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Does Parenthood Change Implicit Gender-Role Stereotypes and Behaviors?

This study examined whether parenthood changes gender-role behavior and implicit gender-role stereotypes as assessed with an Implicit Association Test in Dutch parents. In a cross-sectional sample, parents were found to have more traditional gender-role stereotypes than nonparents with a wish to have a child and nonparents without the wish to have a child. This suggests that gender-role stereotypes increase after the transition into parenthood. In a longitudinal sample, parents were followed for 4 years after the first birthday of their youngest child. The authors found that implicit gender-role stereotypes and behavior became increasingly traditional over time in most parents, except for the following two groups: (a) Fathers with highly traditional gender-role stereotypes did not show change over time and (b) older, highly educated mothers who worked relatively many hours outside the home and who had an egalitarian task division at home, remained egalitarian in their gender-role stereotypes over time.

Becoming a parent is a life-changing moment in which the gender-role behavior of men and women appears to become more traditional. For example, after the arrival of a baby, mothers are more likely to decrease work hours outside the home (Paull, 2008) and increase the time they spend on housework and child care (Yavorsky, Kamp Dush, Schoppe-Sullivan, 2015), whereas fathers' work hours and income tend to remain stable or even increase (Kaufman & Uhlenberg, 2000). Because more traditional gender roles negatively impact career success in women (Mayrhofer, Meyer, Schiffinger, & Schmidt, 2008) and promote gender inequality and traditional gender stereotypes in children (Turner & Gervai, 1995), it is important to study processes underlying this change. In the current investigation, we examined whether parenthood experiences lead to more traditional implicit gender-role stereotypes in Dutch men and women and whether these changes are associated with changes in gender-role behavior (hours in paid work, perceived task division). Using a cross-sectional design, we first tested whether implicit gender-role stereotypes and gender-role behavior are more traditional among parents than nonparents. Using a longitudinal design, we then tested whether implicit gender-role stereotypes and gender-role behavior of parents

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with young children become increasingly more traditional during the first years of parenthood. We studied changes in implicit gender stereotypes in the Netherlands, which scores high on gender equality, and here one might not expect gender roles to still have such an impact.

Background

Work–Family Conflict and Gender-Role Stereotypes

Many new parents find it challenging to balance the competing demands of paid work and family life (Blair-Loy, 2009). How parents solve work–family conflicts and determine the division of labor depends on many factors, including economic factors (Becker, 1991) and national family policies (Sjöberg, 2004), but also on pervasive gender-role norms, particularly women's role of homemaker and men's role of economic provider (Wood & Eagly, 2002). There are, however, individual differences in adherence to societal gender roles, known as "gender flexibility" (Gerson, 2009, p. 10). More fixed, rigid stereotypes that clearly define separate roles for men and women would lead to less gender flexibility in breadwinning and caretaking than more flexible or egalitarian views of gender roles. In line with these propositions, fathers' stronger adherence to traditional gender-role stereotypes predicts more time in paid work (Kaufman & Uhlenberg, 2000), less time in household work (Coltrane & Ishii-Kuntz, 1992), and less time with their children (Bulanda, 2004). Similarly, mothers' stronger adherence to traditional gender-role stereotypes is associated with lower earnings and less time in paid work (Christie-Mizell & Erickson, 2007; Stickney & Konrad, 2007).

The Importance of Studying Implicit Gender-Role Stereotypes

The gender-role stereotypes that new parents report do not always align with the actual division of labor in a family (Coltrane, 1990). One explanation for this difference might lie in the power differential in income within couples, which reduces women's power to bargain out of domestic labor (Bittman, England, Sayer, Folbre, & Matheson, 2003) and makes acting in accordance with egalitarian attitudes difficult. Another reason for this difference could be people's lack of awareness of their gender-role stereotypes or an unwillingness to express their actual stereotypes. Social desirability bias is a common problem when assessing explicit or self-reported stereotypes (Greenwald, Poehlman, Uhlmann, & Banaji, 2009), especially in higher educated samples (Krysan, 1998) and societies that value gender equality. Explicit gender stereotypes reflect directly stated or overtly expressed ideas. Implicit gender-role stereotypes, on the other hand, operate largely outside conscious awareness and are most often assessed with the Implicit Association Test (IAT; Gawronski & Bodenhausen, 2006). The IAT paradigm is based on automatic and fast or habitual responding, which makes it less prone to social-desirability bias. Therefore, in the current investigation we focus on implicit rather than explicit gender-role stereotypes. Discrepancies found between implicit egalitarian gender-role stereotypes and actual gender-role behavior are likely to reflect a difficulty with acting in accordance with one's egalitarian values.

Although widely used, the IAT has also been criticized. For example, it is not entirely clear whether implicit tasks measure a person's own stereotypes or knowledge of culturally shared attitudes (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). Moreover, test–retest reliability has been found to be low to moderate, ranging from .25 to .69 (Lane, Banaji, Nosek, & Greenwald, 2007), indicating that the IAT is sensitive to context effects. Furthermore, the IAT is not valid for making inferences about individuals and should only be used as a research tool for increasing awareness of implicit stereotypes and its consequences (Greenwald et al., 2009). However, the value of the IAT in light of these critiques is most clearly shown in that it has meta-analytically been found to outperform explicit stereotype measures in the prediction of actual behavior, in particular for controversial subjects such as gender and race (Greenwald et al., 2009).

We used the family–career IAT, which assesses how strongly a person automatically associates the concepts of career and family with masculine and feminine gender (Nosek, Banaji, & Greenwald, 2002). Stereotypes can range from strong traditional (i.e., faster and less errors responding to career–men, family–women associations) to counter stereotypical (i.e., faster and less errors responding to career-women, family–men associations; Nosek et al., 2002). Previous work has demonstrated

the reliability and validity of the family–career IAT as a measure of parental implicit gender-role stereotypes. Moderate positive correlations were found between mothers' and fathers' gender-role stereotypes (Endendijk et al., 2013). Furthermore, parents' traditional implicit stereotypes were associated with traditional gender-socialization practices with their children and traditional implicit stereotypes and career aspirations of their children (Croft, Schmader, Block, & Baron, 2014; Endendijk et al., 2013, 2014, 2017). Also, parents' implicit gender-role stereotypes did not correlate with explicit stereotypes about rearing boys and girls or implicit stereotypes about appropriate toys for boys and girls, indicating that they could be considered a distinct aspect of gender stereotypes (Endendijk et al., 2013).

Parenthood and Implicit Gender-Role Stereotypes and Behavior

Theoretical background. Several theories and hypotheses have offered explanations for (a) why parents might have more traditional implicit gender-role stereotypes than nonparents, (b) whether gender-role stereotypes might change in the first years after parenthood, and (c) the association between gender-role stereotypes and behavior. They can roughly be divided in the following two competing groups of hypotheses: the stereotypes-as-traits hypothesis and the stereotypes-as-states hypothesis.

With regard to the stereotypes-as-traits hypothesis, cohort replacement theory (Brewster & Padavic, 2000) and scholars in social psychology who view implicit stereotypes as traits (Baron, 2015) state that implicit stereotypes are formed during childhood and are stable and difficult to change once formed, propositions that are supported by empirical evidence (Baron, 2015; Dunham, Baron, & Banaji, 2006). As such, similar to the influence of personality traits, implicit stereotypes are thought to guide gender-role behavior such as becoming a parent or work–family arrangements and the division of labor within a family. Similarly, rational planning models (Hakim, 2000) and scholars such as Blair-Loy (2009) suggest that adherence to gendered cultural stereotypes of career and family guide future behavior such as becoming a parent. According to these models, traditional individuals are simply more likely to become parents than nontraditional individuals.

