



Does Parenthood Change Implicit Gender-Role Stereotypes and Behaviors?

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Review

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

Does Parenthood Change Implicit Gender-Role Stereotypes and Behaviors?

Joyce J. Endendijk¹, Belle Derks², and Judi Mesman^{3*}

¹ Child and Adolescent Studies, Utrecht University, Heidelberglaan 1, 3548 CS, Utrecht, The Netherlands, j.j.endendijk@uu.nl

² Department of Social, Health and Organisational Psychology, Utrecht University, Heidelberglaan 1, 3548 CS, Utrecht, The Netherlands, b.derks@uu.nl

³ Centre for Child and Family Studies, Leiden University, Wassenaarseweg 52, 2333 AK, Leiden, The Netherlands, mesmanj@fsw.leidenuniv.nl

* Corresponding author.

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ABSTRACT

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 non-parents with a wish to have a child and non-parents 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 four years after the first birthday of their youngest child. We found that implicit gender-role stereotypes and behavior became increasingly traditional over time in most parents, except for two groups: (1) fathers with highly traditional gender-role stereotypes did not show change over time, and (2) older, highly educated mothers who worked relatively many hours outside the home and who had an egalitarian task division at home, who remained egalitarian in their gender-role stereotypes over time.

Keywords: fathers, gender roles, longitudinal, mothers, parenthood, stereotypes.

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2
3 Becoming a parent is a life-changing moment in which gender-role behavior of both
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5 men and women appears to become more traditional. For example, after the arrival of a baby
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7 mothers are more likely to decrease work hours outside the home (Paull, 2008) and increase
8
9 the time they spend on housework and child care (Yavorsky, Kamp Dush, Schoppe-Sullivan,
10
11 2015), while fathers' work hours and income tend to remain stable or even increase
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13 (Kaufman & Uhlenberg, 2000). Because more traditional gender roles negatively impact
14
15 career success in women (Mayrhofer, Meyer, Schiffinger, & Schmidt, 2008), and promote
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17 gender-inequality and traditional gender-stereotypes in children (Turner & Gervai, 1995), it is
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19 important to study processes underlying this change. In the current investigation, we
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21 examined whether parenthood experiences lead to more traditional implicit gender-role
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23 stereotypes in Dutch men and women, and whether these changes are associated with changes
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25 in gender-role behavior (hours in paid work, perceived task division). Using a cross-sectional
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27 design, we first tested whether implicit gender-role stereotypes and gender-role behavior are
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29 more traditional among parents than non-parents. Using a longitudinal design, we then tested
30
31 whether implicit gender-role stereotypes and gender-role behavior of parents with young
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33 children become increasingly more traditional during the first years of parenthood. We
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35 studied changes in implicit gender stereotypes in the Netherlands, which scores high on
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37 gender equality, and here one might not expect gender roles to still have such an impact.
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BACKGROUND

Work-Family Conflict and Gender-Role Stereotypes

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45 Many new parents find it challenging to balance the competing demands of paid work
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47 and family life (Blair-Loy, 2009). How parents solve work-family conflicts and determine
48
49 division of labor depends on many factors, including economic factors (Becker, 1991), and
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51 national family policies (Sjöberg, 2004), but also on pervasive gender-role norms,
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53 particularly women's role of homemaker and men's role of economic provider (Wood &
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3 Eagly, 2002). There are, however, individual differences in adherence to societal gender
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5 roles, known as 'gender flexibility' (Gerson, 2009). More fixed, rigid stereotypes that clearly
6
7 define separate roles for men and women would lead to less gender flexibility in
8
9 breadwinning and caretaking than more flexible/egalitarian views of gender roles. In line
10
11 with these propositions, fathers' stronger adherence to traditional gender-role stereotypes
12
13 predicts more time in paid work (Kaufman & Uhlenberg, 2000), less time in household work
14
15 (Coltrane & Ishii-Kuntz, 1992), and less time with their children (Bulanda, 2004). Similarly,
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17 mothers' stronger adherence to traditional gender-role stereotypes is associated with lower
18
19 earnings and less time in paid work (Christie-Mizell et al., 2007; Stickney & Konrad, 2007).
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The Importance of Studying Implicit Gender-Role Stereotypes

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25 The gender-role stereotypes that new parents report do not always align with the
26
27 actual division of labor in a family (Coltrane, 1990). One explanation for this difference
28
29 might lie in the power differential in income within couples, which reduces women's power
30
31 to bargain out of domestic labor (Brittman, England, Sayer, Folbre, & Matheson, 2003) and
32
33 makes acting in accordance with egalitarian attitudes difficult. Another reason for this
34
35 difference could be people's lack of awareness of their gender-role stereotypes or
36
37 unwillingness to express their actual stereotypes. Social desirability bias is a common
38
39 problem when assessing explicit/self-reported stereotypes (Greenwald, Poehlman, Uhlmann,
40
41 & Banaji, 2009), especially in higher educated samples (Krysan, 1998) and societies that
42
43 value gender equality. Explicit gender stereotypes reflect directly stated or overtly expressed
44
45 ideas. Implicit gender-role stereotypes, on the other hand, operate largely outside conscious
46
47 awareness, and are most often assessed with the implicit association test (IAT, Gawronski &
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49 Bodenhausen, 2006). The IAT paradigm is based on automatic/fast or habitual responding,
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51 which makes it less prone to social desirability bias. Therefore, in the current investigation
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53 we focus on implicit rather than explicit gender-role stereotypes. Discrepancies found
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3 between implicit egalitarian gender-role stereotypes and actual gender-role behavior are
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5 likely to reflect a difficulty with acting in accordance with one's egalitarian values.
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8 Although widely used, the IAT has also been criticized. For example, it is not entirely
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10 clear whether implicit tasks measure a person's own stereotypes, or knowledge of culturally
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12 shared attitudes (De Houwer et al. 2009). Moreover, test-retest reliability has been found to
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14 be low to moderate, ranging from .25 to .69 (Lane, Banaji, Nosek, & Greenwald, 2007),
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16 indicating the IAT is sensitive to the context the person taking the IAT is in. Furthermore, the
17
18 IAT is not valid for making inferences about individuals and should only be used as a
19
20 research tool for increasing awareness of implicit stereotypes and its consequences
21
22 (Greenwald et al., 2009). However, the value of the IAT in light of these critiques is most
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24 clearly shown in that it has meta-analytically been found to outperform explicit stereotype
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26 measures in the prediction of actual behavior, in particular for controversial subjects like
27
28 gender and race (Greenwald et al., 2009).
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32 We used the family-career IAT, which assesses how strongly a person automatically
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34 associates the concepts of 'career' and 'family' with masculine and feminine gender (Nosek
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36 et al., 2002). Stereotypes can range from strong traditional (i.e., faster and less errors
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38 responding to career-men, family-women associations) to counter-stereotypical (i.e., faster
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40 and less errors responding to career-women, family-men associations) (Nosek et al., 2002).
41
42 Previous work has demonstrated the reliability and validity of the family-career IAT as a
43
44 measure of parental implicit gender-role stereotypes. Moderate positive correlations were
45
46 found between mothers' and fathers' gender-role stereotypes (Endendijk et al., 2013).
47
48 Further, parents' traditional implicit stereotypes were associated with traditional gender-
49
50 socialization practices with their children, and traditional implicit stereotypes and career
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52 aspirations of their children (Croft, Schmader, Block, & Baron, 2014; Endendijk et al., 2013,
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54 2014; 2017). Also, parents' implicit gender-role stereotypes did not correlate with explicit
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3 stereotypes about rearing boys and girls, or implicit stereotypes about appropriate toys for
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5 boys and girls, indicating that they could be considered a distinct aspect of gender stereotypes
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7 (Endendijk et al., 2013).
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Parenthood and Implicit Gender-Role Stereotypes and Behavior

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10
11 *Theoretical background.* Several theories and hypotheses have offered explanations
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13 for 1) why parents might have more traditional implicit gender-role stereotypes than non-
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15 parents, 2) whether gender-role stereotypes might change in the first years after parenthood,
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17 and 3) the association between gender-role stereotypes and behavior. They can roughly be
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19 divided in two competing groups of hypotheses: the *Stereotypes-as-Traits Hypothesis* and the
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21 *Stereotypes-as-States Hypothesis*.
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23
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25 With regard to the *Stereotypes-as-Traits Hypothesis*, Cohort Replacement Theory
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27 (Brewster & Padavic, 2000) and scholars in social psychology who view implicit stereotypes
28
29 as traits (Baron, 2015), state that implicit stereotypes are formed during childhood, are stable
30
31 and difficult to change once formed, propositions that are supported by empirical evidence
32
33 (Baron, 2015; Dunham, Baron, & Banaji, 2008). As such, like the influence of personality
34
35 traits, implicit stereotypes are thought to guide gender-role behavior such as becoming a
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37 parent or work-family arrangements and the division of labor within a family. Similarly,
38
39 rational planning models (Hakim, 2000) and scholars like Blair-Loy (2009) suggest that
40
41 adherence to gendered cultural stereotypes of career and family guide future behavior such as
42
43 becoming a parent. According to these models, traditional individuals are simply more likely
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45 to become parents than nontraditional individuals.
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49 The *Stereotypes-as-States Hypothesis* reflects the cognitive reinterpretation
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51 perspective (Kroska, 1997), theories of intra-cohort attitude change (Brooks & Bolzendahl
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53 2004), and social psychology perspectives suggesting that implicit stereotypes can change in
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55 response to repeated exposure to information that is *inconsistent* with current stereotypes
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(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

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attitudes (e.g., Baxter et al, 2015; Corrigan & 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 et al., 2008; Schober & Scott, 2012). Moreover, use of formal child care while mothers work was associated with a change over time towards 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 above studies 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 US, and some in the UK 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 only be related 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

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3 egalitarian gender-role patterns (Fan & Marini, 2000). Older parents have had more time to
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5 build stable careers, which allow more flexibility to engage in household and child-care tasks.
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7 Also, entry into marriage, as the most traditional type of union formation, is associated with
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9 more traditional gender-role stereotypes, than non-marital cohabitation (Cunningham et al.,
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11 2005; Fan & Marini, 2000). Further, regarding family type there is recent evidence that a
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13 mixed-gender sibling configuration in a family has a gender-neutralizing effect on parental
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15 gender-role stereotypes (Endendijk et al., 2013). The proposed mechanism is that opposite-
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17 gender siblings reinforce opposite-sex behavior in each other, creating experiences for
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19 parents that might contradict traditional gender-role stereotypes.
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Gender Differences

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25 It is important to examine gender differences in implicit gender-role stereotype
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27 change and in the association between gender-role stereotypes and behavior. The stereotypes
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29 and behavior of fathers might be less influenced by parenthood than those of mothers,
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31 because fathers experience less work-family conflict than mothers (Blair-Loy, 2009).
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33 However, the empirical evidence regarding this issue is inconsistent. Some studies show that
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35 becoming a parent has less effect on fathers' employment or housework (Morgan & Waite,
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37 1987; Sanchez & Thomson, 1997), whereas others show that mothers and fathers both
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39 become more traditional in their explicit gender-role attitudes after the transition into
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41 parenthood (Baxter et al., 2015; Cunningham et al., 2005; Fan & Marini, 2000). Yet, there is
42
43 also evidence from a qualitative study that fathers might even be more likely to fall back in
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45 traditional gender roles after becoming a parent than mothers, especially when reality fails to
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47 live up to their egalitarian ideals (Gerson, 2009). Finally, explicit gender-role attitudes have
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49 been found to predict career outcomes in women more consistently than in men (Corrigall &
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51 Konrad, 2007; Schober, 2013).
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Parenthood and Implicit Gender-Role Stereotypes in the Netherlands

