



# Longitudinal associations between work-family conflict and enrichment, inter-parental conflict, and child internalizing and externalizing problems



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## ABSTRACT

**Rationale:** Work-family conflict and enrichment refer to parents' challenges and benefits of combining work and family roles. Emerging evidence suggests detrimental effects of work-family conflict and facilitating effects of work-family enrichment on couple, family, and child functioning. This effect may be more pronounced in mothers, who must juggle different roles within the family and work context. To date, research has examined these relations as unidirectional, but reciprocal associations may be possible.

**Objective:** This study investigated the shape and direction of associations between maternal work-family conflict and enrichment, child internalizing and externalizing problems, and inter-parental conflict.

**Method:** Growth curve modelling used six waves of biennial data spanning ten years of childhood (4–5 to 14–15 years) for 2946 children and their employed mothers from the Longitudinal Study of Australian Children.

**Results:** Results indicated bidirectional associations between the work-family interface and child outcomes; mothers' initial work-family conflict was associated with a quadratic increase in child internalizing (but not externalizing) problems over time. Child internalizing problems at 4–5 years predicted a linear decrease in mothers' work-family enrichment over time. However, work-family enrichment at 4–5 years was not associated with the change in either child internalizing or externalizing problems. Work-family conflict and inter-parental conflict at 4–5 years were not associated with change in one another. Initial work-family enrichment was associated with a quadratic decrease in inter-parental conflict, and initial inter-parental conflict was associated with a linear increase in externalizing problems; no evident reverse association was found.

**Conclusion:** Findings demonstrate the importance of the work-family interface in shaping family health outcomes. The primary direction of influence was from work-family factors to inter-parental conflict and child mental health problems. Thus, interventions aimed at promoting family-friendly work environments and policies would likely yield benefits for parents and their families.

## 1. Introduction

The vast majority of modern parents must juggle work and family responsibilities; they experience challenges and enriching opportunities associated with combining these roles, referred to as work-family conflict and work-family enrichment, respectively. Recent studies show that work-family experiences are associated with the quality of the

couple relationship and inter-parental conflict (Cooklin et al., 2015b; Dinh et al., 2017), as well as child mental health outcomes (Dinh et al., 2017; Hart and Kelley, 2006; Strazdins et al., 2013). However, research to date, has focused almost exclusively on unidirectional effects, examining how the work-family interface influences couple and child outcomes, and most of these have been cross-sectional (Cooklin et al., 2015b; Hart and Kelley, 2006; Strazdins et al., 2013). Nevertheless,

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there may be bidirectional relations, in that work-family conflict or enrichment may interfere with or enhance family relationships and functioning; while equally, the functioning of the family (couple and children) may also interfere with or improve parents' ability to manage the work-family interface. We address this possibility using six waves of data from a large representative sample of Australian children, to test bidirectional associations between mothers' work-family conflict/enrichment, inter-parental conflict, and child internalizing/externalizing problems over 10 years of childhood and adolescence. We investigate associations for mothers in this paper given that mothers in Australia still perform a disproportionate amount of unpaid work at home in addition to paid work in the labor force compared to fathers (Craig and Sawrikar, 2009). Therefore mothers' work-family experiences are likely to be particularly salient in their interactions with their partner and child (Cooklin et al., 2015b).

### 1.1. Mothers' work-family experiences

In recent decades, the rate of employment for mothers in Australia has increased (Australian Bureau of Statistics, 2011), which has had an important impact on a number of aspects of family life (Baxter et al., 2007). Findings from previous Australian studies indicate that having a young child has greater impact on mothers' compared to fathers' patterns and rates of employment (for a review, see Birch, 2005). The current study uses data from the Longitudinal Study of Australian Children (LSAC), which is a comprehensive and nationally-representative study of childhood development in Australia, tracking two cohorts of children from birth and kindergarten age to adulthood. Findings from previous research using LSAC data indicated that the rate of employment for Australian mothers whose youngest child was aged 4–5 years was 60% while fathers' rate of employment at the same family life stage was 92% (Baxter et al., 2007). In the same study mothers and fathers reported both negative and positive experiences in combining work and family responsibilities. However, mothers' participation in the workforce has not been accompanied by reductions in child care and household responsibilities (Von Doussa, 2006). Therefore, Australian mothers are more likely to take on child care responsibilities, and their work-family experiences may have greater impacts on family functioning and child outcomes (Westrupp et al., 2016). Consequently, the current study focusses on maternal work-family experiences and associations with child adjustment and family functioning.

### 1.2. Theoretical framework

The intersection between work and family can be understood in relation to a population health perspective. Population health refers to the relative distribution of health outcomes within large groups of individuals, with a key focus on identifying patterns in relation to determinants of health, as well as policies and interventions that link health determinants to health outcomes (Kindig and Stoddart, 2003). Health determinants include a combination of social, environmental, and behavioral factors, which contribute to health inequalities at a population level (Hämmig et al., 2014). The workplace environment is considered to be one of the major sources of health inequalities (Hämmig and Bauer, 2013). For example, a lack of autonomy, job insecurity, and long and inflexible work hours are associated with high levels of work-family conflict and poor mental health in parents (Cooklin et al., 2015a).

