters' degree, 5% Ph.D.), or work status (55% worked full-time, 11% full-time and part-time, 21% part-time, 13% were currently not working). (Appendix 1 specifies experimental groups assignment; considerations on potentially confounding variables Appendix 2.)

Procedure

Recruitment. The recruitment stated that adult women, 21 to 35 years old and not enrolled in college courses (ethnicity, parental, or marital status were not referenced), were sought to participate in an online study on “magazine advertising and magazine journalism,” with sessions spread out across 10 days. Upon completion, participants were promised a \$50 incentive, which was paid from the first author’s university research budget.

Recruitment was initiated through emails to students enrolled at a large Midwestern university, who forwarded it to adult women, and through postings on popular social networking sites and online classified ads (e.g., Facebook and Craigslist). Roughly half of the participants were recruited through online classified ads (49.8%); another quarter was recruited through email (25.3%); another through ‘word of mouth’ or ‘other’ (24.9%). Although the sample is not representative, experimental groups were equivalent; hence, differences in groups’ responses reflect the media exposure effects of interest.

Sign-up. After giving consent, participants indicated their biological sex, age, ethnicity, relationship status, desire for children, educational achievement, and maternal status. Height and weight were ascertained to calculate body mass index (BMI).

Baseline session. On a Friday, participants answered media use questions and completed various psychological questionnaires (see Appendix 1) that were utilized to create equivalent experimental groups. At the end of the session, participants were informed they would receive the link for the next session three days later.

Media exposure sessions. Five daily media exposure sessions began the following Monday. Each day, participants viewed stimuli magazine pages (described in Appendices 3-5). To support the cover story of a study on magazine journalism and advertising, distractor questions were embedded.² At the end of each daily session, manipulation check questions were presented (see Appendix 4).

Post-test session. The post-test session, three days after the last media exposure session, mainly presented the same psychological measures as the baseline session. Importantly, questions on fertility desires were included.

Measures

Assimilation. At the end of each media exposure session, participants responded to two questions about their responses to the individuals featured on the magazine pages on a 7-point scale, with ‘not at all’ and ‘extremely’ as anchors. These questions captured two key elements of assimilation: perceived similarity to and wanting to become like the comparison target (Mussweiler, Rüter, & Epstude, 2004). Participants provided ratings for the following statements: “The persons shown on the magazine pages are similar to me” and “I would like to be like the persons shown on the magazine pages.” With two questions for each of the five media exposure sessions, ten measures were obtained. Given their high correlation ($r = .47, p < .001$), they were collapsed into an average score to create a variable for *assimilation* ($M = 3.26, SD = 1.12$).

Gender role norm change. Twelve items adopted from Davis and Greenstein (2009) captured attitudes toward gender roles in the baseline session and the post-test session (for example, “It is more important for a wife to help her husband’s career than to have one herself” and “A wife’s most important task is caring for her children”). Five items from an individualism-

collectivism scale (Triandis, et al., 1988; for example, “To be superior one must stand alone”) were randomly interspersed as distracters. The items for gender role norms were subjected to an item analysis after reversing two of the items. Given satisfactory inter-item-consistency (Cronbach’s $\alpha = .84$ both at baseline and post-test), the items were collapsed into mean scores ($M = 1.72$, $SD = .51$, at baseline; $M = 1.67$, $SD = .55$, at post-test), with lower scores indicating greater gender equality support. Change across time in gender role norms between baseline and post-test was captured through a difference score (post-test score minus baseline score; $M = -0.04$, $SD = .31$), such that a positive difference score meant a shift towards more traditional gender role norms and a negative difference score indicated a shift toward progressive norms.

Fertility desires. In the sign-up, participants indicated whether or not they already had (biological or adopted) children, if they desired (additional) children, and if they were currently pregnant or trying to become pregnant. All women who already had children or were pregnant were not invited to continue with the study. Within the sample that completed the study, the average number for desired children was $M = 1.81$ ($SD = 1.34$), including the 26% that did not want any children. The post-test questionnaire asked again “Do you want children? If so, how many?” The average number of desired children was $M = 1.88$ ($SD = 1.34$), including the 25% who chose “No/0” as response. Based on these two questions from the baseline and the post session, the *change in number of desired children* was computed. Lastly, the question “If you want to have children, how soon would you like to have your first child?” was presented. Among the women who wanted children, the average number of years was $M = 4.13$ ($SD = 2.37$). This measure served to capture *desired timing of first childbirth*.