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3 Studying gender-role stereotype changes associated with parenthood in the
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5 Netherlands is interesting, because there is a discrepancy between gender-egalitarian ideals
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7 and actual gender-equal sharing of child-care responsibilities in the Netherlands. For
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9 example, the participation of Dutch mothers with 3- to 5-year-old children in the labor market
10
11 is relatively high compared to other countries at 80% (Huerta et al., 2013). However, the
12
13 Netherlands has the highest percentage of part-time working mothers in the world (61%
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15 compared to 19% of fathers; OECD, 2016) even though partly subsidized high quality child
16
17 care is readily available. This high level of part-time work, creates a “mommy track” that
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19 may reduce mothers’ career success (Mayrhofer et al., 2008), and power to bargain out of
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21 domestic labor (Brittman et al., 2003). Moreover, not many fathers make use of government-
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23 financed “daddy days” or partially paid paternity leave (allowing 26 weeks of leave before
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25 the child’s eighth birthday; Huerta et al., 2013). Based on the possibilities to resolve work-
26
27 family dilemmas that are available in the Netherlands, one could suggest that gender-role
28
29 stereotypes might not necessarily change in Dutch parents. However, if gender-role
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31 stereotypes and division of labor become more traditional over time in Dutch parents, the
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33 Dutch work-family policies are apparently not sufficient to promote gender-egalitarian work-
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35 family arrangements.

Current Study

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43 The aims of this study were twofold. First, in a cross-sectional sample we examined
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45 parental status (i.e., parents versus non-parents) in relation to implicit gender-role stereotypes
46
47 and gender-role behavior concerning career and task division in the family. We expected
48
49 parents to have more traditional implicit gender-role stereotypes and behaviors than non-
50
51 parents (e.g., Baxter et al., 2015; Corrigan & Konrad, 2007).

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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

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3 this change could be explained by the gender-role experiences parents were exposed to in
4
5 their family. We expected that, just like with explicit gender-role stereotypes, three specific
6
7 trajectories of implicit-stereotype change could be discerned; parents with stable stereotypes,
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9 parents with stereotypes that become more egalitarian, and parents with stereotypes that
10
11 become more traditional (Schober & Scott, 2012). Furthermore, we hypothesized (in line
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13 with the *Stereotypes-as-States Hypothesis*) that implicit gender-role stereotypes would only
14
15 change when parents are repeatedly exposed to gender-role experiences in the family that are
16
17 inconsistent with their implicit gender-role stereotypes (Berrington et al., 2008; Schober &
18
19 Scott, 2012). In other words, we expected that the direction of implicit gender-role stereotype
20
21 change would be related to the traditionality of gender-role behaviors in the family, such as
22
23 perceived division of household and childcare tasks, and working hours of mothers' and
24
25 fathers' outside the house. Relatedly, we expected lower educated parents, younger parents,
26
27 families with mixed-gender siblings, and married parents, to be more likely to show a change
28
29 towards more traditional stereotypes. Finally, in both samples we examined gender
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31 differences in parenthood effects on gender-role stereotypes and behavior, and the association
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33 between gender-role stereotypes and behavior in an explorative way, because of inconsistent
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35 empirical evidence.
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METHODS

Sample

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45 For the current study two samples were used: 1) a cross-sectional sample with Dutch
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47 adults from the Harvard Project Implicit dataset of the gender-career Implicit Association
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49 Task (2005-2015) (retrieved from osf.io/y9hiq/), and 2) a longitudinal sample of Dutch
50
51 parents from the *Boys will be Boys?* Study (see Endendijk et al., 2013).
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55 Sample 1 consisted non-parents and parents in the Netherlands aged between 25 and
56
57 40 years. We excluded people who 1) conducted the IAT before, 2) had incomplete IAT data,
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3 or 3) did not complete background questions. This resulted in a sample of 672 participants;
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5 251 men (with child under 18: $n = 57$, without child: $n = 194$) and 421 women (with child
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7 under 18: $n = 114$, without child: $n = 307$). Background information of these subsamples can
8
9 be found in Table 1. Most participants were highly educated. We could not select a sample
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11 with a narrower child-age range than 0-18 years, because participants only reported whether
12
13 they had a child aged below 18 years. By selecting a sample of participants aged between 25
14
15 and 40 we most likely included participants with young children, as mothers' and fathers'
16
17 mean age at birth of first child in NL is respectively 29.6 and 32.5 (Central Bureau of
18
19 Statistics, 2017).
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21

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23 Sample 2 consisted of 390 Dutch two-parent families with a youngest child that was
24
25 around 12 months of age and an oldest child that was between 2.5 and 3.5 years old. This
26
27 family type is most common in the Netherlands. Included families participated in two home-
28
29 visits each year over a period of 3 years (2010-2014). The current paper reports on data from
30
31 four time points (Time 1-Time 4: home visits around 1st, 2nd, 3rd, and 4th birthday of youngest
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33 child). At Time 1 oldest children were on average 3.02 years old ($SD = 0.30$), mothers were
34
35 aged between 22 and 46 years ($M = 33.94$, $SD = 3.97$), and fathers were between 25 and 63
36
37 years of age ($M = 36.78$, $SD = 5.07$). At Time 1 most participating parents were married or
38
39 had a cohabitation agreement or registered partnership (93%), and the remaining 7% lived
40
41 together without any kind of registered agreement. With regard to educational level, most
42
43 mothers (79%) and fathers (76%) had a high educational level (academic or higher vocational
44
45 schooling). The sample included similar numbers of four different family constellations;
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47 families with two boys (27%), families with two girls (23%), families with male oldest child,
48
49 and female youngest child (26%), families with female oldest child, and male youngest child
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51 (24%).
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Procedure

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3 Participants in sample 1 signed up for this study by themselves and completed an online
4
5 survey that consisted of the gender-role stereotypes IAT (see below) followed by background
6
7 questions. They did not receive any compensation for their participation. Participants in
8
9 Sample 2 were recruited between April 2010 and May 2011. Families were eligible if they
10
11 were two-parent households, none of the parents or children had a severe physical or
12
13 intellectual handicap, children were born in the Netherlands, and both parents and children
14
15 were fluent in the Dutch language. Eligible families were invited by mail to participate in a
16
17 longitudinal study on the role of fathers and mothers in child socioemotional development in
18
19 the first 4 years of life. They received a letter, a brochure with the details of the study, and an
20
21 answering card to respond to the invitation. Participating mothers and fathers were separately
22
23 visited at home each year, with an intervening period of about two weeks. The order in which
24
25 fathers and mothers were visited was counterbalanced. Families received a payment of 30
26
27 Euros each year and small presents for the children. Each year before the first home-visit,
28
29 both parents were asked to individually complete a set of questionnaires (e.g., about task
30
31 division). During the home visits parents completed the gender-role stereotypes IAT on a
32
33 laptop computer. Reaction time and accuracy were automatically recorded for every trial. All
34
35 visits were conducted by trained graduate or undergraduate students. Informed consent was
36
37 obtained from all participating families. Ethical approval for this study was provided by the
38
39 Committee Research Ethics Code of the Leiden Institute of Education and Child Studies.
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Materials

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47 *Gender-role stereotypes.* In both samples implicit gender-role stereotypes were
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49 assessed by a computerized gender-career Implicit Association Task (IAT) (Nosek et al.,
50
51 2002). This task measures the association of female and male attributes (i.e., Julia, Michelle,
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53 Anna, Emily, Rebecca, Ben, John, Daniel, Paul, Jeffrey) with the concepts of career and
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55 family (Dutch translations of; Management, Professional, Corporation, Salary, Office,
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3 Business, Career, Home, Parents, Children, Family, Marriage, Wedding, Relatives). The task
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5 consists of congruent blocks in which participants should sort both career attributes and male
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7 names to one category and family attributes and female names/attributes to the other, and
8
9 incongruent blocks in which participants should sort career and female attributes to one
10
11 category and family and male attributes to the other. They sort the stimuli (i.e., words) by
12
13 pressing a button that corresponds to the male category or a button for the female category.
14
15 To reduce possible order effects of the presentation of congruent and incongruent blocks
16
17 order of the blocks is varied between respondents. In both samples the participants were
18
19 randomly assigned to one of the two IAT versions (i.e., congruent first, incongruent first). In
20
21 Sample 2 a mother and father within one family always completed the same version of the
22
23 IAT. The improved scoring algorithm by Greenwald, Nosek, and Banaji (2003) was used to
24
25 determine each participant's level of implicit stereotypes. A high positive score represented
26
27 more difficulties (i.e., a combination of longer reaction times and more errors) to pair male
28
29 attributes to the family concept and female attributes to the career concept than to pair female
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31 attributes to the family concept and male attributes to the career concept. In other words,
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33 higher positive scores represent stronger stereotypical (traditional) attitudes about the roles of
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35 men and women, negative scores represent counter-stereotypical attitudes about gender roles,
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37 and scores around zero represent egalitarian attitudes.
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43 *Parental status.* In Sample 1 parental status was determined based on the answers to
44
45 two questions: 1) Are you currently the parent or guardian of a child (or children) under 18
46
47 living in your home? (yes/no), 2) Do you plan to have children? (when they did not have a
48
49 child, yes/no).
50

51
52 *Gender-role behavior.* In Sample 1, two questions were asked that were considered
53
54 aspects of gender-role behavior. First, the participant's contribution to annual household
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56 income was assessed with the question 'What percentage of your family's annual household
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3 income do you contribute?'. Answering options ranged from 1-11 (1 = 0%, 2 = 1 - 10%, 3 =
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5 11 - 20%, 4 = 21 - 30%, 5 = 31 - 40%, 6 = 41 - 50%, 7 = 51 - 60%, 8 = 61 - 70%, 9 = 71 -
6
7 80%, 10 = 81 - 90%, 11 = 91 - 100%). Second, the perceived amount of child-care tasks
8
9 performed by the participant was assessed with the question 'Overall, how much of the
10
11 caregiving duties do you perform for the child/children living in your home?'. Answering
12
13 options ranged from 1-7 (1 = *None*, 2 = *Very little*, 3 = *Somewhat less than half*, 4 = *Half*, 5 =
14
15 *Somewhat more than half*, 6 = *A lot*, 7 = *All of it*).