The stereotypes-as-states hypothesis reflects the cognitive reinterpretation perspective (Kroska, 1997), theories of intracohort attitude change (Brooks & Bolzendahl, 2004), and social psychology perspectives suggesting that implicit stereotypes can change in response to repeated exposure to information that is inconsistent with current stereotypes (Baeyens, Field, & De Houwer, 2005). This inconsistency may lead to a state of psychological discomfort that can be defined as *cognitive dissonance* (Festinger, 1962), which is generally reduced by changing one's attitudes (for a review, see Gawronski & Bodenhausen, 2006). Thus, these models predict that after becoming a parent, implicit gender-role stereotypes change when an individual's stereotypes conflict with their postnatal work–family experiences and division of labor. Furthermore, parents' implicit gender-role stereotypes might continue to change in the years after the transition into parenthood, when gender-role stereotypes remain discrepant with work–family arrangements.

It is of both theoretical and practical importance to directly examine whether implicit gender-role stereotypes change over time as a result of work–family arrangements. If gender-role stereotypes are indeed stable and trait-like, intervention efforts aimed at preventing the before mentioned negative consequences of implicit gender-role stereotypes (e.g., traditional gender stereotypes in children, gender differences in aggression) should then focus on early childhood. Another avenue of intervention in this case could be increasing self-awareness of gender-role stereotypes (Gawronski & Bodenhausen, 2006). Instead, if implicit gender-role stereotypes are state-like and change in response to work–family arrangements associated with parenthood, stereotypes could be open to change by interventions. This could then also explain the low test–retest reliability that is often found with the IAT, suggesting that the IAT measures states rather than traits and is sensitive to context effects (Teige-Mocigemba, Klauer, & Sherman, 2010).

Empirical evidence. In line with the stereotypes-as-traits hypothesis, more traditional individuals were more likely to make traditional life choices such as getting married or becoming a parent (Cunningham, Beutel, Barber, & Thornton, 2005). However, there is more longitudinal evidence for the stereotypes-as-states hypothesis.

For example, entry into parenthood is associated with more traditional self-reported explicit gender-role attitudes (e.g., Baxter, Buchler, Perales, & Western, 2015; Corrigall & Konrad, 2007; Fan & Marini, 2000). Interestingly, Schober and Scott (2012) found that although most parents reported stable explicit gender-role stereotypes, specific groups of parents became either more egalitarian or more traditional. Women who decreased their working hours after becoming a mother have been found to become more traditional in their explicit gender-role attitudes over time (Berrington, Hu, Smith, & Sturgis, 2008; Schober & Scott, 2012). Moreover, the use of formal child care while mothers work was associated with a change over time toward more explicit egalitarian attitudes (Fan & Marini, 2000; Schober & Scott, 2012). These findings show that explicit stereotypes change, in either a more traditional or egalitarian direction, in response to experiences that are inconsistent with current stereotypes. This is consistent with the stereotypes-as-states hypothesis.

However, all the studies noted previously used self-report questionnaires of explicit stereotypes, mostly resulting in highly egalitarian responses. This highlights the importance of studying implicit gender-role stereotypes with the IAT as is proposed in the current study. Furthermore, most studies were conducted in the United States, and some in the United Kingdom or Australia. These are all countries that score substantially lower (between rank 20 and 50) than the Netherlands (rank 3) on gender equality (United Nations Development Program, 2017). In addition, none of these studies have examined gender-role stereotype change for several years after the transition into parenthood.

Educational Level, Age, Marital Status, and Family Type

Changes in implicit gender-role stereotypes might not be related only to gender-role behaviors (i.e., task division, work hours), but also to several demographic characteristics. Higher education can expose people to different perspectives about gender (Bolzendahl & Myers, 2004) and has been found to be related to more egalitarian gender-role patterns in a family (Fan & Marini, 2000). Older age when having the first child is also related to more egalitarian gender-role patterns (Fan & Marini, 2000). Older parents have had more time to build stable careers, which allow more flexibility to engage in household and child-care tasks. Also, entry into marriage, as the most traditional type of union formation, is associated with more traditional gender-role stereotypes, than nonmarital cohabitation (Cunningham et al., 2005; Fan & Marini, 2000). Furthermore, regarding family type, there is recent evidence that a mixed-gender sibling configuration in a family has a gender-neutralizing effect on parental gender-role stereotypes (Endendijk et al., 2013). The proposed mechanism is that opposite-gender siblings reinforce opposite-sex behavior in each other, creating experiences for parents that might contradict traditional gender-role stereotypes.

Gender Differences

It is important to examine gender differences in implicit gender-role stereotype change and in the association between gender-role stereotypes and behavior. The stereotypes and behavior of fathers might be less influenced by parenthood than those of mothers because fathers experience less work–family conflict than mothers (Blair-Loy, 2009). However, the empirical evidence regarding this issue is inconsistent. Some studies show that becoming a parent has less effect on fathers' employment or housework (Morgan & Waite, 1987; Sanchez & Thomson, 1997), whereas others show that mothers and fathers become more traditional in their explicit gender-role attitudes after the transition into parenthood (Baxter et al., 2015; Cunningham et al., 2005; Fan & Marini, 2000). Yet there is also evidence from a qualitative study that fathers might even be more likely to fall back in traditional gender roles after becoming a parent than mothers, especially when reality fails to live up to their egalitarian ideals (Gerson, 2009). Finally, explicit gender-role attitudes have been found to predict career outcomes in women more consistently than in men (Corrigall & Konrad, 2007; Schober, 2013).

Parenthood and Implicit Gender-Role Stereotypes in the Netherlands

Studying gender-role stereotype changes associated with parenthood in the Netherlands is interesting because there is a discrepancy between gender-egalitarian ideals and actual

gender-equal sharing of child-care responsibilities in the Netherlands. For example, the participation of Dutch mothers with 3- to 5-year-old children in the labor market is relatively high compared to other countries at 80% (Huerta et al., 2013). However, the Netherlands has the highest percentage of part-time working mothers in the world (61% compared to 19% of fathers; Organization for Economic Cooperation and Development [OECD], 2016) even though partly subsidized high-quality child care is readily available. This high level of part-time work creates a "mommy track" that may reduce mothers' career success (Mayrhofer et al., 2008) and power to bargain out of domestic labor (Bittman et al., 2003). Moreover, not many fathers make use of government-financed "daddy days" or partially paid paternity leave (allowing 26 weeks of leave before the child's eighth birthday; Huerta et al., 2013). Based on the possibilities to resolve work–family dilemmas that are available in the Netherlands, one could suggest that gender-role stereotypes might not necessarily change in Dutch parents. However, if gender-role stereotypes and division of labor become more traditional over time in Dutch parents, the Dutch work–family policies are apparently not sufficient to promote gender-egalitarian work–family arrangements.

Current Study

The aims of this study were twofold. First, in a cross-sectional sample we examined parental status (i.e., parents vs. nonparents) in relation to implicit gender-role stereotypes and gender-role behavior concerning career and task division in the family. We expected parents to have more traditional implicit gender-role stereotypes and behaviors than nonparents (e.g., Baxter et al., 2015; Corrigall & Konrad, 2007).