The increased rate of women's participation in labor markets means that a higher proportion of workers have primary caring responsibilities and may experience challenges in combining these responsibilities with paid work. In this way, mothers' work and family lives, their interactions with their family members, and consequently their child's developmental trajectories may be influenced by cultural and workplace trends and government policies that influence the workplace environment. In this study we conceptualize mothers' work-family experiences

as social determinants of health through which broad level social policies and practices may filter down to affect child mental health.

The nature of associations between the work-family interface and child mental health can be understood from the conservation of resources perspective (Hobfoll, 1989), where work-family experiences and influences on individuals are thought to be reciprocally reinforcing. According to this theory, parents can be described as having finite resources, such as time and energy. When parents' resources are depleted persistently over time they are vulnerable to experiencing 'loss spirals'. For example, work-family conflict as a stressor leads to poor well-being, and poor well-being in turn reinforces more resource loss and work-family conflict over time (Matthews et al., 2014). Likewise, 'gain spirals' are also possible, such that individuals with enriching work-family roles experience improved well-being, which in turn triggers further resource gains (Matthews et al., 2014). However, the notion of loss and gain spirals in relation to work-family experiences and child outcomes have not been examined yet.

It is possible that child factors influence parents' experiences of work. For example, parents of a child with a mental health problem may need to invest additional time and energy resources to manage child behavior or other problems within the family or to access support services for the child. In combination with other family responsibilities, these commitments may result in depleting parent resources, in turn reinforcing parents' experience of work-family conflict, and reducing the potential for work-family enrichment. In contrast, parents' experience of work-family enrichment may be reinforced by rewarding family commitments. For instance, warm, positive parent-child relationships in context of high functioning children with good mental health may facilitate parents' ability to combine work and family responsibilities, with positive effects crossing over by reinforcing positive mood and interpersonal interactions in the work realm. Longitudinal research is needed to test this possibility.

### 1.3. The work-family interface: a determinant of childhood mental health

Recent studies utilizing LSAC data have found associations between the work-family interface and child global and mental health. Mothers' work-family experiences have been found to be associated with childhood internalizing and externalizing problems cross-sectionally at 4–5 years (Strazdins et al., 2013), and longitudinally (Dinh et al., 2017) via poor parent mental health, parenting irritability, and poor quality parental relationship (Dinh et al., 2017; Strazdins et al., 2013). Likewise, Westrupp et al. (2016) found reciprocal associations between work-family conflict and maternal psychological distress over eight years, and poor child global health (entered as a covariate) was associated with both high maternal work-family conflict and psychological distress.

Scholars have also utilized samples from other countries, and these findings have indicated the presence of associations between maternal work-family experiences and child mental health. For example, Hart and Kelley (2006) used a sample of 1–4 year old American children and found that mothers' (but not fathers') work-family conflict was concurrently associated with child internalizing and externalizing problems. Likewise, drawing on a sample of 3–6 year old Portuguese children, Vieira et al. (2016) found that mothers' work-family conflict and enrichment were cross-sectionally associated with child internalizing and externalizing problems through mother-child interactions. However, the direction of association between the work-family interface and child mental health requires further investigation. This is important because if child factors are found to influence mothers' work-family experiences, then considering those child factors in the context of policy, intervention, and workplace practices may help mothers in modern society function better in managing both their work and family responsibilities.

The possibility of reverse (i.e., mutual) association between child factors and the work-family interface has scarcely been investigated.

Hyde et al. (2004) evaluated whether difficult or irritable child temperament (i.e., fussing, crying, and distress when confronted with limitations) and behavioral problems (i.e., hostile or aggressive behavior) were associated with work-related outcomes and work-family conflict. They found that at 4.5 years of age, child's behavioral problems were cross-sectionally associated with work-family conflict, and these associations were mediated by a lower sense of parenting competence and higher maternal depressed affect. However, when longitudinal models were tested in the same study, associations were no longer evident. Further longitudinal examination is required to explore whether the work-family interface influence children more strongly or the other way around.

#### 1.4. Spillover between the work-family interface, inter-parental conflict, and children

Emerging evidence has shown that maternal work-family experiences are also associated with nature of the couple relationship and inter-parental conflict (Cooklin et al., 2015b; Hart and Kelley, 2006). Inter-parental conflict refers to anger, hostility, and disagreement occurring between parents, and it is estimated to affect one million Australian children annually (Westrupp et al., 2015). Conflict in families may be mutually reinforcing, such that higher levels of inter-parental conflict may increase the level of tension in parent-child interactions (Almeida et al., 1999) and consequently influence child mental health (Cummings et al., 2012). This process of spillover can be conceptualized as an 'emotional transmission' that occurs when an individual's mood, affect, or behavior transfers from one setting to influence others in a second setting. This dynamic is relevant to how parents manage the interplay between work and family responsibilities (Bolger et al., 1989). The reverse direction may also be relevant, where spillover may occur when children experience mental health problems and impact on parents' own functioning, the function of the couple relationship, and the parents' experiences in juggling work-family roles. Whereas it is well established that inter-parental conflict spills over to the parent-child relationship (e.g., Sherrill et al., 2017) and child mental health problems (e.g., Westrupp et al., 2018), spillover from child mental health problems to the parent-child relationship and inter-parental conflict has not yet been investigated.