Potentially confounding variables. A number of variables were controlled for or held constant, as explained in Appendix 2.

Results

Prolonged Exposure Impacts on Number of Desired Children

Addressing H1a, H2a, and H3, a mixed-model ANOVA utilized *number of desired children* at signup and in the post-session as repeated measures. Experimental condition (exposure to homemaker vs. beauty vs. professional portrayals) was incorporated as a between-group factor. The ANOVA controlled for *exposure length*, because exposure effects could depend on actual time spent with stimuli, and *work hours* as covariates.³

The only significant effect in this analysis was the interaction between the within-group factor and experimental condition, $F(2, 159) = 3.90, p = .022, \eta^2_{\text{partial}} = .047$, which is illustrated through difference scores between baseline and posttest session in Figure 1. The original group means for *number of desired children* at signup were $M = 2.67 (SD = 1.24)$ for the *mother/homemaker* portrayals group, $M = 2.47 (SD = 1.42)$ for the *beauty ideal* portrayals group, and $M = 2.70 (SD = 1.25)$ for female *professional* portrayals; the group means at the post-session were $M = 3.02 (SD = 1.24)$, $M = 2.80 (SD = 1.36)$, and $M = 2.70 (SD = 1.20)$, respectively. Subsequent tests showed that this interaction resulted from significant increases in number of desired children in both the beauty portrayals condition, $F(1, 53) = 8.37, p = .006, \eta^2_{\text{partial}} = .136$, and the homemaker portrayal condition, $F(1, 57) = 9.15, p = .004, \eta^2_{\text{partial}} = .139$, while the professional portrayal condition did not produce a change ($p = 1.00$). Thus, H1a and H2a were supported because the number of desired children increased in the experimental groups that saw portrayals of women in the roles of mother/homemaker (+.35 on average, see Figure 1) or beauty ideal (+.33 on average, see Figure 1), per comparison between signup and post-session, whereas no change occurred in the group who viewed professional portrayals. However, H3 was not supported, as exposure to professional portrayals did not reduce the number of desired children.

Prolonged Exposure Impacts on Desired Timing of First Childbirth

Regarding H1b and H2b, an ANOVA examined whether prolonged media exposure affected desired *timing of first childbirth*. This analysis pertained only to women who wanted to have at least one child. Experimental group (exposure to homemaker vs. beauty vs. professional) again served as between-group factor. As controls, *exposure length*, *work hours*, and *number of desired children* at baseline were included as covariates, but only *number of children* desired had a significant influence because women who desired more children intended to have their first child earlier, $F(1, 127) = 11.42, p = .001, \eta^2_{\text{partial}} = .082$.⁴

Experimental condition produced a significant effect, $F(2, 127) = 3.32, p = .028, \eta^2_{\text{partial}} = .055$, illustrated in Figure 1.⁵ Subsequent tests showed that women in the professional portrayals group wanted to have their first child significantly later ($M = 5.42, SD = 1.93$) than women in the beauty portrayals group ($M = 4.43, SD = 2.17$). Thus, H2b was supported. Women in the homemaker portrayal group fell in between ($M = 4.76, SD = 2.25$) and did not differ significantly from the other two groups. Thus, H1b was not supported.

Mediation Analysis of Prolonged Exposure Impact Processes

H4 postulated that the impacts fertility desires occurred through shifts in gender role norms, whereas H5 suggested these impacts to occur through assimilation.⁶

Two mediation analyses with bootstrapping (Preacher & Hayes, 2008) examined these propositions by using *change in number of desired children* as the dependent variable. The first mediation analysis used a dummy variable—exposure to homemaker portrayals = 0, exposure to professional portrayals = 1—to examine the impacts of these two experimental treatments as causal variable. The second mediation analysis also used a dummy variable, now to compare the experimental group with exposure to beauty ideal portrayals (coded as 0) with the group that was

exposed to professional portrayals (coded as 1). For both analyses, the included mediators were *assimilation* and *change in gender role norms* (higher scores indicated a shift toward more traditional norms, lower scores indicated more progressive norms). Exposure length and work hours again served as control variables. However, results from these two analyses merely reiterated the effect demonstrated by the analysis of variance (see Figure 1), but did not show underlying mechanisms, as indirect effects were not significant.