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18 In Sample 2, two similar aspects of parents' gender-role division were considered.
19
20 First, mothers and fathers were asked to report their working hours (i.e., for paid work) every
21
22 year when they were contacted by phone to schedule the home visits. Second, at T2-T4 we
23
24 asked mothers and fathers separately to fill in a 15-item questionnaire on their perception of
25
26 the division of labor regarding small-household tasks (e.g., doing groceries, cooking dinner,
27
28 cleaning) and child-care tasks (e.g., bring children to bed, bathe children, bring children to
29
30 school) during the past week. The questionnaire was based on previous survey measures
31
32 assessing division of labor in the family (Press & Townsley, 1998; Yavorsky et al., 2015).
33
34 Parents could answer on a 5-point scale (1 = *I exclusively/almost exclusively performed this*
35
36 *task*, 5 = *my partner exclusively/almost exclusively performed this task*). Separate scales were
37
38 constructed for division of small-household tasks and division of child-care tasks. The
39
40 internal consistencies (Cronbach's alpha, range across time points, separate for mothers and
41
42 fathers) for division of small-household tasks were .75-.79 for fathers and .79-.82 for
43
44 mothers. The internal consistencies for division of child-care tasks were lower than for the
45
46 small-household scale; .62-.63 for fathers and .61-.65 for mothers. This might be because the
47
48 child-care scale has fewer items. For both questionnaires mean scores around 3 represent an
49
50 egalitarian task division. Scores above 3 represent a nontraditional task division for mother-
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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 ($r_s = .48 - .66, p < .01$). Mothers' perceived task division was, however, more traditional than fathers' (see Table 3 and 4, $p_s < .01$), 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, as 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, 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. 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 non-parent, or plan to have child vs not plan to have child) as between-subject variables, and age, educational level, IAT order as covariates, were conducted to examine differences in gender-

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1
2
3 role stereotypes between parents and non-parents and between non-parents who plan to have
4 a child versus those who did not plan to have a child. We then performed two regression
5 analyses to assess gender differences in the effects of parenthood (parent vs non-parent) on
6 gender-role behavior and associations between gender stereotypes and gender-role behavior.
7 The following variables were entered in the first analysis predicting contribution to family
8 income; age, educational level, gender, gender-role stereotypes, parental status (Step 1), two-
9 way interactions between gender, gender-role stereotypes, and parental status (Step 2). The
10 following variables were entered in the second analysis predicting division of child-care tasks
11 in parents; age, educational level, gender, gender-role stereotypes (Step 1), interaction
12 between gender and gender-role stereotypes (Step 2).
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25 *Sample 2.* We employed latent growth mixture modeling (GMM) using full
26 information maximum likelihood estimation (FIML) in Mplus to model the individual
27 gender-role stereotypes trajectories. We tested these models separately for mothers and
28 fathers. With GMM it is possible to classify individuals in distinct groups based on their
29 individual gender-role stereotype trajectories during parenthood. The classification is made
30 so that individuals within a group are more similar than individuals between groups. GMM is
31 a person-centered approach that allows for different groups of individual growth trajectories,
32 instead of conventional growth modeling that assumes that a single growth trajectory can
33 adequately approximate an entire population (Jung & Wickrama, 2007). The multiple
34 imputation (Markov chain Monte Carlo) method with five imputations and 10 iterations was
35 used to compute missing values on the gender-role stereotypes and behavior variables, and
36 covariates. We fitted a series of linear GMMs, which ranged from one to five latent growth
37 trajectory classes. Quadratic growth curves were examined, because gender-role stereotypes
38 were assessed at 4 time points. GMM models in which only between-class variation was
39 allowed, led to models that converged. We selected the number of latent growth classes on
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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3 the basis of several criteria, with the Bayesian Information Criterion (BIC) and Bootstrapped
4 Likelihood Ratio Test (BLRT) being the most important (Nylund, Asparouhov, & Muthén,
5 2007). Smaller BIC values and significant BLRT indicate a better model fit than the model
6 with 1 class less. Further, each class had to contain > 1% of the sample, and entropy had to be
7 around .70 or higher (Jung & Wickrama, 2007; Nylund et al., 2007).

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

RESULTS

Cross-Sectional Differences Between Parents and Non-Parents

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

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Implicit gender-role stereotypes. Implicit gender-role stereotypes were significantly
higher in parents compared to non-parents (see Table 1), $F(1, 665) = 4.31, p < .05, \text{partial } \eta^2 = .01$. Moreover, gender-role stereotypes did not differ between non-parents who were
planning to have a child ($n = 377, M = 0.45, SD = 0.36$) and non-parents 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.

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Association between gender-role stereotypes and behavior. Regarding contribution to annual household income, there was a significant interaction between gender and parental status ($B = -1.17$, $SE = .55$, $\beta = -.15$, $p < .05$, 95% CI = [-2.243, -0.102]). Simple group comparisons showed that mothers contributed less to the annual household income than non-mothers (see Table 1), $t(295.30) = 2.79$, $p < .01$, $d = .28$, a difference which was not found between fathers and non-fathers, $t(151.74) = -1.29$, $p = .20$. The interaction between implicit gender-role stereotypes and gender was also significant, $B = -1.34$, $SE = .64$, $\beta = -.12$, $p < .05$, 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, $B = 1.60$, $SE = .16$, $\beta = .61$, $p < .01$, 95% CI = [1.281, 1.908]. Implicit gender-role stereotypes were not significantly related to performance of child-care duties, $B = -.20$, $SE = .22$, $\beta = -.05$, $p = .37$, 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 datasets, 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 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 ($r_s = .16 - .40$, $p_s < .01$) and fathers ($r_s = .32 - .35$, $p_s < .01$). At separate measurement waves, implicit gender-role stereotypes did not correlate with gender-role behavior.

Mothers' Gender-Role Stereotype Trajectories

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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3 See Table 2 (top part) for results of the GMM analyses for one to five classes of
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5 maternal gender-role stereotype trajectories. For mothers' gender-role stereotypes, a 3-class
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7 solution fitted the data best (i.e., largest decrease in BIC, entropy > 0.70, significant BLRT,
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9 and sufficient mothers in each group). As can be seen in Figure 1a, mothers in class 1
10
11 (labeled 'traditional-increasing') had strong traditional gender-role stereotypes that became
12
13 even more traditional over time. Mothers in class 2 (labeled 'intermediate-increasing') had
14
15 slightly traditional gender-role stereotypes that became more traditional over time (but
16
17 increase leveled off from T2 to T4). Mothers in class 3 (labeled 'egalitarian') could be
18
19 characterized by egalitarian gender-role stereotypes that became even less traditional over
20
21 time, with a slight increase in traditionality from T3 to T4. Table 3 shows descriptive
22
23 statistics for the three groups on relevant background variables and gender-role behavior.
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25
26

27 *Gender-role stereotype trajectories associated with age, educational level, marital*
28
29 *status, and family type.* A significant class difference was found for mothers' age (in all
30
31 imputed datasets, range: $F(2, 389) = 45.44-62.89, p < .01, \text{partial } \eta^2 = .19-.25$), indicating
32
33 that traditional-increasing mothers were the youngest followed by intermediate-increasing
34
35 mothers and egalitarian mothers. The same difference was found for the age of the partner (in
36
37 all imputed datasets, range: $F(2, 389) = 12.27-17.01, p < .01, \text{partial } \eta^2 = .06-.08$), indicating
38
39 that traditional-increasing mothers had the youngest partners followed by intermediate-
40
41 increasing mothers and egalitarian mothers. Traditional-increasing mothers were more likely
42
43 to have lower education ($\text{res}_{\text{adj}} = 2.5$), whereas egalitarian mothers were more likely to have
44
45 higher education ($\text{res}_{\text{adj}} = 1.8$, significant in 1 imputed dataset, range: $\chi^2(2) = 2.82-8.49, p =$
46
47 $.014-.244$). No class differences were found on the partner's educational level ($ps > .09$),
48
49 marital status ($ps > .38$), and family type ($ps > .19$).
50
51
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53 *Gender-role stereotype trajectories associated with gender-role behavior.* No
54
55 significant class differences were found in gender-role behavior *change* over time (i.e., non-
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

1
2
3 significant interactions between class and gender-role behavior change). However, main
4
5 effects were found of gender-role stereotype class on working hours (in all imputed datasets,
6
7 range: $F(2, 387) = 5.34-7.71, p < .01, partial \eta^2 = .03-.04$), involvement with small-
8
9 household tasks (in 4 out of 5 imputed datasets, range: $F(2, 387) = 2.82-7.21, p = .001-.061$,
10
11 $partial \eta^2 = .01-.04$) and child care tasks (in all imputed datasets, range: $F(2, 387) = 4.92-$
12
13 $6.48, p < .01, partial \eta^2 = .03$). Across time points, intermediate-increasing and egalitarian
14
15 mothers worked more and were less involved with small household tasks than traditional-
16
17 increasing mothers. In addition, traditional-increasing mothers were more involved with child
18
19 care tasks than intermediate-increasing mothers. The work hours of the partner were also
20
21 significantly different between the mothers with different gender-role stereotype trajectories
22
23 (in 2 out of 5 imputed datasets, range: $F(2, 387) = 1.47-4.01, p = .019-.231, partial \eta^2 = .01-$
24
25 $.02$). Traditional-increasing mothers had partners who worked more than egalitarian mothers.
26
27 Also, main effects of time were found in all classes for working hours (in all imputed
28
29 datasets, range: $F(2-2.03, 771.88-784.70) = 6.19-12.96, p < .01, partial \eta^2 = .02-.04$,
30
31 Greenhouse-Geisser correction) and child-care tasks (in all imputed datasets, range: $F(1.94-$
32
33 $1.98, 750.39-765.92) = 12.45-20.77, p < .01, partial \eta^2 = .03-.05$, Huynh-Feldt correction),
34
35 indicating that mothers worked less and became more involved with child-care tasks over
36
37 time.
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Fathers' Gender-Role Stereotype Trajectories

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45 See Table 2 (bottom part) for results of the GMM analyses for one to five classes of
46
47 paternal gender-role stereotype trajectories. For fathers' gender-role stereotypes, a 3-class
48
49 solution fitted the data best (i.e., largest decrease in BIC, entropy > 0.70, significant BLRT,
50
51 and sufficient fathers in each group). As can be seen in Figure 1b, fathers in class 1 (labeled
52
53 'stable traditional') had strong traditional gender-role stereotypes that were stable over time.
54
55 Fathers in class 2 (labeled 'intermediate-increasing') had intermediate gender-role
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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3 stereotypes that became more traditional over time (but increase leveled off from T2 to T4),
4
5 and fathers in class 3 (labeled ‘egalitarian’) had egalitarian gender-role stereotypes that also
6
7 became more traditional over time. Table 4 shows descriptive statistics for the three groups
8
9 on relevant background variables and gender-role behavior.
10

11 *Gender-role stereotype trajectories associated with age, educational level, marital*
12 *status, and family type.* A significant class difference was found for fathers’ age (in all
13
14 imputed datasets, range: $F(2, 389) = 45.41-52.21, p < .01, partial \eta^2 = .19-.21$), indicating
15
16 that egalitarian fathers were older than stable-traditional and intermediate-increasing fathers.
17
18 The same effect was found for age of the partner (in all imputed datasets, range: $F(2, 389) =$
19
20 $6.29-8.43, p < .01, partial \eta^2 = .03-.04$), indicating that egalitarian fathers had older partners
21
22 than stable-traditional and intermediate-increasing fathers. No class differences were found
23
24 for fathers’ educational level ($ps > .11$), partner’s educational level ($ps > .08$), marital status
25
26 ($ps > .67$), and family type ($ps > .12$).
27
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31