#### 1.5. Reciprocal associations

The dynamics of how workplace factors influence mothers, and how these influences are transmitted to partners and children, are complex and potentially bi-directional (Westrupp et al., 2016). Given the scarcity of longitudinal research examining work-family experiences in association with child outcomes, it is helpful to understand how researchers have investigated reciprocal relations between the work-family interface and individual functioning in employees. For example, work-family conflict and exhaustion have been shown to have both a short- (six-weeks) and long-term (three-months) effect on one another (Demerouti et al., 2004). Two research studies examining two-year lagged associations have shown evidence for reciprocal associations between work-family conflict/enrichment and burnout (Innstrand et al., 2008) and work-family conflict and maternal psychological distress (Westrupp et al., 2016). However, these studies have mainly focused on cross-lagged effects, testing associations between two or more variables at two or more time-points. Although this method is advantageous in testing whether the associations between variables are different over multiple intervals (Finkel, 1995), it precludes estimation of the rate and shape of change and whether initial levels of functioning have implications for the rate or nature of subsequent change over time. It is important to understand whether work-family variables change in a linear or non-linear fashion, given that these constructs are not static and can change based on a variety of factors (e.g., job improvements, change of job, working hours, etc.).

#### 1.6. The current study

In the current study, we aimed to investigate the shape and direction of associations between maternal work-family conflict/enrichment, child internalizing/externalizing problems, and inter-parental conflict. Insights into these patterns of relations have important implications for both theory and practice. If we find that children's mental health problems play a role in mothers' work-family experiences and inter-parental conflict, then the notions of loss and gain spirals derived from the conservation of resources model (Hobfoll, 1989) will be important in understanding how parents' involvement in the workplace may influence child development processes over time. In contrast, if we find the work-family interface to be a determinant of family functioning and children's health, then public policies focused on the promotion of flexible work practices and healthy working behaviors may have benefits that extend to the children and families of the working population.

Data from the kindergarten cohort of LSAC was used to examine the constructs over 10 years of childhood and adolescence (i.e., over six time-points with two year time-lags). This design permitted use of latent growth curve modelling. While this technique is not able to test causality definitively, it allows an investigation of the directionality of longitudinal mechanisms and the rate and nature of change over time, given that an experimental design is not feasible. Latent growth curve modelling also has the advantage of assessing whether initial functioning is associated with the rate of change within a variable or in other variables (Martens and Haase, 2006; Pakpahan et al., 2017); and it addresses the question of which variables have stronger associations with the rate of development (Duncan and Duncan, 2009).

## 2. Method

### 2.1. Data

LSAC is a nationally representative cohort study of Australian children and their families (Soloff et al., 2005), which was approved by the Australian Institute of Family Studies Ethics Committee (Gray and Sanson, 2005). Two-stage cluster sampling based on Australian post-codes and Medicare health care database was implemented to randomly select children. Full information on LSAC design and methodology is available elsewhere (Australian Institute of Family Studies, 2015). Children were recruited in 2004 (Time 1) when they were 4–5 years old ( $N = 4983$ ; 59% initial response rate) and were followed across six time-points: Time 2 (6–7 years), Time 3 (8–9 years), Time 4 (10–11 years), Time 5 (12–13 years), and Time 6 (14–15 years). Variables of interest were mothers' reports on their own work-family conflict, work-family enrichment, inter-parental conflict, and their child's internalizing and externalizing problems.

### 2.2. Inclusion and exclusion criteria

For the purpose of this study, all available data at six time-points were merged ( $N = 3276$ ). Children were included in the final dataset if the primary caregiver was the biological, step, adoptive, or foster mother of the child ( $n = 120$  excluded). The sample was limited to working mothers (i.e., mothers who were employed part-time or full-time at one or more time-point; or mothers who were on maternity leave at one or more time-point,  $n = 120$  excluded). Included participants also required data on at least one of the outcome variables (final  $N = 2946$ ).

### 2.3. Measures

#### 2.3.1. Work-family conflict and work-family enrichment

Work-family conflict was assessed using a four-item adaption of the strain scale, and work-family enrichment was assessed using a six-item adaption of the gain scale; both were developed by Marshall and

Barnett (1993). Items of the strain scale assessed mothers' view of employment-related constraints on family life and parenting (e.g., "Because of my work responsibilities I have missed out on home or family activities"), and constraints from family that affect employment (e.g., "Because of my family responsibilities my work time is less enjoyable and more pressured"). Items of the gain scale assessed mothers' views of the benefits of their work on their children and themselves (e.g., "My working has positive effect on my children"). Both scales ranged from 0 to 4 ("strongly disagree" to "strongly agree"), with higher scores indicating more strain or gain (Strazdins et al., 2013). In the current study, the scales showed good internal consistency (Cronbach's  $\alpha$ s, work-family conflict = 0.67 to 0.76; work-family enrichment = 0.85 to 0.88).

### 2.3.2. Inter-parental conflict

Verbal inter-parental conflict was measured using a four-item adaptation of the Inter-Parental Conflict Scale, a subscale of the Co-parental Communication Scale (Australian Institute of Family Studies, 2005). Mothers reported on their verbal conflict with their partner (e.g., "How often do you argue?") on a five-point Likert scale ranging from 0 to 4 ("never" = 0 to "always"). Internal consistency was high across all waves ( $\alpha$ s = 0.76 to 0.82).