Second, in a longitudinal sample we examined whether implicit gender-role stereotypes changed over time in parents with young children and whether the direction of this change could be explained by the gender-role experiences parents were exposed to in their family. We expected that, similar to the explicit gender-role stereotypes, the following three specific trajectories of implicit-stereotype change could be discerned: parents with stable stereotypes, parents with stereotypes that become more egalitarian, and parents with stereotypes that become more traditional (Schober & Scott, 2012). Furthermore, we hypothesized (in line with the stereotypes-as-states hypothesis) that implicit gender-role stereotypes would only change when parents are repeatedly exposed to gender-role experiences in the family that are inconsistent with their implicit gender-role stereotypes (Berrington et al., 2008; Schober & Scott, 2012). In other words, we expected that the direction of implicit gender-role stereotype change would be related to the traditionality of gender-role behaviors in the family, such as perceived division of household and child-care tasks, and working hours of mothers and fathers outside the house. Relatedly, we expected lower educated parents, younger parents, families with mixed-gender siblings, and married parents to be more likely to show a change toward more traditional stereotypes. Finally, in both samples, we examined gender differences in parenthood effects on gender-role stereotypes and behavior and the association between gender-role stereotypes and behavior in an explorative way because of inconsistent empirical evidence.

Method

Sample

For the current study the following two samples were used: (a) a cross-sectional sample with Dutch adults from the Harvard Project Implicit data set of the gender–career IAT (2005–2015; retrieved from osf.io/y9hiq/) and (b) a longitudinal sample of Dutch parents from the "Boys Will Be Boys?" Study (see Endendijk et al., 2013).

Sample 1 consisted of nonparents and parents in the Netherlands aged between 25 and 40 years. We excluded people who (a) conducted the IAT before, (b) had incomplete IAT data, or (c) did not complete background questions. This resulted in a sample of 672 participants; 251 men (with a child younger than age 18, $n = 57$; without child, $n = 194$) and 421 women (with a child younger than age 18, $n = 114$; without child, $n = 307$). The background information of these subsamples can be found in Table 1. Most participants were highly educated. We could not select a sample with a narrower child-age range than 0 to 18 years because participants only reported whether they had a child aged younger than 18 years. By selecting a sample of participants aged between 25 and 40 we most likely included participants with young children, as mothers' and fathers' mean age at birth of first child in the

Table 1. *Descriptive Statistics of Background and Study Variables in Men and Women With or Without a Child Younger Than Age 18, Who Plan or Do Not Plan to Have a Child*

		Parent of child younger than age 18		Nonparent	
Variables	Range	Men, $n = 57$ *M* (*SD*)	Women, $n = 114$ *M* (*SD*)	Men, $n = 194$ *M* (*SD*)	Women, $n = 307$ *M* (*SD*)
Background variables					
Age in years[a]		34.77 (3.17)	35.18 (3.17)	30.43 (3.61)	30.52 (3.36)
Educational level[a]	1–10[b]	8.74 (1.34)	8.87 (1.22)	8.60 (1.29)	8.85 (1.14)
Study variables					
Gender-role stereotypes IAT	−2 to 2	0.50 (0.40)	0.52 (0.32)	0.44 (0.37)	0.44 (0.36)
Contribution to income[c]	1–11	8.16 (2.12)	6.61 (2.08)	7.68 (3.47)	7.34 (3.05)
Child-care tasks performed[d]	1–7	3.18 (0.89)	4.73 (1.06)	-	-

Note. IAT = Implicit Association Test.

[a]Analyses of variance revealed that parents were older than nonparents, $F(1, 668) = 203.01$, $p < .01$, partial $\eta^2 = .23$. Educational level did not differ between parents and nonparents, $F(1, 668) = 0.46$, $p = .50$. There were no differences between men and women in age, $F(1, 668) = 0.60$, $p = .44$, or educational level, $F(1, 668) = 2.92$, $p = .09$. The interaction between parental status and gender was not significant for age, $F(1, 668) = 0.26$, $p = .61$, or educational level, $F(1, 668) = 0.30$, $p = .59$. [b]Educational levels: 1 = "elementary school," 2 = "junior high," 3 = "some high school," 4 = "high school graduate," 5 = "some college," 6 = "associate's degree," 7 = "bachelor's degree," 8 = "some graduate school," 9 = "master's degree," 10 = "advanced degree, such as J.D., M.D., Ph.D." [c]Contribution to income ranged from 1 = *0%* to 11 = *91–100%*. [d]Child-care tasks performed ranged from 1 = *none* to 7 = *all of it*.

Netherlands is 29.6 and 32.5, respectively (Central Bureau of Statistics, 2017).

Sample 2 consisted of 390 Dutch two-parent families with a youngest child who was around 12 months of age and an oldest child who was between 2.5 and 3.5 years old. This family type is most common in the Netherlands. Included families participated in two home visits each year during a period of 3 years (2010–2014). This article reports on data from four time points (Time 1 [T1]–Time 4 [T4]: home visits around the first, second, third, and fourth birthdays of the youngest child). At Time 1, the oldest children were on average 3.02 years old ($SD = 0.30$), mothers were aged between 22 and 46 years ($M = 33.94$, $SD = 3.97$), and fathers were between 25 and 63 years of age ($M = 36.78$, $SD = 5.07$). At Time 1, most participating parents were married or had a cohabitation agreement or registered partnership (93%), and the remaining 7% lived together without any kind of registered agreement. With regard to educational level, most mothers (79%) and fathers (76%) had a high educational level (academic or higher vocational schooling). The sample included similar numbers of the following four different family constellations: families with two boys (27%), families with two girls (23%), families with a male oldest child and a female youngest child (26%), and families with a female oldest child and a male youngest child (24%).

Procedure

Participants in Sample 1 signed up for this study by themselves and completed an online survey that consisted of the gender-role stereotypes IAT (see later) followed by background questions. They did not receive any compensation for their participation. Participants in Sample 2 were recruited between April 2010 and May 2011. The families were eligible if they were two-parent households, none of the parents or children had a severe physical or intellectual handicap, children were born in the Netherlands, and both parents and children were fluent in the Dutch language. The eligible families were invited by mail to participate in a longitudinal study on the role of fathers and mothers in child socioemotional development in the first 4 years of life. They received a letter, a brochure with the details of the study, and an answering card to respond to the invitation. Participating mothers and fathers were separately visited at home each year, with an intervening period of about 2 weeks. The order in which fathers and mothers were visited was counterbalanced. Families received a payment of 30 Euros each year and

small presents for the children. Each year before the first home visit, both parents were asked to individually complete a set of questionnaires (e.g., about task division). During the home visits parents completed the gender-role stereotypes IAT on a laptop computer. Reaction time and accuracy were automatically recorded for every trial. All visits were conducted by trained graduate or undergraduate students. Informed consent was obtained from all participating families. Ethical approval for this study was provided by the Committee Research Ethics Code of the Leiden Institute of Education and Child Studies.