Another set of two mediation analyses with bootstrapping (Preacher & Hayes, 2008) tested these propositions by using *desired timing of first childbirth* as the dependent variable. Otherwise, the same model specifications were applied as in the set of two mediation analyses reported above. However, only women who wanted at least one child were included in the analysis because women who did not wish to have children did not have a score for *desired timing of first childbirth*.

The first of these two mediation analyses focused on the experimental groups with exposure to homemaker portrayals (coded as 0) and to professional portrayals (coded as 1). It showed again that exposure to the professional portrayal fostered greater *assimilation* (coefficient = .48, $p = .036$). *Change in gender role norms* influenced *desired timing of first childbirth* significantly, such that a shift toward more progressive norms led to longer time span before first planned birth (coefficient = -2.11, $p < .001$). No total or direct effect of exposure to homemaker versus professional portrayal affected *desired timing of first childbirth*, as before in the analysis of variance (see Figure 1). No indirect effects were significant.

Lastly, a mediation analysis examined the experimental groups with exposure to beauty ideal portrayals (coded as 0) and to professional portrayals (coded as 1). It showed again that exposure to the professional portrayal fostered greater *assimilation* (coefficient = .66, $p = .016$)

while the impact of exposure on gender role norms fell short of significance ($p = .098$). Both mediators showed a significant effect on desired *timing of first childbirth* as dependent variable: Greater *assimilation* (coefficient = .42, $p = .048$) and stronger shifts toward more progressive *gender role norms* (coefficient = -2.22, $p = .013$) fostered later planned birth. The total effect (coefficient = 1.09, $p = .046$) of exposure to beauty versus professional portrayal on *desired timing of first childbirth* was significant, as before in the analysis of variance (see Figure 1). The direct effect, however, was above the significance cut-off (coefficient = 1.05, $p = .053$); thus the analysis demonstrated mediation. Importantly, the analysis revealed, with 95% confidence, that the indirect effect of portrayal condition (beauty versus professional) on *desired timing of first child* through *assimilation* was significant, with a point estimate of .278 and a 95% BCa (bias-corrected and accelerated) bootstrap confidence interval of .037 to .786. Thus H5 was supported with regard to *desired timing of first childbirth*. When comparing the beauty portrayals group with the career portrayals group. Moreover, the analysis yielded, with 95% confidence, that the indirect effect of portrayal condition (beauty versus professional) on *desired timing of first child* through *gender role norm change* was significant, with a point estimate of -.25 and a 95% BCa (bias-corrected and accelerated) bootstrap confidence interval of -.855 to -.011. This finding supports H4 for *desired timing of first childbirth* as well. The results of this mediation analysis are illustrated in Figure 2.

Moderation Analysis of Assimilation Impacts

To examine the RQ, four moderation analyses were run with the MODPROBE SPSS macro (Hayes & Matthes, 2009). Assimilation served as predictor, while the type of exposure (again with dummy variables, representing homemaker vs. beauty vs. professional portrayals) served as moderator; *desired timing of first childbirth* and *desired timing of first childbirth* were

the dependent variables.

The analysis with homemaker vs. professional portrayals ($N = 89$) as moderator and *desired timing of first childbirth* as dependent variable yielded a moderation that approached significance ($p = .059$, R^2 change = .065, $b = .80$, $SE = .418$, $t = 1.91$), as greater assimilation during exposure to mother/homemaker portrayals was linked to wanting the first child sooner ($b = -.31$, $SE = .28$, $t = -1.13$, $p = .264$) in contrast to greater assimilation during exposure to professional portrayals leading to a desire for motherhood later in life ($b = .49$, $SE = .316$, $t = 1.56$, $p = .123$). Hence, the difference suggested in H1b was fueled by assimilation in line with the RQ. Moderation in the other three analyses did not approach significance. These findings were stable when including above-mentioned control variables.

Discussion

Our prolonged exposure experiment investigated whether exposure to media portrayals of women in different social roles affects fertility desires among unmarried, childless American women. Importantly, fertility desires were measured three days after the last media exposure, suggesting that if any changes occurred, they reflect lingering media impact.

Exposure to mother/homemaker portrayals produced a significant increase in number of desired children (supporting H1a). Further, exposure to beauty ideal portrayals had a similar effect of an increase in number of desired children (supporting H2a). Participants in the condition with professional women portrayals showed no change in number of desired children (no support for H3). Yet, they desired their first child later than women in the condition with beauty ideal exposure (supporting H2b), although no significant impact emerged for timing of first child among women in the mother/homemaker portrayal condition (H1b not supported). This lack of an impact per H3 could result from a floor effect, as number of desired children was

low to begin with in the sample (1.8 compared to 2.6 on average in the U.S. population; Gallup, 2013) and thus unlikely to decrease much.