32 *Gender-role stereotype trajectories associated with gender-role behavior.* Egalitarian
33
34 fathers had partners with higher working hours than other fathers (in 2 of 5 imputed datasets,
35
36 range: $F(2, 387) = 1.45-3.48, p = .032-.236, partial \eta^2 = .01-.02$). No class differences were
37
38 found for fathers’ own working hours ($ps > .16$), involvement with small-household ($ps >$
39
40 $.16$) or child-care tasks ($ps > .43$). Fathers’ work hours did not decrease over time (in 4 of 5
41
42 imputed datasets, range: $F(1.88, 729.62-733.50) = 1.66-3.15, p = .047-.19, partial \eta^2 = .00-$
43
44 $.01$, Greenhouse-Geisser correction). Mother classes were related to father classes (in 1 of 5
45
46 imputed datasets, range: $\chi^2(4) = 4.14-11.48, p = .02-.39$), indicating that egalitarian fathers
47
48 were more likely to be partnered with egalitarian mothers ($res_{adj} = 2.5$).
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GENERAL DISCUSSION

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54 The goal of this study was to examine, longitudinally and cross-sectionally, whether
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56 parenthood is associated with changes towards more traditional implicit gender-role
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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3 stereotypes, and whether this change is associated with one's gender-role behavior in the
4
5 family. First, implicit gender-role stereotypes were more traditional in parents than in non-
6
7 parents. Second, three specific trajectories of implicit gender-role stereotype change in the
8
9 first years of parenthood could be discerned for mothers and fathers; egalitarian, traditional,
10
11 and intermediate trajectories. The direction of gender-role stereotype change was related to
12
13 individual differences in gender-role behavior (i.e., working hours, perceived task division
14
15 regarding child care and small household) and background variables (i.e., age, educational
16
17 level). Third, parenthood was for the most part similarly associated with mothers' and
18
19 fathers' implicit gender-role stereotypes. However, in terms of behavior there were some
20
21 differences: mothers spent more time on child care than fathers, mothers' contribution to
22
23 annual household income was lower than non-mothers', and mothers decreased their work
24
25 hours over time, whereas fathers did not. Associations between gender-role stereotype change
26
27 and own gender-role behavior were found in mothers, but not in fathers. Finally, fathers'
28
29 gender-role stereotype trajectories were only associated with mothers' working hours.
30
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34 Parents indeed had more traditional implicit gender-role stereotypes than non-parents,
35
36 which is consistent with previous evidence for explicit stereotypes (Baxter et al., 2015;
37
38 Corrigan & Konrad, 2007; Fan & Marini, 2000). This finding could indicate two things.
39
40 First, parents were already more traditional in their gender-role stereotypes before they
41
42 became parents and that was the reason they became parents in the first place. Second,
43
44 parents became more traditional in their gender-role stereotypes after they became parents. It
45
46 is not possible to draw firm conclusions about this issue, because of the cross-sectional data.
47
48 However, gender-role stereotypes did not differ between non-parents who planned to have a
49
50 child and non-parents who did not plan to have a child. This could suggest that gender-role
51
52 stereotypes change after the transition into parenthood and not because of people's wish to
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54 have children. Our findings also show that this change might be truly longitudinal, because,
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

1
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3 for most parents, implicit gender-role stereotypes were found to continue increasing at least
4
5 during the first years of parenthood. It is possible that changes in gender-role stereotypes
6
7 level off or return to pre-parenthood levels sometime after children go to school. Especially
8
9 when children reach the school age parental time in child care generally decreases, and
10
11 mothers return to work or to more working hours (Bianchi, 2000), which is likely to result in
12
13 less traditional gender-role stereotypes. However, it is also possible that the traditional
14
15 gender-role stereotypes that develop in the first year of parenthood remain a strong influence
16
17 on the work-family task division within couples, acting as a self-maintaining cycle. Future
18
19 research on changes in implicit gender-role stereotypes and task division between couples in
20
21 later phases of parenthood is needed to examine these possibilities.
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25 Interestingly, not all parents showed an increase in traditional gender-role stereotypes
26
27 during the first years of parenthood; only mothers with traditional gender-role stereotypes,
28
29 parents with intermediate level gender-role stereotypes, and fathers with egalitarian gender-
30
31 role stereotypes. Gender-role stereotypes of mothers with egalitarian gender-role stereotypes
32
33 became even more egalitarian over time (although they became slightly more traditional
34
35 again when children reached school-age). Gender-role stereotypes of fathers with high
36
37 traditional gender-role stereotypes remained stable. The shape of the gender-role stereotype
38
39 trajectories was slightly different from a previous study examining explicit gender-role
40
41 attitudes shortly before and after becoming a parent (Schober & Scott, 2012), which might be
42
43 due to methodological differences between the studies. For mothers, it was found that older
44
45 age, higher working hours, higher education, having an older partner, and a more egalitarian
46
47 task division were buffering against change toward more traditional implicit gender-role
48
49 stereotypes over time. However, just as for the other mothers, these mothers' perceived task
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51 division became more traditional and working hours decreased with increasing child age.
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56 Older age when having the first child and higher maternal education have also been
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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2
3 associated with a change toward more egalitarian self-reported gender-role attitudes (Fan &
4
5 Marini, 2000; Schober & Scott, 2012), supposedly because these women have had more time
6
7 to build stable careers, leading to more gender-equal divisions of labor in the family
8
9 (Coltrane, 1990). It is also possible that older women are more aware of gender inequality
10
11 due to more frequent exposure with gender discrimination in their personal lives, resulting in
12
13 more progressive gender-role attitudes (Bolzendahl & Meyers, 2004).
14
15

16
17 An explanation for the stable gender-role stereotype trajectory of fathers with high
18
19 traditional gender-role stereotypes could be that these fathers' stereotypes were already
20
21 congruent with what was happening in their families. It is also possible that fathers'
22
23 traditional gender-role stereotypes reinforced a traditional task division in the family.
24
25 Interestingly, fathers' gender-role stereotype trajectories were only related to their partners'
26
27 working hours, and not to their own gender-role behaviors. Fathers, in particular, may be
28
29 more influenced by their partners' working hours, because fathers changed work patterns less
30
31 than their partners did in response to the transition to parenthood (i.e., there was a floor effect
32
33 in work pattern change among fathers). This finding suggests that in the workplace men's
34
35 traditional roles might still be favored and therefore difficult to change. Last, fathers within
36
37 the egalitarian gender-role stereotype trajectory were more likely to be older and have older
38
39 partners with high working hours. This is in line with a qualitative study showing that
40
41 postponing parenthood as a couple might lead to more involved fathers who are willing to
42
43 share responsibilities associated with parenthood, because they have had more time to
44
45 envision and to become "attached" to the father-role (Coltrane, 1990). Alternatively,
46
47 egalitarian fathers were also partnered with non-traditional women (i.e., older age when
48
49 becoming a mother, and concentrating on their career). The greater monetary resources
50
51 associated with a working partner, gives these fathers more flexibility to engage in household
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53 and child-care tasks, which might be the reason for their egalitarian attitudes. Interestingly
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

1
2
3 even fathers with egalitarian gender-role stereotypes in early childhood showed a slight
4
5 change towards more traditional gender-role stereotypes over time, possibly because fathers
6
7 work patterns remained stable and traditional over the years, and their perceived involvement
8
9 in household and childcare tasks was comparable to that of men with more traditional gender-
10
11 role stereotypes.
12

13
14 The longitudinal changes in implicit gender-role stereotypes are unlikely to be due to
15
16 repeated testing effects. Stimulus familiarity and frequency have been found to be unrelated
17
18 to IAT scores (Ottaway, Hayden, & Oakes, 2001). Also, if anything, taking multiple IAT
19
20 tests would make it easier to respond to stereotype-incongruent associations, thus decreasing
21
22 and not increasing gender-role bias in most parents. Further, the individual differences in
23
24 stereotype change over time cannot be explained by repeated-testing effects.
25
26

27
28 More similarities than differences were found between mothers and fathers. It is
29
30 possible that in current-day societies like the Netherlands in which gender equality is valued
31
32 highly, the effect of parenthood on mothers' and fathers' gender-role stereotypes and
33
34 behavior is becoming more and more similar (Baxter et al., 2015; Cunningham et al., 2005;
35
36 Fan & Marini, 2000). Mothers were only more likely than fathers to decrease working hours
37
38 and increase perceived involvement with child-care tasks with increasing child age, and
39
40 gender-role stereotypes and behavior were more consistently associated in mothers, which
41
42 might be due to a greater identification with the parental role in women compared to men
43
44 (Kerpelman & Schvaneveldt, 1999). People who identify strongly with a social role are more
45
46 likely to behave in accordance with this role or incorporate experiences associated with this
47
48 role into their gender-role stereotypes (Stryker & Burke, 2000).
49
50

51
52 This study also has important theoretical and practical implications. The finding that
53
54 implicit gender-role stereotypes change in response to parents' personal life experiences,
55
56 provides support for the Stereotypes-as-States hypothesis and not for the Stereotypes-as-
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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2
3 Traits hypothesis. This sensitivity to context can also explain the low to moderate correlations
4
5 between measurement waves in the current study and the moderate test-retest correlations
6
7 found in previous studies using the IAT (Nosek et al., 2007). This finding further suggests
8
9 that implicit gender-role stereotypes can be changed once formed, which provides
10
11 possibilities for interventions focusing on parents to prevent the negative consequences of
12
13 implicit gender-role stereotypes on both parents (e.g., unequal career opportunities) and
14
15 children (e.g., traditional gender-stereotypes, gender differences in aggression). One avenue
16
17 of intervention could be increasing parents' self-awareness of implicit gender-role stereotypes
18
19 and its consequences for themselves and their children. Increased awareness is the key to
20
21 change in gender-related behaviors (Gawronski & Bodenhausen, 2006).
22
23

24
25 Also promising might be family policies supporting dual-earner family arrangements.
26
27 Family policy institutions, like readily available public day-care services for preschool-aged
28
29 children, paid maternity and paternity leave, and public home help to the elderly, are known
30
31 to reduce the tension between paid work and family obligations (Sjöberg, 2004). These
32
33 policies might subsequently also reduce the change toward more traditional gender-role
34
35 stereotypes. In the Netherlands, most of these family policies are in place, but paternity leave
36
37 is only partially paid. Moreover, the individual differences in gender-role stereotype change
38
39 found in the current study suggest that the Dutch work-family policies to promote egalitarian
40
41 work-family arrangements might not be sufficient for all families. The Scandinavian
42
43 countries do have extensive paid paternity leave policies and equally shared parental leave is
44
45 promoted with 'equality bonuses' (Thévenon, 2011). Interestingly in these countries
46
47 parenthood is not associated with a less gender-equal division of labor (Hegewisch &
48
49 Gornick, 2011). Thus, supporting equally shared paid parental leave might be a fruitful
50
51 direction to take. These policies might, however, have a bigger impact if they are
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

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2
3 accompanied by a societal shift in which father involvement is encouraged and valued
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5 (Thomson, Beauvais, & Lyness, 1999).
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7
8 Last, our findings with regard to the association between gender-role stereotype
9
10 change and perceived division of labor, are in line with gender-role theories and a large body
11
12 of research demonstrating the association between gender-role stereotypes and division of
13
14 household and paid labor in parents (e.g., Christie-Mizell et al. 2007; Kaufman & Uhlenberg,
15
16 2000). However, it should be mentioned that in the current study no associations were found
17
18 between implicit gender-role stereotypes and behavior at single time-points. Thus, there is a
19
20 certain discrepancy between one's implicit gender-role stereotypes and perceived gender-role
21
22 behavior, that could not be due to social desirability bias or lack of awareness.
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26 This study is not without limitations. First, we used a combination of a cross-sectional
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28 and longitudinal study (without a non-parent control group) to examine the effects of
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30 parenthood on implicit gender-role stereotypes and behavior. Ideally, future studies should
31
32 employ a longitudinal design starting before the transition into parenthood, following parents
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34 and non-parents for longer periods of time. These studies can examine whether parenthood
35
36 truly changes gender-role stereotypes and behavior, or whether traditional adults are more
37
38 likely to become a parent.
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42 Second, the generalizability of the results might be reduced, because both samples
43
44 were highly educated and Dutch, and the cross-sectional sample was a convenience sample
45
46 that was even higher-educated than the longitudinal sample. Higher educated people might
47
48 have greater opportunities to utilize public and private child-care facilities than less well-
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50 educated people, which may increase the options they have after becoming a parent to
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52 reconcile work-family dilemma's in a gender-egalitarian way. Subsequently this might
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54 prevent an increase in traditional gender-role stereotypes. However, implicit gender-role
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56 stereotypes are less affected by educational level than explicit gender-role stereotypes
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(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 from Australia, the UK, and the US (e.g., Baxter et al., 2015; Corrigan & 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 two 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.