### 2.3.3. Internalizing and externalizing problems

The Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) was used to assess child internalizing/externalizing problems. Five items assessed children's emotional symptoms, referred to herein as 'internalizing problems' (e.g., "My child ... has many worries or often seems worried"), and 10 items assessed conduct problems (e.g., "My child ... fights with other children or bullies them") and hyperactivity-inattention symptoms (e.g., "My child ... is restless, overactive, cannot stay still for long"), herein referred to together as 'externalizing problems.' Items were rated on a three-point scale (0 = "Not true" to 2 = "Certainly true") and summed to make internalizing and externalizing scores. Both scales showed acceptable internal consistency (internalizing,  $\alpha$ s = 0.58 to 0.73; externalizing,  $\alpha$ s = 0.78 to 0.81).

### 2.3.4. Sociodemographic variables

Mothers reported on child age, gender, Indigenous status (Aboriginal or Torres Strait Islander), number of children in the household, main language spoken at home, and their own level of education. Mothers and fathers reported on their own working hours, which were used as categorical variables in the analysis (1 = 1–15 h, 2 = 16–29 h, 3 = 30–34 h, 4 = 35–40 h, 5 = 41–49 h, 6 = 50 or more hours) (Australian Bureau of Statistics, 2010).

### 2.3.5. Socio-economic position

A continuous, composite variable was formed based on household (i.e., both parents if available) income, education, and occupational prestige and was divided into quartiles at baseline using the population weights and full sample (1 = low, 2 = Medium, 3 = high) (Blakemore et al., 2009).

## 2.4. Statistical analyses

Stata software version 13.1 (StataCorp, 2013) was used for cleaning data, deriving variables, and conducting preliminary analyses. Analyses for aims of the study were conducted in Mplus version 7.4 (Muthén and Muthén, 2012). The model was weighted using cross-sectional weights from Time 1 to account for non-response. In order to account for the complex survey design, the Mplus stratification and cluster options were specified. The dataset had missing data on all variables (i.e., up to 40% at one time-point for work-family factors; up to 22% for inter-parental conflict; and up to 9% for child internalizing and externalizing problems). Maximum likelihood estimation (the default method in Mplus) was used to utilize all available data. For the purpose of the

model fit evaluation, four fit indices were requested: chi-square, which is less informative with large sample size (Byrne, 2013); root-mean-square error of approximation (RMSEA), with values  $\leq .06$  indicating good fit; the standardized root mean square residual (SRMR), with values  $\leq .08$  indicating good fit; and the comparative fit index (CFI), with values  $\geq .95$  indicate good fit (Hu and Bentler, 1999).

Latent growth curve analysis was conducted to test the longitudinal trajectories for repeated measures of child internalizing/externalizing problems, work-family conflict/enrichment, and inter-parental conflict. In the first step, initial testing of the shape of change over time (i.e., linear vs non-linear) was conducted for each variable separately. Thus, four latent variables were estimated for each repeated measure; the starting point (i.e., the intercept), the rate of linear growth (i.e., the slope), and the rate of non-linear growth (i.e., quadratic and cubic terms). Then two models were run for each repeated measure, one with only linear slope and one with non-linear terms included. This initial step indicated that the non-linear terms for work-family conflict and enrichment were not significantly different from zero in their means, and there were no improvements in Bayesian values for the model. However, for the other repeated measures (i.e., inter-parental conflict, internalizing and externalizing problems), quadratic terms were significantly different from zero in their means, and lower Akaike and Bayesian values indicated a better model fit. Based on this evidence, the next step was to estimate a model with two latent variables (i.e., intercepts and linear slopes) for all the repeated measures, and quadratic terms were added for inter-parental conflict and internalizing and externalizing problems. Given the likelihood that the variables in the model were associated cross-sectionally, within time-point correlations were allowed between all variables (e.g., Time 1 work-family conflict with Time 1 work-family enrichment, inter-parental conflict, and internalizing and externalizing problems). A series of regressions were requested with each intercept predicting its associated slopes and quadratic terms for each measure. Covariates (i.e., child gender, number of children in the household, socio-economic position, and mothers' and fathers' working hours) were entered to predict all the variables in the model.

## 3. Results

### 3.1. Descriptive statistics

Sample characteristics of included and excluded participants are compared in Table 1. Included children were half male (50%) and were on average 57 months old ( $SD = 2.61$ ) at baseline. Mothers tended to work fewer hours than fathers, with 43% of mothers versus 3.5% of fathers working between 1 and 15 or 16–29 h, 17% of mothers versus 32% of fathers working between 30 and 34 or 35–40 h, and 6% of mothers versus 53% of fathers working between 41 and 49 or more than 50 h. Means, standard deviations, and correlations between all study variables are presented in Supplementary Table 1.