Mediation analyses examined processes that produced the difference in desired timing of first childbirth between women who had viewed beauty ideal portrayals and those who had viewed professional portrayals--shifts toward more progressive gender role norms (H4 supported) and assimilation (H5 supported) emerged as mediators. Hence, both processes, intergroup processes (per SIT) and interpersonal processes (per SCT), acted as mediators of media exposure impacts on fertility planning. Specifically, greater levels of assimilation and stronger shifts toward more progressive gender role norms fostered planning a later date for the birth of first child. For the significant impact on number of desired children, neither gender role norm changes nor assimilation mediated this effect. Per examination of the RQ, the assimilation impact on desired time of first child tended to depend on portrayal type, as greater assimilation to homemakers versus professionals had opposite effects (desiring sooner vs. later childbirth).

Given that fertility desires are often thought to be rather stable and only adjusted in response to key life events (Gray, Evans, & Reimondos, 2011), the observed media effects on this important personal health outcome are surprising. Because post-exposure fertility desires were assessed three days after the last media exposure and are not obviously connected to the media messages, we believe it is highly unlikely that social desirability produced the demonstrated effects. Yet, when the processes at work are considered, the effects are plausible and fit with recent work on fertility desires by McQuillan et al. (2015) which shows that more traditional gender attitudes and perceived social norms are linked to number of desired children (in addition to characteristics such as age, relationship status, and work status). McQuillan et al. (2015) suggested that the centrality of mother as a social role for a woman's identity strongly

shapes her fertility desires. This view implies that, in the present study, media effects resulted from gender role portrayals through impacts on gender norms and assimilation, resulting in the observed effects on fertility desires.

An important limitation of the present work is that the sample consisted of White women and almost entirely of women with at least a bachelor's degree. White women and women with college education have less children, remain voluntarily childless more frequently, and also expect to have less children (Martinez, Daniels, & Chandra, 2012). Possibly, other population segments process women's media portrayals differently, although assimilation (perceived similarity to and wanting to become like comparison target; Mussweiler et al., 2004) will again be important. Thus, potentially, the present study examined a socio-demographic group of women with particularly low likelihood of being affected in their fertility desires by media exposure. However, future research is needed to find out how other population segments respond to women's role portrayals in the media with regard to family planning preferences.

Our investigation demonstrated media impacts on fertility desires evident even three days after the last media exposure session. Thus, these impacts are not short-lived and linger on. Given that popular media are saturated with beauty ideal and mother/homemaker portrayals, it may be surprising that such stimuli can instigate any measurable impacts still. As it stands, such imagery plays a role in how women envision their future with regard to having children and fosters fertility desires. The question of whether increases or decreases in fertility desire are fortunate or unfortunate is a complex matter regarding ethics and economics, along with implications for health, hardship and happiness. Answering this question is beyond the scope of this empirical investigation. However, as it stands, the media messages women receive do influence fertility desires, and as such, have the ability to impact a nation's birthrate.