Further, 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 non-parents 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

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

1
2
3 interesting to also use time diaries, which are considered the gold standard (Yavorsky et al.,
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5 2015), to examine whether over- or under-estimation of perceived household contributions is
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7 related to implicit gender-role stereotypes.
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10 To conclude, this is one of the first studies demonstrating (1) change in implicit
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12 stereotypes over a longer period of time, and (2) associating change with personal life
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14 experiences. This adds to our understanding of the reliability and state-like characteristics of
15
16 stereotypes assessed with IAT measures. More specifically, being a parent of young children
17
18 is associated with an increase in traditional implicit gender-role stereotypes and division of
19
20 labor in most parents, even in a quite gender-equal society like the Netherlands. These
21
22 increases are likely to be associated with unfavorable outcomes in both parents and children,
23
24 such as unequal career opportunities for mothers and fathers (Mayrhofer et al., 2008), the
25
26 development of gender differences in their children's problem behavior (Endendijk et al.,
27
28 2017), and the intergenerational transmission of gender stereotypes (Endendijk et al., 2013).
29
30 However, the current study also provides interesting findings as not all parents show an
31
32 increase in traditional gender-role stereotypes, and some even become more egalitarian in
33
34 their stereotypes. As mothers' higher work hours and a more egalitarian task division in the
35
36 home appear to be important buffering factors against increased traditional gender-role
37
38 stereotypes, there is a need for more rigorous policies that support combining mothering and
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40 fathering with (full-time) paid employment, such as more equal amounts of paid maternity
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42 and paternity leaves. More generally, these findings suggest that an accumulation of counter-
43
44 stereotypic experiences over the years can reduce implicit stereotypes.
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46
47
48

REFERENCES

49
50
51 Baron, A. S. (2015). Constraints on the development of implicit intergroup attitudes. *Child*
52
53 *Development Perspectives*, 9, 50-54. doi:10.1111/cdep.12105
54
55
56
57
58
59
60

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Baxter, J., Buchler, S., Perales, F., & Western, M. (2015). A life-changing event: First births
4 and men's and women's attitudes to mothering and gender divisions of labor. *Social Forces*,
5 93, 989-1014. doi:10.1093/sf/sou103
6
7
8
9
10 Baeyens, F., Field, A. P., & Houwer, J. D. (2005). Associative learning of likes and dislikes:
11 Some current controversies and possible ways forward. *Cognition & Emotion*, 19, 161-174.
12 doi:10.1080/02699930441000265
13
14
15
16 Becker, G. S. (1991). *A treatise on the family*. Cambridge, MA: Harvard University Press.
17
18 Blair-Loy, M. (2009). *Competing devotions: Career and family among women executives*.
19 Cambridge, MA: Harvard University Press.
20
21
22
23 Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or
24 surprising continuity? *Demography*, 37, 401-414. doi:10.1353/dem.2000.0001
25
26
27 Berrington, A., Hu, Y., Smith, P. W., & Sturgis, P. (2008). A graphical chain model for
28 reciprocal relationships between women's gender role attitudes and labour force
29 participation. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 171,
30 89-108. doi:10.1111/j.1467-985X.2007.00510.x
31
32
33
34
35
36 Bittman, M., England, P., Sayer, L., Folbre, N., & Matheson, G. (2003). When does gender
37 trump money? Bargaining and time in household work. *American Journal of Sociology*,
38 109, 186-214. doi:10.1086/378341
39
40
41
42
43 Bolzendahl, C. I., & Myers, D. J. (2004). Feminist attitudes and support for gender equality:
44 Opinion change in women and men, 1974–1998. *Social forces*, 83, 759-789.
45 doi:10.1353/sof.2005.0005
46
47
48
49 Brewster, K. L., & Padavic, I. (2000). Change in gender-ideology, 1977–1996: The
50 contributions of intracohort change and population turnover. *Journal of Marriage and*
51 *Family*, 62, 477-487. doi:10.1111/j.1741-3737.2000.00477.x
52
53
54
55
56
57
58
59
60

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Brooks, C., & Bolzendahl, C. (2004). The transformation of US gender role attitudes: Cohort
4 replacement, social-structural change, and ideological learning. *Social Science Research*,
5 33, 106-133. doi:10.1016/S0049-089X(03)00041-3
6
7
8
9
10 Bulanda, R. E. (2004). Paternal involvement with children: The influence of gender
11 ideologies. *Journal of Marriage and Family*, 66, 40-45. doi: 10.1111/j.0022-
12 2455.2004.00003.x
13
14
15
16 Central Bureau of Statistics (2017). *Geboorte: Kerncijfers*. Retrieved from
17 <http://statline.cbs.nl/Statweb/>
18
19
20
21 Christie-Mizell, C. A., & Erickson, R. J. (2007). Mothers and mastery: The consequences of
22 perceived neighborhood disorder. *Social Psychology Quarterly*, 70, 340-365.
23 doi:10.1177/019027250707000406
24
25
26
27 Coltrane, S. (1990). Birth timing and the division of labor in dual-earner families exploratory
28 findings and suggestions for future research. *Journal of Family Issues*, 11, 157-181.
29 doi:10.1177/019251390011002003
30
31
32
33
34 Coltrane, S., & Ishii-Kuntz, M. (1992). Men's housework: A life course perspective. *Journal*
35 *of Marriage and the Family*, 54, 43-57. doi:10.2307/353274
36
37
38
39 Corrigall, E. A., & Konrad, A. M. (2007). Gender role attitudes and careers: A longitudinal
40 study. *Sex Roles*, 56, 847-855. doi:10.1007/s11199-007-9242-0
41
42
43 Croft, A., Schmader, T., Block, K., & Baron, A. S. (2014). The second shift reflected in the
44 second generation: Do parents' gender roles at home predict children's aspirations.
45 *Psychological Science* (online first article). doi:10.1177/0956797614533968.
46
47
48
49 Cunningham, M., Beutel, A. M., Barber, J. S., & Thornton, A. (2005). Reciprocal
50 relationships between attitudes about gender and social contexts during young adulthood.
51 *Social Science Research*, 34, 862-892. doi:10.1016/j.ssresearch.2005.03.001
52
53
54
55
56
57
58
59
60

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

1
2
3 De Houwer, J., Teige-Mocigemba, S., Spruyt, A., & Moors, A. (2009). Implicit measures: A
4
5 normative analysis and review. *Psychological Bulletin*, *135*, 347-368.

6
7 doi:10.1037/a0014211

8
9
10 Dunham, Y., Baron, A. S., & Banaji, M. R. (2006). From American city to Japanese village:
11
12 A cross-cultural investigation of implicit race attitudes. *Child Development*, *77*, 1268-1281.

13
14 doi:10.1111/j.1467-8624.2006.00933.x

15
16 Endendijk, J.J., Groeneveld, M.G., Van Berkel, S.R., Hallers-Haalboom, E.T., Mesman, J., &
17
18 Bakermans-Kranenburg, M.J. (2013), Gender stereotypes in the family context: Mothers,
19
20 fathers, and siblings. *Sex Roles*, *68*, 577-590. doi:10.1007/s11199-013-0265-4

21
22
23 Endendijk, J. J., Groeneveld, M. G., Pol, L. D., Berkel, S. R., Hallers-Haalboom, E. T.,
24
25 Bakermans-Kranenburg, M. J., & Mesman, J. (2017). Gender differences in child
26
27 aggression: Relations with gender-differentiated parenting and parents' gender-role
28
29 stereotypes. *Child Development*, *88*, 299-316. doi:10.1111/cdev.12589

30
31
32 Endendijk, J. J., Groeneveld, M.G., Van der Pol, L.D., Van Berkel, S.R., Hallers-Haalboom,
33
34 E.T., Mesman, J., & Bakermans-Kranenburg M.J. (2014). Boys don't play with dolls:
35
36 Mothers' and fathers' gender talk during picture book reading. *Parenting: Science and*
37
38 *Practice*, *14*, 141-161. doi:10.1080/15295192.2014.972753

39
40
41 Evertsson, M. (2013). The importance of work changing work commitment following the
42
43 transition to motherhood. *Acta Sociologica*, *56*, 139-153. doi:10.1177/0001699312466177

44
45 Fan, P. L., & Marini, M. M. (2000). Influences on gender-role attitudes during the transition
46
47 to adulthood. *Social Science Research*, *29*, 258-283. doi:10.1006/ssre.1999.0669

48
49 Festinger, L. (1962). *A theory of cognitive dissonance* (Vol. 2). Stanford university press.