Materials

Gender-role stereotypes. In both samples implicit gender-role stereotypes were assessed by a computerized gender–career IAT (Nosek et al., 2002). This task measures the association of female and male attributes (i.e., Julia, Michelle, Anna, Emily, Rebecca, Ben, John, Daniel, Paul, Jeffrey) with the concepts of career and family (Dutch translations of management, professional, corporation, salary, office, business, career, home, parents, children, family, marriage, wedding, relatives). The task consists of congruent blocks in which participants should sort both career attributes and male names to one category and family attributes and female names to the other, and incongruent blocks in which participants should sort career and female attributes to one category and family and male attributes to the other. They sort the stimuli (i.e., words) by pressing a button that corresponds to the male category or a button for the female category. To reduce possible order effects of the presentation of congruent and incongruent blocks, the order of the blocks is varied between respondents. In both samples the participants were randomly assigned to one of the two IAT versions (i.e., congruent first, incongruent first). In Sample 2, a mother and father within one family always completed the same version of the IAT. The improved scoring algorithm by Greenwald, Nosek, and Banaji (2003) was used to determine each participant's level of implicit stereotypes. A high positive score represented more difficulties (i.e., a combination of longer reaction times and more errors) to pair male attributes to the family concept and female attributes to the career concept than to pair female attributes to the family concept and male attributes to the career concept. In other words, higher positive scores represent stronger stereotypical (traditional) attitudes about the roles of men and women, negative scores represent counter-stereotypical attitudes about gender roles, and scores around zero represent egalitarian attitudes.

Parental status. In Sample 1, parental status was determined based on the answers to the following two questions: (a) Are you currently the parent or guardian of a child (or children) younger than age 18 living in your home? (yes/no), (b) Do you plan to have children? (when they did not have a child, yes/no).

Gender-role behavior. In Sample 1, two questions were asked that were considered aspects of gender-role behavior. First, the participant's contribution to annual household income was assessed with the question "What percentage of your family's annual household income do you contribute?" Answering options ranged from 1 to 11 (1 = "0%," 2 = "1%–10%," 3 = "11%–20%," 4 = "21%–30%," 5 = "31%–40%," 6 = "41%–50%," 7 = "51%–60%," 8 = "61%–70%," 9 = "71%–80%," 10 = "81%–90%," 11 = "91%–100%"). Second, the perceived amount of child-care tasks performed by the participant was assessed with the question "Overall, how much of the caregiving duties do you perform for the child/children living in your home?" Answering options ranged from 1 to 7 (1 = "none," 2 = "very little," 3 = "somewhat less than half," 4 = "half," 5 = "somewhat more than half," 6 = "a lot," 7 = "all of it").

In Sample 2, two similar aspects of parents' gender-role division were considered. First, mothers and fathers were asked to report their working hours (i.e., for paid work) every year when they were contacted by phone to schedule the home visits. Second, at T2 to T4, we asked mothers and fathers separately to fill in a 15-item questionnaire on their perception of the division of labor regarding small household tasks (e.g., buying groceries, cooking dinner, cleaning) and child-care tasks (e.g., bring children to bed, bathe children, bring children to school) during the past week. The questionnaire was based on previous survey measures assessing division of labor in the family (Press & Townsley, 1998; Yavorsky et al., 2015). Parents could answer on a five-point scale (1 = *I exclusively/almost exclusively performed this task*, 5 = *my partner*

exclusively/almost exclusively performed this task). Separate scales were constructed for the division of small household tasks and the division of child-care tasks. The internal consistencies (Cronbach's alpha, range across time points, separate for mothers and fathers) for the division of small household tasks were .75 to .79 for fathers and .79 to .82 for mothers. The internal consistencies for division of child-care tasks were lower than for the small household scale: .62 to .63 for fathers and .61 to .65 for mothers. This might be because the child-care scale has fewer items. For both questionnaires, mean scores around 3 represent an egalitarian task division. Scores above 3 represent a nontraditional task division for mother report and a traditional task division for father report. Scores below 3 represent a traditional task division for mother report and a nontraditional task division for father report.

Father reports were used for analyses with fathers, mother reports were used for analyses with mothers (results are similar when father reports are used in mother analyses and mother reports are used in father analyses). Across all time points, mothers' perceived task division correlated moderately with fathers' perceived task division ($rs = .48–.66$, $p < .01$). Mothers' perceived task division was, however, more traditional than fathers' (see Tables 2 and 3, $ps < .01$), but both parents reported on average that mothers were slightly more responsible for child-care and small household tasks. We focused on perceived task division in both samples because these personal experiences are most likely to be associated with an individual's endorsement of gender-role stereotypes (Kroska, 1997).

Covariates and missing values. In both samples, the following variables were considered potential confounders of gender stereotypes: task division and working hours (e.g., Cunningham et al., 2005; Fan & Marini, 2000; Schober & Scott,

Table 2. *Pooled Descriptive Statistics in Five Imputed Data Sets for Mothers' Study Variables Separate for Mothers' Gender-Role Stereotype Trajectories*

	Mothers' gender-role stereotype trajectory			
Variables	1. Traditional-increasing *M* (*SE*)	2. Intermediate-increasing *M* (*SE*)	3. Low-decreasing *M* (*SE*)	Significant contrasts
n (%)	39 (10)	254 (65)	97 (25)	
Mother age	29.46 (0.63)	33.74 (0.35)	36.29 (0.33)	C1 < C2 < C3
Partner age	33.36 (1.31)	36.68 (0.33)	39.39 (0.50)	C1 < C2 < C3
Working hours mother				
T1	21.74 (2.46)	25.60 (0.60)	27.01 (0.87)	C1 < C3
T2	19.84 (2.52)	25.01 (0.65)	26.27 (0.89)	C1 < C2,C3
T3	19.72 (2.16)	24.69 (0.67)	26.06 (0.89)	C1 < C2,C3
T4	18.80 (2.51)	24.35 (0.67)	25.80 (0.94)	C1 < C2,C3
Working hours partner				
T1	39.22 (1.36)	37.58 (0.37)	36.25 (0.63)	C1 > C3
T2	38.72 (1.67)	37.45 (0.39)	36.65 (0.60)	C1 > C3
T3	38.73 (1.71)	37.39 (0.40)	36.57 (0.60)	C1 > C3
T4	38.28 (1.84)	37.09 (0.45)	36.29 (0.66)	-
Division of child-care tasks				
T2	2.49 (0.11)	2.66 (0.04)	2.54 (0.06)	-
T3	2.34 (0.09)	2.58 (0.04)	2.47 (0.06)	C1 < C2
T4	2.22 (0.13)	2.54 (0.04)	2.36 (0.07)	C1 < C2
Division of small household tasks				
T2	1.96 (0.10)	2.29 (0.04)	2.31 (0.07)	C1 < C2,C3
T3	1.96 (0.12)	2.31 (0.05)	2.31 (0.07)	C1 < C2,C3
T4	1.96 (0.13)	2.28 (0.05)	2.23 (0.08)	C1 < C2,C3

Note. Significant contrasts represent contrasts between the three gender-role stereotype trajectories (C1,C2,C3). T1 to T4 represent measurement waves around the first, second, third, and fourth birthday of the youngest child in the family. Task division variables represent task division as reported by mothers. (Scores above 3 represent a nontraditional task division. Scores below 3 represent a traditional task division.) Working hours of partner are partner reported.