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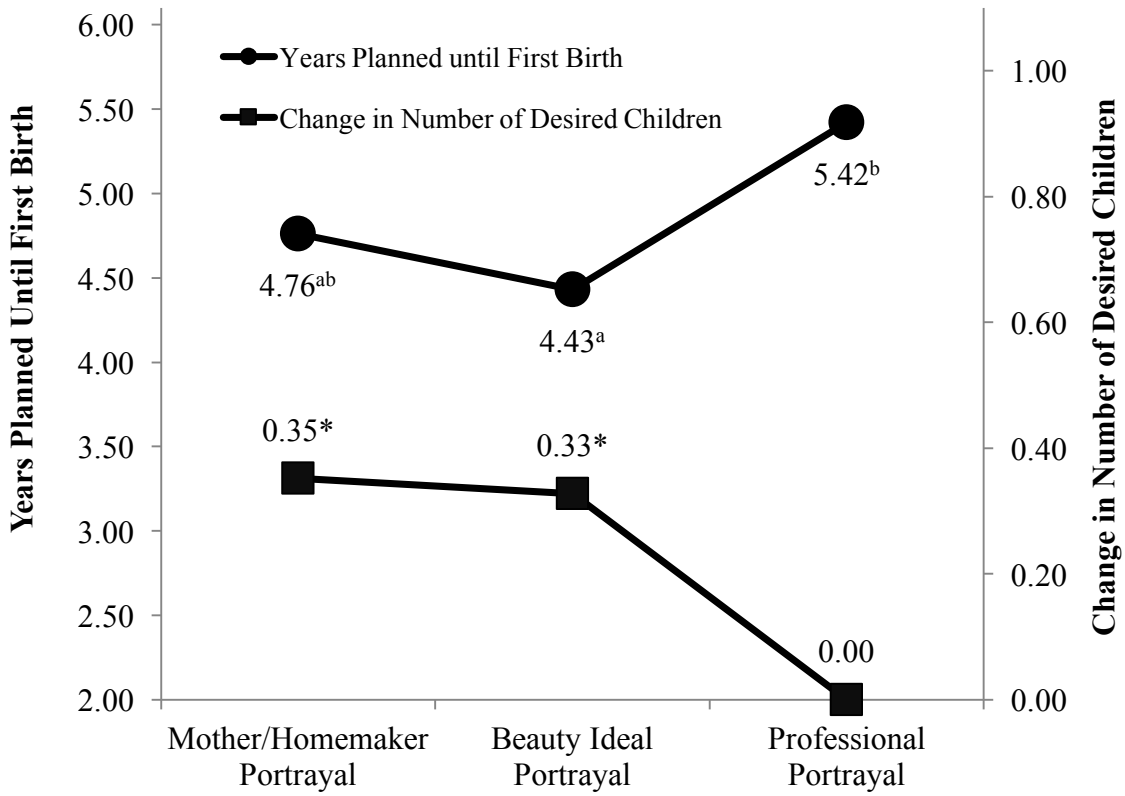
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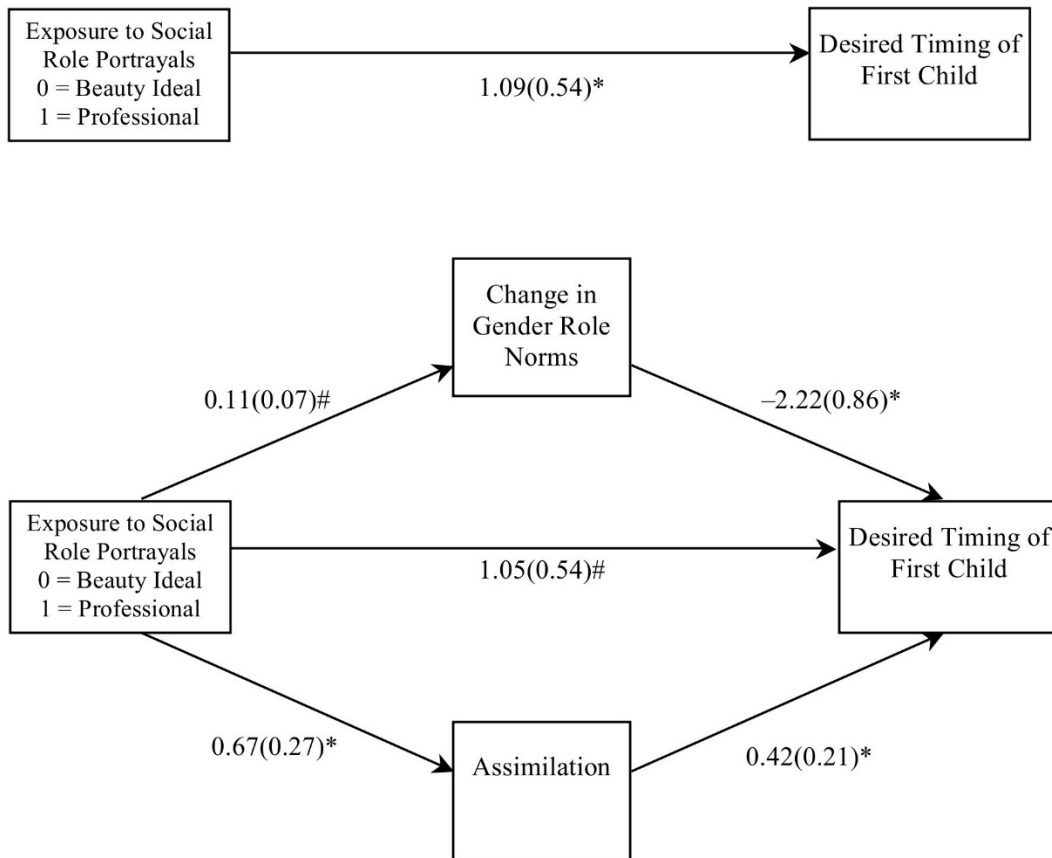
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Figure 1. Effect of media exposure condition on desire for children.