50
51
52 Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in
53
54 evaluation: an integrative review of implicit and explicit attitude change. *Psychological*
55
56 *Bulletin*, *132*, 692-731. doi:10.1037/0033-2909.132.5.692

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Gerson, K. (2009). *The unfinished revolution: Coming of age in a new era of gender, work,*
4 *and family.* Oxford, UK: Oxford University Press.
5
6
7 Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the
8
9 Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and*
10 *Social Psychology, 85,* 197-216. doi:10.1037/0022-3514.85.2.197.
11
12
13 Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., Banaji, M. R. (2009). Understanding
14
15 and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of*
16 *Personality and Social Psychology, 97,* 17-41. doi:10.1037/a0015575.
17
18
19
20 Hakim, C. (2000). *Work–lifestyle choices in the 21st century: Preference theory.* Oxford:
21
22 Oxford University Press.
23
24
25 Hegewisch, A., & Gornick, J. C. (2011). The impact of work-family policies on women's
26
27 employment: a review of research from OECD countries. *Community, Work & Family, 14,*
28
29 119-138. doi:10.1080/13668803.2011.571395
30
31
32 Huerta, M., Adema, W., Baxter, J., Han, W., Lausten, M., Lee, R., & Waldfogel, J. (2013),
33
34 Fathers' leave, fathers' involvement and child development: Are they related? Evidence
35
36 from four OECD countries, *OECD Social, Employment and Migration Working Papers,*
37
38 No. 140, OECD Publishing. doi:10.1787/5k4dlw9w6czq-en.
39
40
41 Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and
42
43 growth mixture modeling. *Social and Personality Psychology Compass, 2,* 302-317.
44
45 doi:10.1111/j.1751-9004.2007.00054.x
46
47
48 Kaufman, G., & Uhlenberg, P. (2000). The influence of parenthood on the work effort of
49
50 married men and women. *Social Forces, 78,* 931-947. doi:10.1093/sf/78.3.931
51
52
53 Kerpelman, J. L., & Schvaneveldt, P. L. (1999). Young adults' anticipated identity
54
55 importance of career, marital, and parental roles: Comparisons of men and women with
56
57 different role balance orientations. *Sex Roles, 41,* 189-217. doi:10.1023/A:1018802228288
58
59
60

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Kroska, A. (1997). The division of labor in the home: A review and reconceptualization.
4
5 *Social Psychology Quarterly*, 60, 304-322. Retrieved from
6
7 <http://www.jstor.org/stable/2787092>
8
9
10 Krysan, M. (1998). Privacy and the expression of white racial attitudes: A comparison across
11
12 three contexts. *Public Opinion Quarterly*, 62, 506-544.
13
14 Kuo, P. X., Volling, B. L., & Gonzalez, R. (2017). Gender role beliefs, work–family Conflict,
15
16 and father involvement after the birth of a second child. *Psychology of Men & Masculinity*.
17
18 Advance online publication. doi:10.1037/men0000101
19
20
21 Lane, K. A., Banaji, M. R., Nosek, B. A., & Greenwald, A. G. (2007). Understanding and
22
23 using the Implicit Association Test: IV. What we know (so far). In B. Wittenbrink & N. S.
24
25 Schwarz (Eds.), *Implicit measures of attitudes: Procedures and controversies* (pp. 59 –
26
27 102). New York: Guilford Press.
28
29
30 Mayrhofer, W., Meyer, M., Schiffinger, M., & Schmidt, A. (2008). The influence of family
31
32 responsibilities, career fields and gender on career success: An empirical study. *Journal of*
33
34 *Managerial Psychology*, 23, 292-323. doi:10.1108/02683940810861392
35
36
37 Morgan, S. P., & Waite, L. J. (1987). Parenthood and the Attitudes of Young Adults.
38
39 *American Sociological Review*, 52, 541–547. Retrieved from www.jstor.org/stable/2095299
40
41 Nosek, B. A., Banaji, M., & Greenwald, A. G. (2002). Harvesting implicit group attitudes
42
43 and beliefs from a demonstration web site. *Group Dynamics: Theory, Research, and*
44
45 *Practice*, 6, 101-115. doi:10.1037/1089-2699.6.1.101
46
47
48 Nosek, B. A., Greenwald, A. G., & Banaji, M. R. (2007). The Implicit Association Test at
49
50 age 7: A methodological and conceptual review. In J. A. Bargh (Ed.), *Automatic processes*
51
52 *in social thinking and behavior* (pp. 265-292). Hove, UK. Psychology Press.
53
54
55
56
57
58
59
60

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes
4 in latent class analysis and growth mixture modeling: A Monte Carlo simulation study.
5 *Structural Equation Modeling, 14*, 535-569. doi:10.1080/10705510701575396
6
7
8
9
10 OECD (2016). *OECD Labour Force Statistics 2015*. OECD Publishing. doi:
11 10.1787/oecd_ifs-2015-en
12
13
14 Ottaway, S. A., Hayden, D. C., & Oakes, M. A. (2001). Implicit attitudes and racism: Effects
15 of word familiarity and frequency on the implicit association test. *Social Cognition, 19*, 97-
16 144. doi:10.1521/soco.19.2.97.20706
17
18
19
20
21 Paull, G. (2008). Children and women's hours of work. *The Economic Journal, 118*(526), F8-
22 F27. doi:10.1111/j.1468-0297.2007.02114.x
23
24
25 Press, J. E., & Townsley, E. (1998). Wives' and husbands' housework reporting: Gender,
26 class, and social desirability. *Gender & Society, 12*, 188-218.
27
28
29
30
31
32
33 Sanchez, L., & Thomson, E. (1997). Becoming mothers and fathers parenthood, gender, and
34 the division of labor. *Gender & Society, 11*, 747-772. doi:10.1177/089124397011006003
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- Schober, P. S. (2013). The parenthood effect on gender inequality: Explaining the change in
paid and domestic work when British couples become parents. *European Sociological
Review, 29*, 74-85. doi:10.1093/esr/jcr041
- Schober, P., & Scott, J. (2012). Maternal employment and gender role attitudes: dissonance
among British men and women in the transition to parenthood. *Work, Employment &
Society, 26*, 514-530. doi:10.1177/0950017012438577
- Sjöberg, O. (2004). The role of family policy institutions in explaining gender-role attitudes:
a comparative multilevel analysis of thirteen industrialized countries. *Journal of European
Social Policy, 14*, 107-123. doi:10.1177/0958928704042003

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

- 1
2
3 Stickney, L. T., & Konrad, A. M. (2007). Gender-role attitudes and earnings: A multinational
4 study of married women and men. *Sex Roles, 57*, 801-811. doi:10.1007/s11199-007-9311-4
5
6
7 Stacey, J., & Biblarz, T. J. (2001). (How) does the sexual orientation of parents matter?.
8
9 *American Sociological Review, 66*, 159-183.
10
11 Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social*
12 *Psychology Quarterly, 63*, 284-297. Retrieved from <http://www.jstor.org/stable/2695840>.
13
14
15
16 Teige-Mocigemba, S., Klauer, K. C., & Sherman, J. W. (2010). A practical guide to the
17 implicit association test and related tasks. In B. Gawronski & B. K. Payne (Eds.),
18 *Handbook of implicit social cognition: Measurement, theory, and applications* (pp. 117-
19 139). New York, NY: Guilford.
20
21
22
23
24
25 Thévenon, O. (2011). Family policies in OECD countries: A comparative analysis.
26
27 *Population and Development Review, 37*, 57-87. doi:10.1111/j.1728-4457.2011.00390.x
28
29
30 Thompson, C. A., Beauvais, L. L., & Lyness, K. S. (1999). When work-family benefits are
31 not enough: The influence of work-family culture on benefit utilization, organizational
32 attachment and work-family conflict. *Journal of Vocational Behavior, 54*, 392-415.
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- United Nations Development Program (2017). *Human Development Report 2016*. Retrieved
from: http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf
- Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and
men: implications for the origins of sex differences. *Psychological Bulletin, 128*, 699-727.
doi:10.1037/0033-2909.128.5.699

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

Yavorsky, J. E., Kamp Dush, C. M., & Schoppe-Sullivan, S. J. (2015). The production of inequality: The gender division of labor across the transition to parenthood. *Journal of Marriage and Family*, 77, 662-679. doi:10.1111/jomf.12

For Peer Review

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2
3
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5
6
7
8
9
10
11
12
13
14
15
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IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

Table 1. *Descriptive Statistics of Background and Study Variables in Men and Women with or without a Child Under 18, who Plan or Not Plan to Have a Child*

	Range	Parent of child under 18		Non-parent	
		Men N=57 M (SD)	Women N=114 M (SD)	Men N=194 M (SD)	Women N=307 M (SD)
<i>Background variables</i>					
Age in years ¹		34.77 (3.17)	35.18 (3.17)	30.43 (3.61)	30.52 (3.36)
Educational level ¹	1-10 ²	8.74 (1.34)	8.87 (1.22)	8.60 (1.29)	8.85 (1.14)
<i>Study variables</i>					
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 ³	1-11	8.16 (2.12)	6.61 (2.08)	7.68 (3.47)	7.34 (3.05)
Child-care tasks performed ⁴	1-7	3.18 (0.89)	4.73 (1.06)	-	-

¹ Analyses of variance revealed that parents were older than in non-parents, $F(1, 668) = 203.01, p < .01$, partial $\eta^2 = .23$. Educational did not differ between parents and non-parents, $F(1, 668) = 0.46, p = .50$. 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, $F(1, 668) = 0.30, p = .59$.

² Educational levels represent: 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.

³ Contribution to income ranged from 1 = 0% to 11 = 91 - 100%.

⁴ Child-care tasks performed ranged from 1 = None to 7 = All of it.

Table 2. *Class Solutions for GMM Models for Gender-Role Stereotypes*

	Number of classes				
	1	2	3	4	5
<i>Gender-Role Stereotypes</i>					
Mother					
BIC	928.10	816.23	812.78	816.08	826.92
BLRT	N/A	< .01	< .01	N/A	N/A
Entropy	1.0	0.69	0.72	0.73	0.78
Father					
BIC	975.65	844.19	832.40	853.11	868.25
BLRT	N/A	< .01	< .01	N/A	N/A
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.

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

Table 3. Pooled Descriptive Statistics in 5 Imputed Datasets for Mothers' Study Variables Separate for Mothers' Gender-Role Stereotype Trajectories

	Mothers' gender-role stereotype trajectory			
	1. Traditional-increasing	2. Intermediate-increasing	3. Low-decreasing	Significant contrasts
	<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	
<i>n (%)</i>	10	65	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-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.