Table 3. *Pooled Descriptive Statistics in Five Imputed Data Sets for Fathers' Study Variables Separate for Fathers' Gender-Role Stereotype Trajectories*

	Fathers' gender-role stereotype trajectories			
Variables	1. Stable-traditional *M* (*SE*)	2. Intermediate-increasing *M* (*SE*)	3. Egalitarian-increasing *M* (*SE*)	Significant contrasts
n (%)	46 (12)	250 (64)	94 (24)	
Father age	35.79 (0.67)	35.42 (0.29)	40.83 (0.70)	C1,C2 < C3
Partner age	33.62 (0.58)	33.50 (0.27)	35.25 (0.42)	C1,C2 < C3
Working hours partner[a]				
T1	25.14 (1.51)	24.95 (0.63)	26.94 (0.91)	C1,C2 < C3
T2	25.07 (1.61)	24.09 (0.70)	26.60 (0.89)	C1,C2 < C3
T3	25.01 (1.61)	23.70 (0.73)	26.48 (0.89)	C1,C2 < C3
T4	24.93 (1.56)	23.30 (0.72)	26.03 (0.97)	C1,C2 < C3
Division of child-care tasks				
T2	3.18 (0.08)	3.20 (0.04)	3.16 (0.05)	–
T3	3.25 (0.08)	3.25 (0.03)	3.26 (0.05)	–
T4	3.28 (0.09)	3.22 (0.04)	3.23 (0.06)	–
Division of small household tasks				
T2	3.35 (0.10)	3.38 (0.05)	3.25 (0.06)	–
T3	3.40 (0.11)	3.34 (0.04)	3.27 (0.06)	–
T4	3.32 (0.12)	3.37 (0.05)	3.30 (0.06)	–

Note. Significant contrasts represent contrasts between the three gender-role stereotype trajectories (C1,C2,C3). T1 to T4 represent measurement waves around the first, second, third, and fourth birthday of the youngest child in the family. Task division variables represent task division as reported by fathers. (Scores above 3 represent a traditional task division. Scores below 3 represent a nontraditional task division.)

[a]Fathers own working hours do not differ between groups or over time. Pooled means for fathers' working hours are T1 = 37.43, T2 = 37.40, T3 = 37.34, T4 = 37.04. Working hours of partner are partner reported.

2012); parents' age, educational level, family type (boy–boy, girl–girl, boy–girl, girl–boy), and IAT task order (congruent first, incongruent first). These variables are included in the model when they were consistently related to the study variables. In Sample 2, there were 59 fathers and 45 mothers with missing values for gender-role stereotypes on one or more time points. With regard to work hours, 20 fathers and mothers had missing data on one or more time points. On the task division questionnaire, 104 fathers and 92 mothers had missing data on one or more time points. A total of 248 mothers and 221 fathers had complete data on all variables.

Analyses

Sample 1. Analyses of variance with gender and parental status (either parent vs. nonparent or plan to have child vs. do not plan to have child) as between-subject variables and age, educational level, and IAT order as covariates were conducted to examine differences in gender-role stereotypes between parents and nonparents and between nonparents who plan to have a child versus those who did not plan to have a child. We then performed two regression analyses to assess gender differences in the effects of parenthood (parent vs. nonparent) on gender-role behavior and associations between gender stereotypes and gender-role behavior. The following variables were entered in the first analysis predicting the contribution to family income: age, educational level, gender, gender-role stereotypes, parental status (Step 1), and two-way interactions between gender, gender-role stereotypes, and parental status (Step 2). The following variables were entered in the second analysis predicting the division of child-care tasks in parents: age, educational level, gender, gender-role stereotypes (Step 1), and interaction between gender and gender-role stereotypes (Step 2).

Sample 2. We employed latent growth mixture modeling (GMM) using full information

maximum likelihood estimation in Mplus (Muthén & Muthén, 1998–2012) to model the individual gender-role stereotypes trajectories. We tested these models separately for mothers and fathers. With GMM it is possible to classify individuals in distinct groups based on their individual gender-role stereotype trajectories during parenthood. The classification is made so that individuals within a group are more similar than individuals between groups. GMM is a person-centered approach that allows for different groups of individual growth trajectories instead of conventional growth modeling that assumes that a single growth trajectory can adequately approximate an entire population (Jung & Wickrama, 2008). The multiple imputation (Markov chain Monte Carlo) method with five imputations and 10 iterations was used to compute missing values on the gender-role stereotypes and behavior variables and covariates. We fitted a series of linear GMMs, which ranged from one to five latent growth trajectory classes. Quadratic growth curves were examined because gender-role stereotypes were assessed at four time points. GMM models in which only between-class variation was allowed led to models that converged. We selected the number of latent growth classes on the basis of several criteria, with the Bayesian Information Criterion (BIC) and Bootstrapped Likelihood Ratio Test (BLRT) being the most important (Nylund, Asparouhov, & Muthén, 2007). Smaller BIC values and significant BLRT indicate a better model fit than the model with one class less. Furthermore, each class had to contain >1% of the sample, and entropy had to be around .70 or higher (Jung & Wickrama, 2008; Nylund et al., 2007).

We examined the different classes of gender-role stereotype change from the GMM in relation to several possible moderators of gender-role stereotype change. Therefore, we conducted analyses of variance or chi-square tests to compare the gender-role stereotype trajectories with regard to several background variables (i.e., mothers' and fathers' age, mothers' and fathers' educational level, family type, marital status). In addition, we tested class differences in gender-role behavior (i.e., mothers' and fathers' work hours, small household and child-care task division) and gender-role behavior change over time with repeated-measures analyses of variance. A chi-square test was used to examine the association between mothers' and fathers' gender-role stereotype classes.

Results

Cross-Sectional Differences Between Parents and Nonparents

Table 1 shows descriptive characteristics of background and study variables separate for gender and parental status.

Implicit gender-role stereotypes. Implicit gender-role stereotypes were significantly higher in parents when compared with nonparents (see Table 1), $F(1, 665) = 4.31$, $p < .05$, *partial* $\eta^2 = .01$. Moreover, gender-role stereotypes did not differ between nonparents who were planning to have a child ($n = 377$, $M = 0.45$, $SD = 0.36$) and nonparents who were not planning to have a child ($n = 105$, $M = 0.40$, $SD = 0.36$), $F(1, 475) = 1.35$, $p = .25$. There were no differences between men and women.

Association between gender-role stereotypes and behavior. Regarding contribution to annual household income, there was a significant interaction between gender and parental status ($B = -1.17$, $SE = 0.55$, $\beta = -.15$, $p < .05$, 95% CI = [−2.243, −0.102]). Simple group comparisons showed that mothers contributed less to the annual household income than nonmothers (see Table 1), $t(295.30) = 2.79$, $p < .01$, $d = .28$, a difference that was not found between fathers and nonfathers, $t(151.74) = -1.29$, $p = .20$. The interaction between implicit gender-role stereotypes and gender was also significant, $B = -1.34$, $SE = 0.64$, $\beta = -.12$, $p < .05$, 95% CI = [−2.588, −0.084], indicating that, regardless of parental status, in men more traditional implicit gender-role stereotypes were associated with a higher contribution to annual household income ($r = .12$, $p = .06$), whereas in women more traditional implicit gender-role stereotypes were associated with a lower contribution to annual household income ($r = -.09$, $p = .06$). Mothers performed significantly more child care tasks than fathers, $B = 1.60$, $SE = 0.16$, $\beta = .61$, $p < .01$, 95% CI = [1.281, 1.908]. Implicit gender-role stereotypes were not significantly related to performance of child-care duties, $B = -0.20$, $SE = .22$, $\beta = -.05$, $p = .37$, 95% CI = [−0.624, 0.234]. The other effects did not reach significance.

Longitudinal Changes in Parents' Implicit Gender-Role Stereotypes and Behavior

In the whole sample, gender-role stereotypes increased over time in mothers—in all imputed data sets, range: $F(2.32–2.37, 907.16–923.89) = 15.83–17.14$, $p < .01$, partial $\eta^2 = .04$, Huynh-Feldt correction for sphericity—and in fathers—in all imputed datasets, range: $F(2.84–2.87, 1104.74–1113.92) = 9.98–12.88$, $p < .01$, partial $\eta^2 = .03$, Huynh-Feldt correction. Implicit gender-role stereotypes were correlated between measurement waves for mothers ($rs = .16–.40$, $ps < .01$) and fathers ($rs = .32–.35$, $ps < .01$). At separate measurement waves, implicit gender-role stereotypes did not correlate with gender-role behavior.