Note. Means with different superscripts denote a significant difference between experimental groups, $p < .05$. Means with an asterisk indicate a significant change between sign-up session and post session, $p < .05$.

Figure 2. Mediation of prolonged exposure impact processes on desired timing of first child.



Exposure to Social Role Portrayals → Change in Gender Role Norms → Desired Timing of First Child
 -0.23(0.19), 95% CI [-0.86, -0.01]

Exposure to Social Role Portrayals → Assimilation → Desired Timing of First Child
 0.29(0.19), 95% CI [0.04, 0.79]

Total Indirect Effect
 0.06(0.27), 95% CI [-0.57, 0.54]

Note. Numbers denote coefficients, with standard error in parentheses. Coefficients with asterisk are significant at $p < .05$; coefficients with number sign are significant at $p < .10$.

Appendix 1: Recipient Characteristics

The sample at sign-up comprised 589 individuals, which were then selectively invited (based on socio-demographics) for the baseline session. A hierarchical cluster analysis with various recipient characteristics (see below), using the Ward method and squared Euclidian distances, served to compile the experimental groups, so that each resulting cluster was represented in each group in proportion to its share in the total sample. This approach served to ensure that the experimental groups were equivalent regarding baseline measures and combinations thereof.

The following measures from the baseline session served to create equivalent experimental groups. Self-esteem (Heatherton & Polivy, 1991) averaged at $M = 3.57$ ($SD = .57$) on a 5-point scale (Cronbach's alpha = .90). Social comparison readiness (Gibbons & Buunk, 1999) averaged at $M = 4.80$ ($SD = .93$) on a 7-point scale (Cronbach's alpha = .83). Thirteen items on gender role attitudes (from Davis & Greenstein, 2009) were presented with a 5-point scale from 'strongly disagree' to 'strongly agree' (Cronbach's alpha = .81; $M = 1.72$, $SD = .51$), with six items on individualism-collectivism (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988) interspersed as distractors. In addition to these psychometric variables, the experimental groups also did not differ in age, work hours, desire for children, relationship status, education level, or BMI measured in the signup session or their habitual magazine use.

Appendix 2: Potentially Confounding Variables

A number of factors that may affect the hypothesized impacts were addressed as follows in the research design:

(a) Empirical research shows that marital status influences family planning (Hayford & Guzzo, 2010) such that more planning occurs among married individuals. Hence, married women should be less affected by media exposure because their desire for children likely reflects their husband's preferences as well (Thomson, 1997). Thus, this investigation focuses on women who had never been married and did not have children yet. Further, relationship status (single vs. in a relationship) was controlled for statistically.

(b) Another factor known to affect fertility preferences is women's work status (Shreffler & Johnson, 2013), which was controlled for statistically.

(c) Furthermore, SCT suggests that recipients selectively attend to media characters that they perceive as similar to themselves (Festinger, 1954). Hence, the present study utilized a design in which participants viewed same-sex (female), same-race (White) media characters. Given the extent of stimuli and incentive costs, it was necessary to focus on one racial group.

(d) An additional aspect of the processing of media messages is the extent of exposure (e.g., Holstrom, 2004), which was logged in seconds by the online survey software and statistically controlled for. For each participant, the average page viewing time across all stimuli was computed ($M = 31.20$, $SD = 18.46$) to obtain a condensed *exposure length* variable (14 outliers with exposure times over 600 seconds for a page were defined as missing value).

(e) Level of education was also controlled for, as it is known to affect fertility desires (e.g., Martinez et al., 2012).