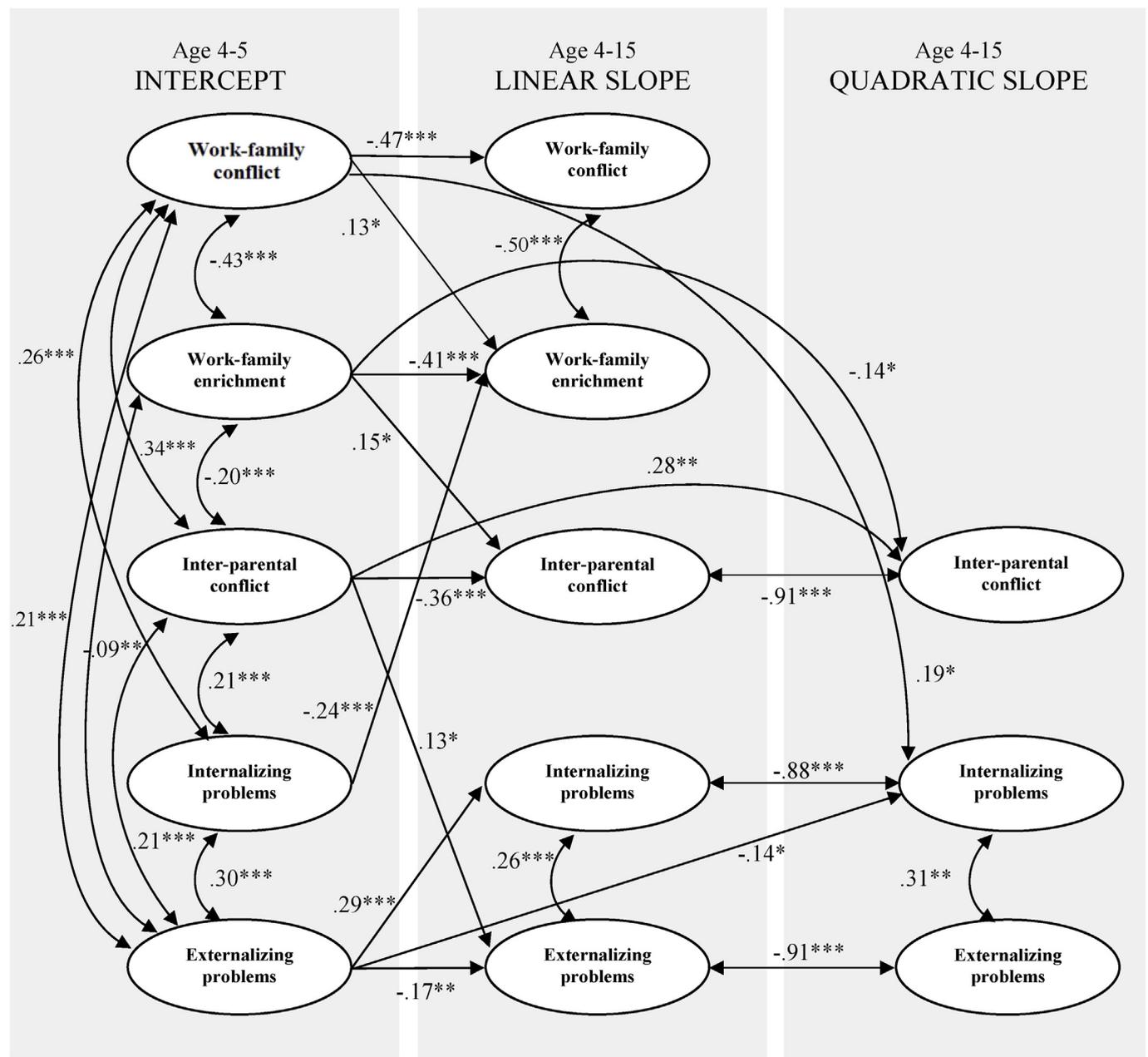
### 3.2. Model results

Findings from the latent growth curve analysis are presented in Fig. 1 and Supplementary Table 2. Fig. 1 presents significant patterns of associations between study variables, and Supplementary Table 2 presents all regression coefficients from the model. This model had good fit,  $\chi^2$  (386,  $N = 2946$ ) = 860.22,  $p < 0.001$ ; RMSEA = 0.02, 90% CI [0.019, 0.02]; CFI = 0.98; SRMR = 0.02. Model results indicated that, for the sample overall, higher scores at 4–5 years within work-family conflict and enrichment were associated with a more rapid linear decrease in the same construct over time. Higher scores in inter-parental conflict at 4–5 years were associated with both the linear and quadratic components of the growth trajectory for inter-parental conflict. Figs. 2–4 present the pattern of change in dependent variables, plotted at the mean, and one standard deviation above and below the mean of

**Table 1**  
 Characteristics of included and excluded participants at baseline.

Variable	Included participants, %	Excluded participants, %	$\chi^2$ ( $\phi$ )
Child male	50.24	55.15	2.86 (-0.03)
Child age in months, mean (SD)	56.87 (2.63)	56.85 (2.60)	9.65 (0.05)
Mother age in years, mean (SD)	35.24 (4.79)	35.25 (5.93)	81.12** (0.16)
Low socio-economic position	12.95	33.43	97.39*** (0.17)
Mother education below year 12	34.16	54.32	51.39*** (0.13)
Two or more children in household	89.99	87.27	2.36 (-0.03)
Main language not English	11.34	25.45	53.13*** (-0.13)
Aboriginal/Torres Strait Islander	1.94	4.85	11.55** (0.06)

Note. Included participants,  $N = 2946$ ; Excluded participants,  $N = 330$ . Socio-economic position was divided into quartiles at baseline using the population weights and full sample to compare the included and excluded samples.