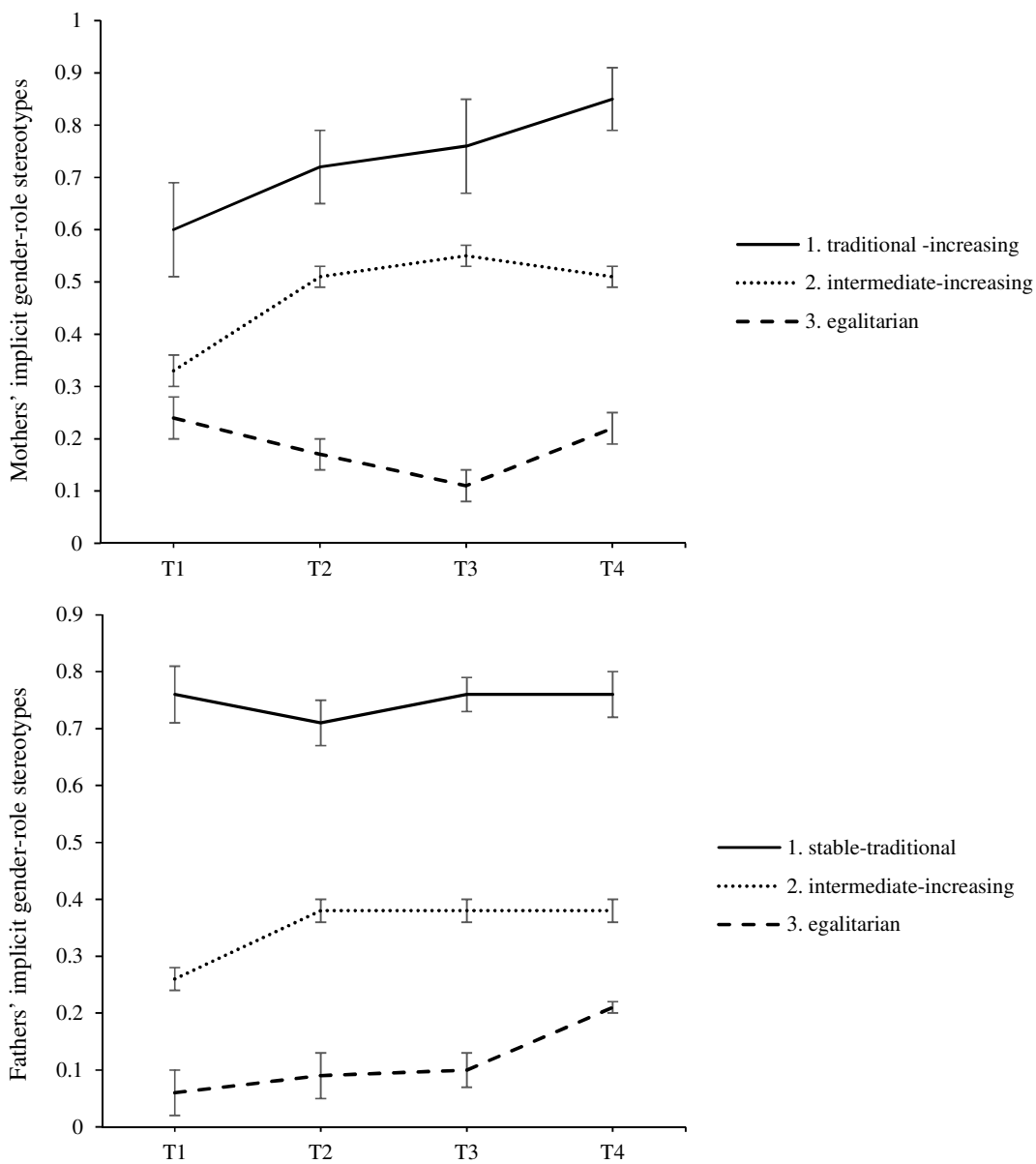
IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS

Table 4. *Pooled Descriptive Statistics in 5 Imputed Datasets for Fathers' Study Variables Separate for Fathers' Gender-Role Stereotype Trajectories*

	Fathers' gender-role stereotype trajectories			
	1. Stable-traditional	2. Intermediate-increasing	3. Egalitarian-increasing	Significant contrasts
	<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>	
<i>n (%)</i>	12	64	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 ¹				
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)	-

¹ 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. *Note.* Significant contrasts represent contrasts between the three gender-role stereotype trajectories (C1,C2,C3). T1-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).

IMPLICIT GENDER-ROLE STEREOTYPE CHANGE IN PARENTS



(b)

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

Supplementary material for analyses in imputed datasets

Mothers gender-role stereotype classes group differences

Mother age

Imp 1: $F(2, 389) = 61.83, p < .01, \text{partial } \eta^2 = .24$

Imp 2 $F(2, 389) = 51.68, p < .01, \text{partial } \eta^2 = .21$

Imp 3 $F(2, 389) = 62.89, p < .01, \text{partial } \eta^2 = .25$

Imp 4 $F(2, 389) = 45.44, p < .01, \text{partial } \eta^2 = .19$

Imp 5 $F(2, 389) = 50.52, p < .01, \text{partial } \eta^2 = .21$

Partner age

Imp 1: $F(2, 389) = 17.01, p < .01, \text{partial } \eta^2 = .08$

Imp 2: $F(2, 389) = 12.28, p < .01, \text{partial } \eta^2 = .06$

Imp 3: $F(2, 389) = 12.28, p < .01, \text{partial } \eta^2 = .06$

Imp 4: $F(2, 389) = 13.99, p < .01, \text{partial } \eta^2 = .07$

Imp 5: $F(2, 389) = 16.31, p < .01, \text{partial } \eta^2 = .08$

Mother edu

Imp 1: $\chi^2(2) = 2.82, p = .24$

Imp 2: $\chi^2(2) = 4.41, p = .11$

Imp 3: $\chi^2(2) = 3.92, p = .14$

Imp 4: $\chi^2(2) = 4.61, p = .10$

Imp 5: $\chi^2(2) = 8.49, p < .05$

Mother work hours

main effect time:

Imp 1: $F(2.01, 776.04) = 10.87, p < .01, \text{partial } \eta^2 = .03$, Greenhouse-Geisser correction for sphericity

Imp 2 $F(2.01, 777.56) = 11.64, p < .01, \text{partial } \eta^2 = .03$, Greenhouse-Geisser correction for sphericity

Imp 3 $F(2.03, 784.70) = 12.96, p < .01, \text{partial } \eta^2 = .03$, Greenhouse-Geisser correction for sphericity

1
2
3 Imp 4 $F(2.02, 780.01) = 12.49, p < .01, \text{partial } \eta^2 = .03$, Greenhouse-Geisser correction for
4 sphericity

5
6 Imp 5 $F(2, 771.88) = 6.19, p < .01, \text{partial } \eta^2 = .02$, Greenhouse-Geisser correction for
7 sphericity

8
9 Main effects class

10
11 Imp 1: $F(2, 387) = 5.80, p < .01, \text{partial } \eta^2 = .03$

12
13 Imp 2 $F(2, 387) = 5.90, p < .01, \text{partial } \eta^2 = .03$

14
15 Imp 3 $F(2, 387) = 6.38, p < .01, \text{partial } \eta^2 = .03$

16
17 Imp 4 $F(2, 387) = 5.34, p < .01, \text{partial } \eta^2 = .03$

18
19 Imp 5 $F(2, 387) = 7.71, p < .01, \text{partial } \eta^2 = .04$

20
21 interaction class*work hour change:

22
23 Imp 1: $F(4.01, 776.04) = 0.82, p = .51, \text{partial } \eta^2 < .01$, Greenhouse-Geisser correction for
24 sphericity

25
26 Imp 2 $F(4.02, 777.56) = 1.00, p = .41, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
27 sphericity

28
29 Imp 3 $F(4.06, 784.70) = 1.34, p = .26, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
30 sphericity

31
32 Imp 4 $F(4.03, 780.01) = 0.95, p = .44, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
33 sphericity

34
35 Imp 5 $F(3.99, 771.88) = 0.52, p = .72, \text{partial } \eta^2 < .01$, Greenhouse-Geisser correction for
36 sphericity

37
38 Partner work hours

39
40 Main effects class

41
42 Imp 1: $F(2, 387) = 2.85, p = .06, \text{partial } \eta^2 = .01$

43
44 Imp 2: $F(2, 387) = 4.01, p < .05, \text{partial } \eta^2 = .02$

45
46 Imp 3: $F(2, 387) = 3.39, p < .05, \text{partial } \eta^2 = .02$

47
48 Imp 4: $F(2, 387) = 2.81, p = .06, \text{partial } \eta^2 = .01$

49
50 Imp 5: $F(2, 387) = 1.47, p = .23, \text{partial } \eta^2 = .01$

51
52 Interaction class*work hour change:

1
2
3 Imp 1: $F(3.76, 727.00) = 0.73, p = .56, \text{partial } \eta^2 = .00$, Greenhouse-Geisser correction for
4 sphericity
5

6 Imp 2: $F(3.77, 729.62) = 0.59, p = .66, \text{partial } \eta^2 = .00$, Greenhouse-Geisser correction for
7 sphericity
8

9
10 Imp 3: $F(3.77, 729.63) = 0.83, p = .50, \text{partial } \eta^2 = .00$, Greenhouse-Geisser correction for
11 sphericity
12

13 Imp 4: $F(3.75, 726.47) = 0.71, p = .58, \text{partial } \eta^2 = .00$, Greenhouse-Geisser correction for
14 sphericity
15

16 Imp 5: $F(3.77, 729.42) = 1.19, p = .31, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
17 sphericity
18

19 Small household tasks

20
21 main effect time:

22
23
24 Imp 1: $F(1.91, 737.30) = 1.73, p = .18, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
25

26 Imp 2 $F(1.88, 728.12) = 0.34, p = .70, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
27

28 Imp 3 $F(1.90, 736.79) = 1.01, p = .36, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
29

30 Imp 4 $F(1.90, 733.80) = 1.58, p = .21, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
31

32 Imp 5 $F(1.94, 752.47) = 0.19, p = .82, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
33

34 interaction class*work hour change:

35
36 Imp 1: $F(3.81, 737.30) = 0.26, p = .90, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
37

38 Imp 2 $F(3.76, 728.12) = 0.74, p = .56, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
39

40 Imp 3 $F(3.81, 736.79) = 0.33, p = .85, \text{partial } \eta^2 < .01$, Huynh-Feldt correction for sphericity
41

42 Imp 4 $F(3.79, 733.80) = 01.18, p = .32, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for
43 sphericity
44

45 Imp 5 $F(3.89, 752.47) = 1.60, p = .17, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
46
47

48 Main effects class

49
50 Imp 1: $F(2, 387) = 6.33, p < .01, \text{partial } \eta^2 = .03$
51

52 Imp 2 $F(2, 387) = 7.21, p < .01, \text{partial } \eta^2 = .04$
53

54 Imp 3 $F(2, 387) = 6.31, p < .01, \text{partial } \eta^2 = .03$
55

56 Imp 4 $F(2, 387) = 4.29, p < .05, \text{partial } \eta^2 = .02$
57
58
59
60

1
2
3 Imp 5 $F(2, 387) = 2.82, p = .06, \text{partial } \eta^2 = .01$
4

5 Child care tasks
6

7 main effect time:
8

9 Imp 1: $F(1.96, 758.49) = 14.91, p < .01, \text{partial } \eta^2 = .04$, Huynh-Feldt correction for
10 sphericity
11

12 Imp 2 $F(1.95, 754.57) = 12.67, p < .01, \text{partial } \eta^2 = .03$, Huynh-Feldt correction for
13 sphericity
14

15 Imp 3 $F(1.98, 765.92) = 20.77, p < .01, \text{partial } \eta^2 = .05$, Huynh-Feldt correction for
16 sphericity
17

18 Imp 4 $F(1.94, 750.39) = 14.40, p < .01, \text{partial } \eta^2 = .04$, Huynh-Feldt correction for
19 sphericity
20

21 Imp 5 $F(1.95, 756.21) = 12.45, p < .01, \text{partial } \eta^2 = .03$, Huynh-Feldt correction for
22 sphericity
23

24 interaction class*work hour change:
25

26 Imp 1: $F(3.92, 758.49) = 0.94, p = .44, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
27

28 Imp 2 $F(3.90, 754.57) = 1.02, p = .39, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
29

30 Imp 3 $F(3.96, 765.92) = 2.00, p = .09, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
31

32 Imp 4 $F(3.88, 750.39) = 0.88, p = .47, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
33

34 Imp 5 $F(3.91, 756.21) = 1.99, p = .10, \text{partial } \eta^2 = .01$, Huynh-Feldt correction for sphericity
35

36 Main effects class
37

38 Imp 1: $F(2, 387) = 5.19, p < .01, \text{partial } \eta^2 = .03$
39

40 Imp 2 $F(2, 387) = 5.83, p < .01, \text{partial } \eta^2 = .03$
41

42 Imp 3 $F(2, 387) = 5.83, p < .01, \text{partial } \eta^2 = .03$
43

44 Imp 4 $F(2, 387) = 4.92, p < .05, \text{partial } \eta^2 = .03$
45

46 Imp 5 $F(2, 387) = 6.48, p = .06, \text{partial } \eta^2 = .03$
47
48
49
50
51
52
53
54
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59
60