Mothers' Gender-Role Stereotype Trajectories

See Table 4 (top) for results of the GMM analyses for one to five classes of maternal gender-role stereotype trajectories. For mothers' gender-role stereotypes, a three-class solution fit the data best (i.e., largest decrease in BIC, entropy >0.70, significant BLRT, and sufficient mothers in each group). As can be seen in Figure 1A, mothers in Class 1 (labeled "traditional-increasing") had strong traditional gender-role stereotypes that became even more traditional over time. Mothers in Class 2 (labeled "intermediate-increasing") had slightly traditional gender-role stereotypes that became more traditional over time (but increase leveled off from T2 to T4). Mothers in Class 3 (labeled "egalitarian") could be characterized by egalitarian gender-role stereotypes that became even less traditional over time, with a slight increase in traditionality from T3 to T4. Table 2 shows descriptive statistics for the three groups on relevant background variables and gender-role behavior.

Gender-role stereotype trajectories associated with age, educational level, marital status, and family type. A significant class difference was found for mothers' age, indicating that traditional-increasing mothers were the youngest followed by intermediate-increasing mothers and egalitarian mothers—in all imputed data sets, range: $F(2, 389) = 45.44–62.89$, $p < .01$, partial $\eta^2 = .19–.25$. The same difference was found for the age of the partner, indicating that traditional-increasing mothers had the youngest partners followed by intermediate-increasing mothers and egalitarian mothers—in all imputed data sets, range: $F(2, 389) = 12.27–17.01$, $p < .01$, partial $\eta^2 = .06–.08$. Traditional-increasing mothers were more likely to have lower education ($res_{adj} = 2.5$), whereas egalitarian mothers were more likely to have higher education, $res_{adj} = 1.8$, significant in one imputed data set, range: $\chi^2(2) = 2.82–8.49$, $p = .014–.244$. No class differences were found on the partner's educational level ($ps > .09$), marital status ($ps > .38$), or family type ($ps > .19$).

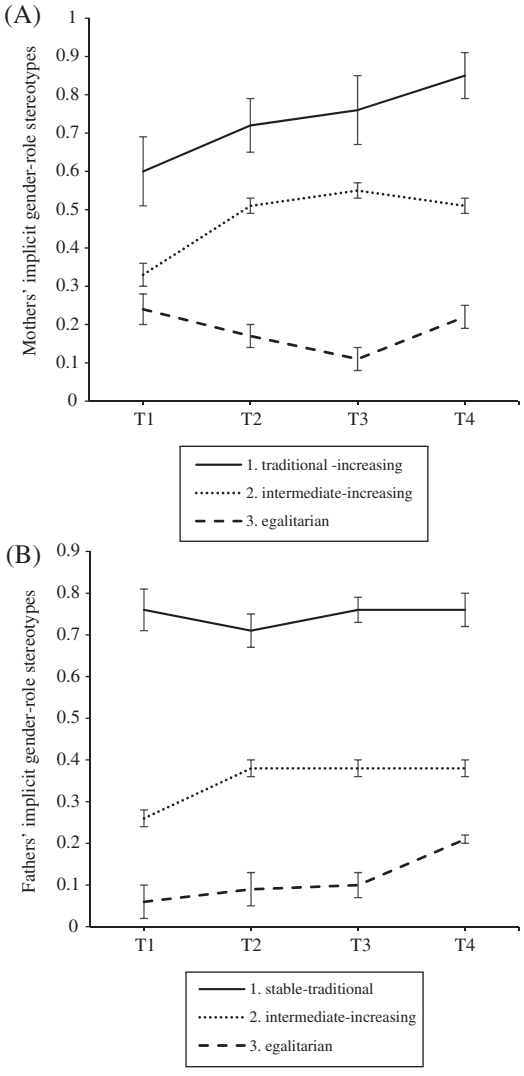
Gender-role stereotype trajectories associated with gender-role behavior. No significant class differences were found in gender-role behavior change over time (i.e., nonsignificant interactions between class and gender-role behavior change). However, main effects were

Table 4. *Class Solutions for Growth Mixture Modeling Models for Gender-Role Stereotypes*

		Number of classes			
Gender-role stereotypes	1	2	3	4	5
Mother					
BIC	928.10	816.23	812.78	816.08	826.92
BLRT	—	<.01	< .01	—	—
Entropy	1.0	0.69	0.72	0.73	0.78
Father					
BIC	975.65	844.19	832.40	853.11	868.25
BLRT	—	<.01	< .01	—	—
Entropy	1.0	0.66	0.69	0.65	0.64

Note. BIC, Bayesian Information Criterion; BLRT, Bootstrapped Likelihood Ratio Test; N/A, not available because no convergence. Shaded areas represent best fitting models. Models include following covariates: age and gender-role stereotype task version.

Figure 1. Three Trajectories of Implicit Gender-Role Stereotype Change in Mothers (A) and Fathers (B).



Note. Error bars represent standard errors of the mean.

found of gender-role stereotype class on working hours—in all imputed data sets, range: $F(2, 387) = 5.34–7.71$, $p < .01$, partial $\eta^2 = .03–.04$—involvement with small household tasks—in four of five imputed data sets, range: $F(2, 387) = 2.82–7.21$, $p = .001–.061$, partial $\eta^2 = .01–.04$—and child care tasks—in all imputed data sets, range: $F(2, 387) = 4.92–6.48$, $p < .01$, partial $\eta^2 = .03$. Across time points, intermediate-increasing and egalitarian mothers worked more and were less involved with small household tasks than traditional-increasing mothers. In addition, traditional-increasing mothers were more involved with child care tasks than intermediate-increasing mothers. The work hours of the partner were also significantly different between the mothers with different gender-role stereotype trajectories—in two of five imputed data sets, range: $F(2, 387) = 1.47–4.01$, $p = .019–.231$, partial $\eta^2 = .01–.02$. Traditional-increasing mothers had partners who worked more than egalitarian mothers. Also, main effects of time were found in all classes for working hours—in all imputed data sets, range: $F(2–2.03, 771.88–784.70) = 6.19–12.96$, $p < .01$, partial $\eta^2 = .02–.04$, Greenhouse–Geisser correction—and child-care tasks, indicating that mothers worked less and became more involved with child-care tasks over time—in all imputed data sets, range: $F(1.94–1.98, 750.39–765.92) = 12.45–20.77$, $p < .01$, partial $\eta^2 = .03–.05$, Huynh-Feldt correction.

Fathers' Gender-Role Stereotype Trajectories

See Table 4 (bottom) for results of the GMM analyses for one to five classes of paternal gender-role stereotype trajectories. For fathers' gender-role stereotypes, a three-class solution fit the data best (i.e., largest decrease in BIC, entropy >0.70, significant BLRT, and sufficient fathers in each group). As can be seen in Figure 1B, fathers in Class 1 (labeled "stable-traditional") had strong traditional gender-role stereotypes that were stable over time. Fathers in Class 2 (labeled "intermediate-increasing") had intermediate gender-role stereotypes that became more traditional over time (but increase leveled off from T2 to T4), and fathers in Class 3 (labeled "egalitarian") had egalitarian gender-role stereotypes that also became more traditional over time. Table 3 shows descriptive statistics for the three groups on relevant background variables and gender-role behavior.