**Fig. 1.** Latent growth curve model testing the direction of associations between child internalizing and externalizing problems, work-family conflict, work-family enrichment, and inter-parental conflict. Figures are standardized regression coefficients where  $p < .05$ . Model adjusted for sociodemographic factors measured at Time 1 (age 4–5 years), including child gender, number of children in the household, mothers' working hours and socio-economic position. Note:  $N = 2946$ .  $*p < .05$ .  $**p < .01$ .  $***p < .001$ . Non-significant paths are not depicted, but remained in the model.

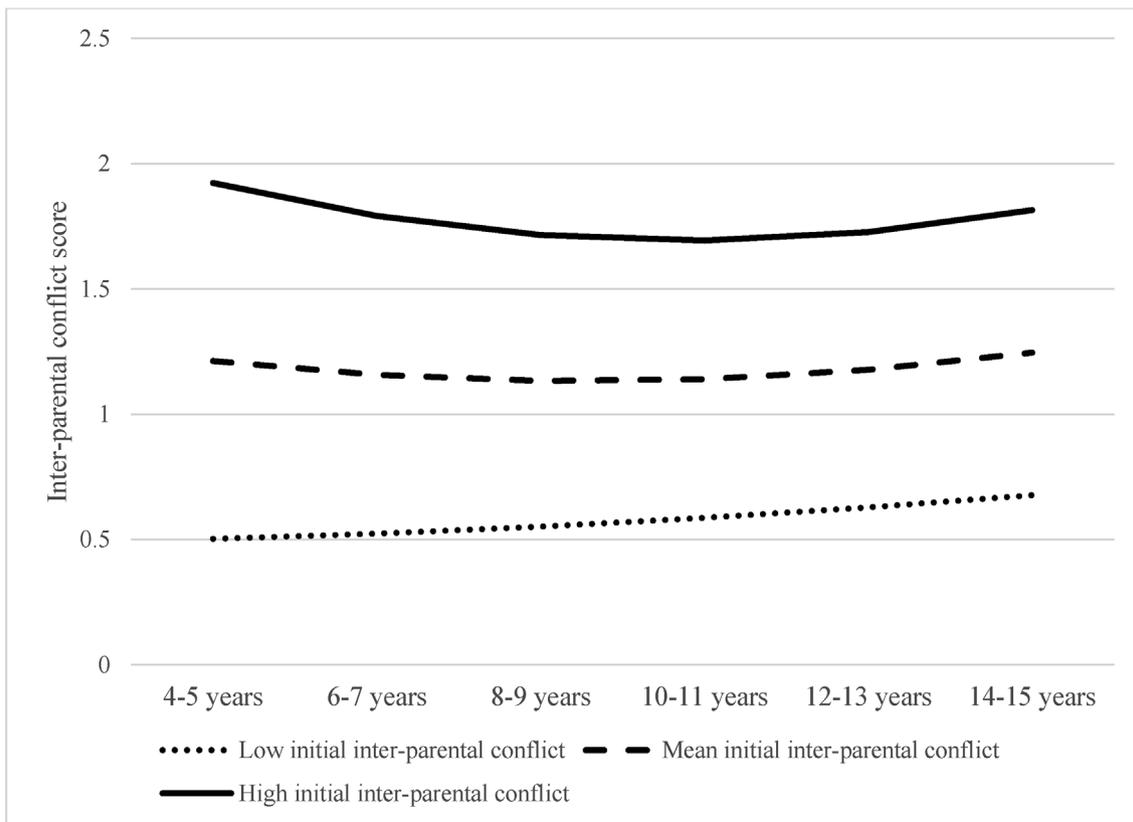


Fig. 2. Rate of change in inter-parental conflict. Note: Cut off points for low and high initial inter-parental conflict are one standard deviation ( $SD = .71$ ) below and above the mean ( $M = 1.21$ ), respectively.