Table 1. Range of Descriptive Statistics in 5 Imputed Datasets for Mothers' Study Variables Separate for Mothers' Gender-Role Stereotype Classes

Mothers gender-role stereotypes ¹				
	Class 1	Class 2	Class 3	Significant contrasts
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
<i>n (%)</i>	5-13	63-67	23-27	
T1 gender-role stereotypes ²	0.52-0.69 (0.29-0.42)	0.32-0.36 (0.42-0.43)	0.24-0.26 (0.39-0.41)	C1>C2>C3
T2 gender-role stereotypes ²	0.67-0.79 (0.21-0.26)	0.49-0.53 (0.25-0.27)	0.17-0.19 (0.25-0.27)	C1>C2>C3
T3 gender-role stereotypes ²	0.70-0.88 (0.20-0.26)	0.54-0.56 (0.21-0.22)	0.09-0.13 (0.24-0.25)	C1>C2>C3
T4 gender-role stereotypes ²	0.81-0.92 (0.15-0.18)	0.49-0.53 (0.21-0.23)	0.19-0.24 (0.28)	C1>C2>C3
Mothers' age	29.52-29.83 (2.63-2.88)	33.36-33.94 (3.66-3.87)	36.19-36.39 (3.01-3.12)	C1<C2<C3
Partner age	31.91-34.03 (4.71-6.44)	36.52-36.76 (4.71-5.15)	38.22-38.66 (4.29-4.58)	C1<C2<C3
T1 working hours mother	19.00-22.57 (10.46-11.06)	25.35-25.73 (9.02-9.27)	26.68-27.33 (8.00-8.72)	C1<C3
T2 working hours mother	17.17-20.99 (10.66-12.05)	24.75-25.20 (9.579.97)	26.00-26.53 (8.15-8.86)	C1<C2,C3
T3 working hours mother	17.81-20.47 (9.56-11.95)	24.46-24.91 (10.01-10.32)	25.88-26.24 (8.23-8.92)	C1<C2,C3
T4 working hours mother	16.19-19.69 (11.00-11.96)	24.07-24.49 (10.12-10.35)	25.62-25.97 (8.67-9.32)	C1<C2,C3
T2 child-care task division	2.37-2.56 (0.46-0.49)	2.65-2.67 (0.55-0.57)	2.52-2.56 (0.56-0.60)	-
T3 child-care task division	2.28-2.37 (0.47-0.57)	2.57-2.59 (0.54-0.56)	2.46-2.48 (0.60-0.61)	C1<C2
T4 child-care task division	2.09-2.31 (0.47-0.64)	2.51-2.56 (0.58-0.61)	2.33-2.38 (0.61-0.66)	C1<C2
T2 small-household task division	1.94-1.98 (0.46-0.69)	2.27-2.30 (0.65-0.68)	2.26-2.36 (0.59-0.67)	C1<C2,C3
T3 small-household task division	1.91-2.01 (0.55-0.71)	2.28-.2.34 (0.61-0.66)	2.27-2.35 (0.60-0.64)	C1<C2,C3
T4 small-household task division	1.91-2.00 (0.67-0.83)	2.26-2.31 (0.69-0.74)	2.18-2.27 (0.65-0.71)	C1<C2,C3

¹ Mothers in class 1 had strong traditional gender-role stereotypes that slightly increased over time. Mothers in class 2 had slightly traditional gender-role stereotypes that increased over time. Class 3 represents mothers with slightly traditional gender-role stereotypes that decreased over time.

² Intercept of gender-role stereotypes is uncorrelated with slope in growth mixture models.

Fathers gender-role stereotype classes group differences

Father age

Imp 1: $F(2, 389) = 50.58, p < .01, \text{partial } \eta^2 = .21$

Imp 2 $F(2, 389) = 45.41, p < .01, \text{partial } \eta^2 = .19$

Imp 3 $F(2, 389) = 50.52, p < .01, \text{partial } \eta^2 = .21$

Imp 4 $F(2, 389) = 52.21, p < .01, \text{partial } \eta^2 = .21$

Imp 5 $F(2, 389) = 51.34, p < .01, \text{partial } \eta^2 = .21$

Partner age

Imp 1: $F(2, 389) = 6.29, p < .01, \text{partial } \eta^2 = .03$

Imp 2: $F(2, 389) = 6.57, p < .01, \text{partial } \eta^2 = .03$

Imp 3: $F(2, 389) = 7.09, p < .01, \text{partial } \eta^2 = .04$

Imp 4: $F(2, 389) = 7.30, p < .01, \text{partial } \eta^2 = .04$

Imp 5: $F(2, 389) = 8.43, p < .01, \text{partial } \eta^2 = .04$

Father work hours

Main effect time:

Imp 1: $F(1.88, 729.80) = 2.76, p = .07, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for sphericity

Imp 2 $F(1.88, 732.83) = 2.82, p = .06, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for sphericity

Imp 3 $F(1.89, 733.50) = 1.95, p = .15, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for sphericity

Imp 4 $F(1.88, 729.62) = 1.66, p = .19, \text{partial } \eta^2 < .01$, Greenhouse-Geisser correction for sphericity

Imp 5 $F(1.88, 732.04) = 3.15, p = .05, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for sphericity

Main effect class:

Imp 1: $F(2, 387) = 1.52, p = .22, \text{partial } \eta^2 = .01$

1
2
3 Imp 2 $F(2, 387) = 1.47, p = .23, \text{partial } \eta^2 = .01$

4
5 Imp 3 $F(2, 387) = 1.18, p = .31, \text{partial } \eta^2 = .01$

6
7 Imp 4 $F(2, 387) = 1.07, p = .34, \text{partial } \eta^2 = .01$

8
9 Imp 5 $F(2, 387) = 0.49, p = .61, \text{partial } \eta^2 < .01$

10
11 interaction class*work hour change:

12
13 Imp 1: $F(3.75, 725.65) = 1.27, p = .28, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
14 sphericity

15
16 Imp 2 $F(3.77, 729.47) = 1.03, p = .39, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
17 sphericity

18
19 Imp 3 $F(3.78, 731.36) = 1.68, p = .16, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
20 sphericity

21
22 Imp 4 $F(3.76, 726.62) = 1.58, p = .18, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
23 sphericity

24
25 Imp 5 $F(3.77, 729.09) = 1.06, p = .38, \text{partial } \eta^2 = .01$, Greenhouse-Geisser correction for
26 sphericity

27
28
29
30 Partner work hours

31
32 Main effect class:

33
34 Imp 1: $F(2, 387) = 1.45, p = .24, \text{partial } \eta^2 = .01$

35
36 Imp 2 $F(2, 387) = 3.15, p < .05, \text{partial } \eta^2 = .02$

37
38 Imp 3 $F(2, 387) = 3.48, p < .05, \text{partial } \eta^2 = .02$

39
40 Imp 4 $F(2, 387) = 2.73, p = .07, \text{partial } \eta^2 = .01$

41
42 Imp 5 $F(2, 387) = 2.55, p = .08, \text{partial } \eta^2 = .01$

Table 2. Range of Descriptive Statistics in 5 Imputed Datasets for Fathers' Study Variables Separate for Fathers' Gender-Role Stereotype Classes

	Fathers gender-role stereotypes ¹			Significant contrasts
	Class 1	Class 2	Class 3	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
<i>n</i> (%)	11-13	59-66	22-29	
T1 gender-role stereotypes ²	0.73-0.78 (0.28-0.31)	0.25-0.27 (0.32-0.34)	0.04-0.07 (0.34-0.36)	C1>C2>C3
T2 gender-role stereotypes ²	0.71-0.73 (0.22-0.23)	0.36-0.40 (0.28-0.29)	0.07-0.11 (0.28-0.30)	C1>C2>C3
T3 gender-role stereotypes ²	0.75-0.77 (0.22-0.23)	0.37-0.39 (0.21-0.23)	0.09-0.11 (0.25-0.26)	C1>C2>C3
T4 gender-role stereotypes ²	0.72-0.78 (0.19-0.23)	0.37-0.39 (0.26-0.27)	0.19-0.25 (0.26-0.29)	C1>C2>C3
Fathers' age	35.58-36.18 (4.12-4.27)	35.26-35.50 (4.09-4.14)	40.20-41.16 (5.51-5.62)	C1,C2<C3
Partner age	33.44-34.10 (3.04-3.47)	33.43-33.57 (3.99-4.08)	35.06-35.39 (3.86-3.97)	C1,C2<C3
T1 working hours mother ²	25.20-26.78 (8.51-10.01)	24.76-25.16 (9.17-9.61)	26.68-27.10 (8.34-8.93)	C1,C2<C3
T2 working hours mother	24.22-25.80 (9.34-10.35)	23.88-24.37 (10.11-10.49)	26.33-26.85 (8.23-8.41)	C1,C2<C3
T3 working hours mother	24.32-25.62 (9.41-10.44)	23.46-24.06 (10.35-10.87)	26.26-26.70 (8.23-8.48)	C1,C2<C3
T4 working hours mother	24.31-25.39 (9.10-10.43)	23.06-23.59 (10.53-10.89)	25.71-26.28 (9.02-9.14)	C1,C2<C3
T2 child-care task division	3.15-3.24 (0.44-0.49)	3.19-3.21 (0.52-0.55)	3.13-3.19 (0.43-0.50)	-
T3 child-care task division	3.21-3.27 (0.49-0.58)	3.25-3.26 (0.50-0.51)	3.23-3.27 (0.50-0.51)	-
T4 child-care task division	3.24-3.32 (0.55-0.61)	3.20-3.24 (0.53-0.58)	3.21-3.26 (0.51-0.54)	-
T2 small-household task division	3.32-3.40 (0.62-0.66)	3.33-3.41 (0.63-0.68)	3.23-3.27 (0.54-0.61)	-
T3 small-household task division	3.37-3.44 (0.64-0.75)	3.32-3.36 (0.62-0.65)	3.24-3.29 (0.55-0.59)	-
T4 small-household task division	3.27-3.39 (0.71-0.87)	3.34-3.39 (0.66-0.71)	3.28-3.33 (0.51-0.60)	-

¹ Fathers in class 1 had strong traditional gender-role stereotypes that were stable over time. Fathers in class 2 had intermediate gender-role stereotypes that became more traditional over time. Class 3 represents fathers with egalitarian gender-role stereotypes that became more traditional over time.

²Intercept of gender-role stereotypes is uncorrelated with slope in growth mixture models.

Associations between classes

Mother gender-role stereotype classes * father gender-role stereotype classes

Imp 1: $\chi^2(4) = 8.04, p = .09$

Imp 2: $\chi^2(4) = 7.58, p = .11$

Imp 3: $\chi^2(4) = 4.14, p = .39$

Imp 4: $\chi^2(4) = 8.21, p = .08$

Imp 5: $\chi^2(4) = 11.48, p < .05$