Gender-role stereotype trajectories associated with age, educational level, marital status, and family type. A significant class difference was found for fathers' age, indicating that egalitarian fathers were older than stable-traditional and intermediate-increasing

fathers—in all imputed data sets, range: $F(2, 389) = 45.41–52.21$, $p < .01$, partial $\eta^2 = .19–.21$. The same effect was found for age of the partner, indicating that egalitarian fathers had older partners than stable-traditional and intermediate-increasing fathers—in all imputed data sets, range: $F(2, 389) = 6.29–8.43$, $p < .01$, partial $\eta^2 = .03–.04$. No class differences were found for fathers' educational level ($ps > .11$), partner's educational level ($ps > .08$), marital status ($ps > .67$), or family type ($ps > .12$).

Gender-role stereotype trajectories associated with gender-role behavior. Egalitarian fathers had partners with higher working hours than other fathers—in two of five imputed data sets, range: $F(2, 387) = 1.45–3.48$, $p = .032–.236$, partial $\eta^2 = .01–.02$. No class differences were found for fathers' own working hours ($ps > .16$) or involvement with small household ($ps > .16$) or child-care tasks ($ps > .43$). Fathers' work hours did not decrease over time—in four of five imputed data sets, range: $F(1.88, 729.62–733.50) = 1.66–3.15$, $p = .047–.19$, partial $\eta^2 = .00–.01$, Greenhouse–Geisser correction. Mother classes were related to father classes, indicating that egalitarian fathers were more likely to be partnered with egalitarian mothers ($res_{adj} = 2.5$)—in one of five imputed data sets, range: $\chi^2(4) = 4.14–11.48$, $p = .02–.39$.

Discussion

The goal of this study was to examine, longitudinally and cross-sectionally, whether parenthood is associated with changes toward more traditional implicit gender-role stereotypes and whether this change is associated with one's gender-role behavior in the family. First, implicit gender-role stereotypes were more traditional in parents than in nonparents. Second, three specific trajectories of implicit gender-role stereotype change in the first years of parenthood could be discerned for mothers and fathers: egalitarian, traditional, and intermediate trajectories. The direction of gender-role stereotype change was related to individual differences in gender-role behavior (i.e., working hours, perceived task division regarding child-care tasks and small household tasks) and background variables (i.e., age, educational level). Third, parenthood was, for the most part, similarly associated with mothers' and fathers' implicit gender-role stereotypes. However, in terms of behavior there were some differences: Mothers spent more time on child care than fathers, mothers' contribution to annual household income was lower than nonmothers', and mothers decreased their work hours over time, whereas fathers did not. Associations between gender-role stereotype change and own gender-role behavior were found in mothers, but not in fathers. Finally, fathers' gender-role stereotype trajectories were only associated with mothers' working hours.

Parents indeed had more traditional implicit gender-role stereotypes than nonparents, which is consistent with previous evidence for explicit stereotypes (Baxter et al., 2015; Corrigall & Konrad, 2007; Fan & Marini, 2000). This finding could indicate the following: First, parents were already more traditional in their gender-role stereotypes before they became parents and that was the reason they became parents in the first place, and, second, parents became more traditional in their gender-role stereotypes after they became parents. It is not possible to draw firm conclusions about this issue because of the cross-sectional data. However, gender-role stereotypes did not differ between nonparents who planned to have a child and nonparents who did not plan to have a child. This could suggest that gender-role stereotypes change after the transition into parenthood and not because of people's wish to have children. Our findings also show that this change might be truly longitudinal because for most parents implicit gender-role stereotypes were found to continue increasing at least during the first years of parenthood. It is possible that changes in gender-role stereotypes level off or return to pre-parenthood levels sometime after children go to school. Especially when children reach the school age parental time in child care generally decreases and mothers return to work or to more working hours (Bianchi, 2000), which is likely to result in fewer traditional gender-role stereotypes. However, it is also possible that the traditional gender-role stereotypes that develop in the first year of parenthood remain a strong influence on the work–family task division within couples, acting as a self-maintaining cycle. Future research on changes in implicit gender-role stereotypes and task division between couples in later phases of parenthood is needed to examine these possibilities.

Interestingly, not all parents showed an increase in traditional gender-role stereotypes during the first years of parenthood; only

mothers with traditional gender-role stereotypes, parents with intermediate level gender-role stereotypes, and fathers with egalitarian gender-role stereotypes. Gender-role stereotypes of mothers with egalitarian gender-role stereotypes became even more egalitarian over time (although they became slightly more traditional again when children reached school age). Gender-role stereotypes of fathers with high traditional gender-role stereotypes remained stable. The shape of the gender-role stereotype trajectories was slightly different from a previous study examining explicit gender-role attitudes shortly before and after becoming a parent (Schober & Scott, 2012), which might be due to methodological differences between the studies. For mothers, it was found that older age, higher working hours, higher education, having an older partner, and a more egalitarian task division were buffering against change toward more traditional implicit gender-role stereotypes over time. However, just as for the other mothers, these mothers' perceived task division became more traditional and working hours decreased with increasing child age. Older age when having the first child and higher maternal education have also been associated with a change toward more egalitarian self-reported gender-role attitudes (Fan & Marini, 2000; Schober & Scott, 2012), supposedly because these women have had more time to build stable careers, leading to more gender-equal divisions of labor in the family (Coltrane, 1990). It is also possible that older women are more aware of gender inequality due to more frequent exposure with gender discrimination in their personal lives, resulting in more progressive gender-role attitudes (Bolzendahl & Meyers, 2004).

An explanation for the stable gender-role stereotype trajectory of fathers with high traditional gender-role stereotypes could be that these fathers' stereotypes were already congruent with what was happening in their families. It is also possible that fathers' traditional gender-role stereotypes reinforced a traditional task division in the family. Interestingly, fathers' gender-role stereotype trajectories were only related to their partners' working hours and not to their own gender-role behaviors. Fathers, in particular, may be more influenced by their partners' working hours because fathers changed work patterns less than their partners did in response to the transition to parenthood (i.e., there was a floor effect in work pattern change among fathers). This finding suggests that, in the workplace, men's traditional roles might still be favored and therefore difficult to change. Last, fathers within the egalitarian gender-role stereotype trajectory were more likely to be older and have older partners with high working hours. This is in line with a qualitative study showing that postponing parenthood as a couple might lead to more involved fathers who are willing to share responsibilities associated with parenthood because they have had more time to envision and to become "attached" to the father role (Coltrane, 1990). Alternatively, egalitarian fathers were also partnered with nontraditional women (i.e., older age when becoming a mother and concentrating on their career). The greater monetary resources associated with a working partner gives these fathers more flexibility to engage in household and child-care tasks, which might be the reason for their egalitarian attitudes. Interestingly, even fathers with egalitarian gender-role stereotypes in early childhood showed a slight change toward more traditional gender-role stereotypes over time, possibly because fathers work patterns remained stable and traditional over the years, and their perceived involvement in household and child-care tasks was comparable with that of men with more traditional gender-role stereotypes.

The longitudinal changes in implicit gender-role stereotypes are unlikely to be due to repeated testing effects. Stimulus familiarity and frequency have been found to be unrelated to IAT scores (Ottaway, Hayden, & Oakes, 2001). Also, if anything, taking multiple IAT tests would make it easier to respond to stereotype-incongruent associations, thus decreasing and not increasing gender-role bias in most parents. Furthermore, the individual differences in stereotype change over time cannot be explained by repeated-testing effects.