Appendix 3: Description of Stimuli

In each of the media exposure sessions, participants viewed eight manipulated magazine articles and eight manipulated magazine advertisements. All manipulated stimuli presented women in a positive light; none featured women with negative expression. Articles and ads alternated; two distractor pages that showed no individuals were interspersed. The same distractor pages were used in all three conditions. Stimuli pages were adopted from an earlier study with college women (Knobloch-Westerwick et al., 2014) and had been selected such that the experimental groups viewed magazine pages featuring either female *mother/homemaker* portrayals, female *beauty ideal* portrayals, or female *professional* portrayals. Appendix 4 shows stimuli page examples. The *beauty ideal* condition used pages from *Shape*, *Vogue*, *Allure*, and *Self* that featured advice and information on cosmetics, weight loss/body shaping, and style/clothing. For the *professional* condition, pages from magazines such as *Fast Company*, *Newsweek*, and *Business Week* were compiled; they featured interviews and reports, showing women in prestigious occupational positions, about financial advice, career guidance, and personal work success story. The *mother/homemaker* condition presented pages from *Health*, *Parenting*, *Working Mother*, *Parents*, *Better Homes and Gardens*, *Ladies' Home Journal* and *Family Circle* that displayed women together with a variety of information and advice--ranging from pregnancy and breastfeeding guidance to parenting tips, as well as home beautification ideas and input on managing a family household.

Each experimental condition featured 90 pages compiled from contemporary magazines. To avoid sequence effects, the sequence of pages was reversed for half of the participants in each condition across all five sessions. A manipulation check, separate from the main experiment, demonstrated that the magazine pages represented the three different role portrayals as desired (see Appendix 5).

Appendix 5: Stimuli Manipulation Checks

To establish that participants’ perceptions of the stimuli aligned with the targeted portrayals, a post-hoc test was conducted. About 13 months after the main data collection, a random sub-sample of participants from each of the three experimental groups were asked to participate in an online study examining magazine enjoyment. Within the online study, participants then viewed and rated, in random order, a random 10 percent of the articles and a random 10 percent of the ads from each of the three experimental conditions. Importantly, the online procedure (set up in Qualtrics, an online survey tool) was prepared such that it pulled from the entire stimuli pool of 240 magazine pages with mother/homemaker, beauty ideal, and professional portrayals in random fashion. In total, participants viewed and rated 24 magazine pages from the original experiment, only 8 of which they would have seen when previously participating—with four ads and four articles from each of the stimuli groups.

Twenty-three participants rated each page on a 7-point scale ranging from “not at all” to “extremely,” for three statements. The statements included “The woman shown on the magazine page is beautiful,” “The woman shown on the magazine page is influential,” and “The woman shown on the magazine page values family life.” Results of the stimuli test are reported below and attest to stimuli differentiation on all three dimensions as desired for the experimental design.

	Mother/ Homemaker Portrayals	Professional Portrayals	Beauty Ideal Portrayals
Ratings for ‘beautiful’	4.82 ^a [0.94]	4.52 ^a [0.87]	5.30 ^b [0.83]
Ratings for ‘influential’	3.60 ^a [1.05]	4.90 ^b [0.82]	2.94 ^a [0.82]
Ratings for ‘values family life’	5.52 ^a [1.13]	3.11 ^b [0.96]	2.06 ^c [0.58]

Note. Means in a row with different superscripts differ at $p < .05$ in a multiple comparisons test with Sidak correction. Standard deviations in brackets.

Notes

- ¹ We would like to note that this RQ is based on a suggestion from an anonymous reviewer and wish to thank the reviewer.
- ² The distracter questions were presented with the following prompts: This article is interesting/This article is informative/The person in this article is likeable,” after each ad page, “This ad is effective/This ad is informative/The person in this ad is likeable” on a 7-point scale from ‘not at all’ to ‘extremely.’
- ³ Upon reviewer request, the ANOVA model was extended to include education level and relationship status (single vs. in a relationship but not married) as additional control variables. The same results emerged, as the sample was relatively homogenous in terms of these variables.
- ⁴ Upon reviewer request, the ANOVA model was extended to include education level and relationship status (single vs. in a relationship but not married) as additional control variables. The same results emerged, as the sample was relatively homogenous in terms of these variables.
- ⁵ Upon reviewer request, this analysis was re-run with additional control variables – age, BMI, and relationship status – and yielded the same significant impact of experimental condition.
- ⁶ Additionally, per reviewer inquiry, a possible moderation effect of ‘beauty vs. career portrayals’ on how assimilation affected desired timing of birth of first child was examined. No significant moderation emerged. It appears that only career portrayals influenced assimilation, which in turn affected desired timing of birth of first child.