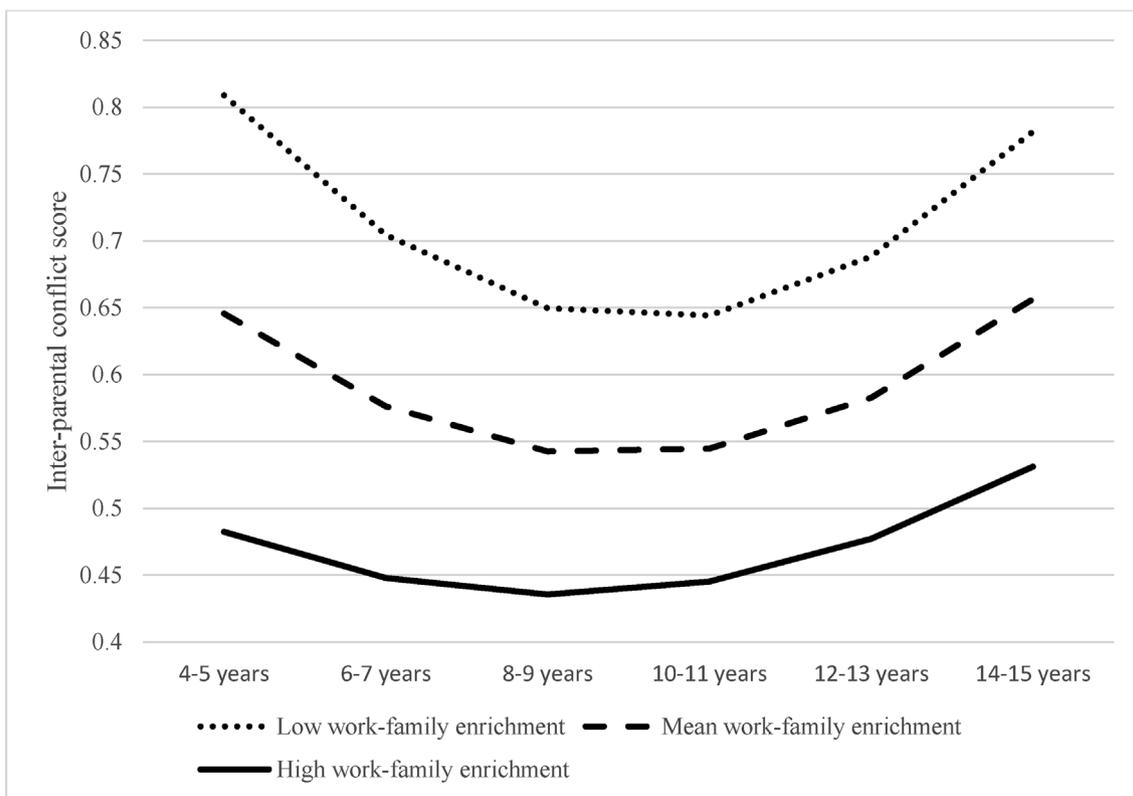


Fig. 3. Rate of change in inter-parental conflict predicted by work-family enrichment. Note: Cut off points for low and high work-family enrichment are one standard deviation ( $SD = .76$ ) below and above the mean ( $M = 2.64$ ), respectively.

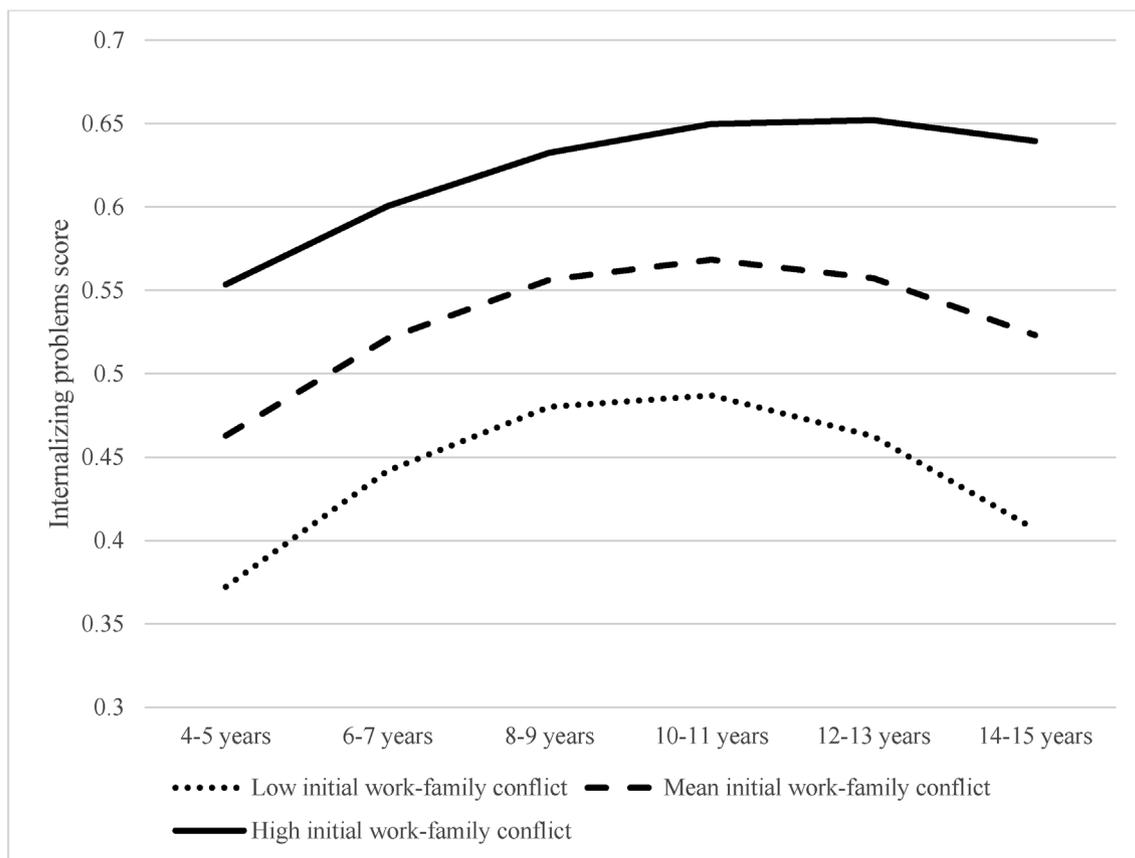


Fig. 4. Rate of change in internalizing problems predicted by work-family conflict. Note: Cut off points for low and high work-family conflict are one standard deviation ( $SD = 1.03$ ) below and above the mean ( $M = 1.69$ ), respectively.