More similarities than differences were found between mothers and fathers. It is possible that in current-day societies such as the Netherlands in which gender equality is valued highly, the effect of parenthood on mothers' and fathers' gender-role stereotypes and behavior is becoming more similar (Baxter et al., 2015; Cunningham et al., 2005; Fan & Marini, 2000). Mothers were only more likely than fathers to decrease working hours and increase perceived involvement with child-care tasks with increasing child age, and gender-role stereotypes and behavior

were more consistently associated in mothers, which might be due to a greater identification with the parental role in women compared to men (Kerpelman & Schvaneveldt, 1999). People who identify strongly with a social role are more likely to behave in accordance with this role or incorporate experiences associated with this role into their gender-role stereotypes (Stryker & Burke, 2000).

This study also has important theoretical and practical implications. The finding that implicit gender-role stereotypes change in response to parents' personal life experiences provides support for the stereotypes-as-states hypothesis and not for the stereotypes-as-traits hypothesis. This sensitivity to context can also explain the low to moderate correlations between measurement waves in the current study and the moderate test–retest correlations found in previous studies using the IAT (Nosek et al., 2007). This finding further suggests that implicit gender-role stereotypes can be changed once formed, which provides possibilities for interventions focusing on parents to prevent the negative consequences of implicit gender-role stereotypes on both parents (e.g., unequal career opportunities) and children (e.g., traditional gender stereotypes, gender differences in aggression). One avenue of intervention could be increasing parents' self-awareness of implicit gender-role stereotypes and its consequences for themselves and their children. Increased awareness is the key to change in gender-related behaviors (Gawronski & Bodenhausen, 2006).

Also promising might be family policies supporting dual-earner family arrangements. Family policy institutions, such as readily available public day-care services for preschool-aged children, paid maternity and paternity leave, and public home help to the elderly, are known to reduce the tension between paid work and family obligations (Sjöberg, 2004). These policies might subsequently also reduce the change toward more traditional gender-role stereotypes. In the Netherlands, most of these family policies are in place, but paternity leave is only partially paid. Moreover, the individual differences in gender-role stereotype change found in the current study suggest that the Dutch work–family policies to promote egalitarian work–family arrangements might not be sufficient for all families. The Scandinavian countries do have extensive paid paternity leave policies, and equally shared parental leave is promoted with equality bonuses (Thévenon, 2011). Interestingly, in these countries parenthood is not associated with a less gender-equal division of labor (Hegewisch & Gornick, 2011). Thus, supporting equally shared paid parental leave might be a fruitful direction to take. These policies might, however, have a bigger impact if they are accompanied by a societal shift in which father involvement is encouraged and valued (Thompson, Beauvais, & Lyness, 1999).

Last, our findings with regard to the association between gender-role stereotype change and perceived division of labor are in line with gender-role theories and a large body of research demonstrating the association between gender-role stereotypes and division of household and paid labor in parents (e.g., Christie-Mizell & Erickson, 2007; Kaufman & Uhlenberg, 2000). However, it should be mentioned that in the current study no associations were found between implicit gender-role stereotypes and behavior at single time points. Thus, there is a certain discrepancy between one's implicit gender-role stereotypes and perceived gender-role behavior that could not be a result of social desirability bias or lack of awareness of one's gender-role stereotypes.

This study is not without limitations. First, we used a combination of a cross-sectional and longitudinal study (without a nonparent control group) to examine the effects of parenthood on implicit gender-role stereotypes and behavior. Ideally, future studies should employ a longitudinal design starting before the transition into parenthood, following parents and nonparents for longer periods of time. These studies can examine whether parenthood truly changes gender-role stereotypes and behavior or whether traditional adults are more likely to become parents.

Second, the generalizability of the results might be reduced because both samples were highly educated and Dutch, and the cross-sectional sample was a convenience sample that was even higher educated than the longitudinal sample. Higher educated people might have greater opportunities to use public and private child-care facilities than less well-educated people, which may increase the options they have after becoming a parent to reconcile the work–family dilemma in a gender-egalitarian way. Subsequently, this might prevent an increase in traditional gender-role

stereotypes. However, implicit gender-role stereotypes are less affected by educational level than explicit gender-role stereotypes (Endendijk et al., 2013), and there was considerable variation in IAT scores within our high-educated samples, approximating a normal distribution. Moreover, the findings are generally consistent with previous studies on explicit gender-role stereotypes of parents form Australia, the United Kingdom, and the United States (e.g., Baxter et al., 2015; Corrigall & Konrad, 2007; Schober, 2013). Comparisons are needed with future studies conducted in countries with specific policies aimed at enhancing gender-equal sharing of responsibilities associated with parenthood, such as Scandinavian countries, and in countries where gender equality is low, such as countries in the Middle East.

Relatedly, our results might not be generalizable to other family types than families with a mother, a father, and two children with an age difference of around 2 years. Gender-traditional task division increases with the birth of additional children (Sanchez & Thomson, 1997), especially when additional births are close together in time (Kuo, Volling, & Gonzalez, 2017). Also, single, gay, and lesbian parents are less traditional in their gender-role behavior (Stacey & Biblarz, 2001). Future research should examine changes in gender-role stereotypes and behavior after the transition to parenthood in different family types.

Furthermore, the age range of the children in the cross-sectional sample was larger (0–18) than in the longitudinal sample, reducing the comparability of the results. The difference in implicit gender-role stereotypes between parents and nonparents in the cross-sectional sample might have been larger when focusing on the same younger age range as the children in the longitudinal sample because it has been suggested that parents' gender-role stereotypes may revert to pre-parenthood levels as children grow older (Evertsson, 2013).

Last, a survey measure was used to assess parents' perceived division of household labor, which may have been biased by people's gender-role stereotypes (Press & Townsley, 1998). However, implicit gender-role stereotypes were not related to perceived division of household labor at single measurement waves in the current study. Still, it might have been interesting to also use time diaries, which are considered the gold standard (Yavorsky et al., 2015), to examine whether over- or underestimation of perceived household contributions is related to implicit gender-role stereotypes.

To conclude, this is one of the first studies demonstrating (a) a change in implicit stereotypes over a longer period of time and (b) the association of change with personal life experiences. This adds to our understanding of the reliability and state-like characteristics of stereotypes assessed with IAT measures. Specifically, being a parent of young children is associated with an increase in traditional implicit gender-role stereotypes and a division of labor in most parents, even in a gender-equal society such as the Netherlands. These increases are likely to be associated with unfavorable outcomes in both parents and children, such as unequal career opportunities for mothers and fathers (Mayrhofer et al., 2008), the development of gender differences in their children's problem behavior (Endendijk et al., 2017), and the intergenerational transmission of gender stereotypes (Endendijk et al., 2013). However, the current study also provides interesting findings, as not all parents show an increase in traditional gender-role stereotypes, and some even become more egalitarian in their stereotypes. As mothers' higher work hours and a more egalitarian task division in the home appear to be important buffering factors against increased traditional gender-role stereotypes, there is a need for more rigorous policies that support combining mothering and fathering with (full-time) paid employment, such as more equal amounts of paid maternity and paternity leaves. Generally, these findings suggest that an accumulation of counter-stereotypic experiences during the years can reduce implicit stereotypes.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Appendix S1. Supplementary material for analyses in imputed datasets

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