the predictor variables. Fig. 2 shows the rate of change in inter-parental conflict predicted by initial inter-parental conflict. This figure shows that the rate of change in inter-parental conflict over childhood varied by initial levels of inter-parental conflict. Plotting these associations for the three groups (as shown by the three lines in the figure) show that the rate of change in inter-parental conflict for mothers with low initial inter-parental conflict was fairly consistent and linear over time. For mothers with average or high levels of initial inter-parental conflict, there was a pattern showing an initial decline in the rate of change in inter-parental conflict followed by a quadratic increase in the rate of change.

Initial work-family conflict and enrichment were negatively associated. In contrast, initial work-family conflict was positively associated with more rapid change in work-family enrichment over time. Initial levels of work-family conflict and inter-parental conflict at age 4–5 years were associated, but the initial levels in each did not predict change in the other over time. Initial inter-parental conflict at 4–5 years did not predict change in work-family enrichment, but initial work-family enrichment predicted both the linear and quadratic components of growth in inter-parental conflict over time. To illustrate this association visually, Fig. 3 presents the rate and shape of change in inter-parental conflict, according to initial levels of work-family enrichment, plotted on the graph at low (one standard deviation below the mean), average (mean), or high (one standard deviation above the mean) scores for initial work-family enrichment. Since the linear part of the slope for inter-parental conflict was negative, the figure shows that higher scores for initial work-family enrichment were associated with weaker reduction in inter-parental conflict over time (i.e., moving closer to zero), which may be a function of the low level of inter-parental conflict at the first time-point. In contrast, lower scores for initial work-family enrichment were associated with greater initial reduction

in inter-parental conflict over time. The quadratic component of the association is visible in Fig. 3, where higher initial work-family enrichment values were associated with a less steep increase in inter-parental conflict later in childhood.

Initial levels of child internalizing and externalizing problems did not predict the rate of change in work-family conflict over time, but higher initial work-family conflict predicted the quadratic component of change in child internalizing (but not externalizing) problems over childhood (i.e., 4–5 to 14–15 years). Fig. 4 illustrates this association visually by presenting the rate and shape of change in internalizing problems over childhood, in the context of low, average, and high work-family conflict. According to Fig. 4, when initial work-family conflict was low (or at a mean level), child internalizing problems increased slightly more rapidly and peaked earlier (~10–11 years of age), followed by more rapid reduction in internalizing problems thereafter. However, when initial work-family conflict was high, child internalizing problems increased more slowly, peaked later (~12–13 years), and showed a less rapid decrease thereafter.

As shown in Fig. 1, initial levels of work-family enrichment and child externalizing problems were associated; and initial levels of child internalizing problems were associated with linear change in work-family enrichment from 4 to 5 to 14–15 years. Initial levels of inter-parental conflict were associated with child internalizing and externalizing problems at 4–5 years, and initial levels of inter-parental conflict predicted the linear component of increase in child externalizing (but not internalizing) problems over 4–5 to 14–15 years. However, initial child internalizing and externalizing problems were not associated with change in inter-parental conflict over time.

#### 4. Discussion

Using data from a large population-level study, we sought to test the shape and direction of associations between maternal work-family conflict and enrichment, child internalizing and externalizing problems, and inter-parental conflict, over 10 years of childhood and adolescence. We found that mothers' work-family conflict and enrichment changed in a linear fashion over time, inter-parental conflict showed a quadratic increase, and child internalizing and externalizing problems decreased in a quadratic manner over time. We also found that higher initial work-family conflict predicted more rapid increases in work-family enrichment and child internalizing problems; initial child internalizing problems predicted a more rapid reduction in mothers' work-family enrichment; higher initial work-family enrichment predicted more rapid decreases in inter-parental conflict; and finally, initial inter-parental conflict predicted more rapid increases in child externalizing symptoms over time. These associations remained despite adjusting for mothers' and fathers' working hours, child gender, the number of children in the household, and family socio-economic position.

We found that maternal work-family conflict and enrichment at 4–5 years were negatively associated, but work-family conflict at 4–5 years was positively associated with change in work-family enrichment over time. These findings perhaps indicate that increases in work-family enrichment may be greater for those mothers who experience more work-family conflict initially. One possible reason may be that these mothers start with a high level work-family conflict and a low level of work-family enrichment, and hence are likely to experience more benefits in combining work and family roles later. It is also possible that these findings are influenced by a ceiling effect: Most of the participants scored at the higher end of the work-family enrichment scale; thus, the measure did not adequately capture the variation at the top levels of work-family enrichment. This type of ceiling effect may have reduced the strength of the detected association, and replication is therefore needed for clarification.

The findings of our study also showed that when mothers experienced higher initial work-family conflict at 4–5 years, their children were more likely to experience a steeper increase in internalizing symptoms over 4–5 to 14–15 years, compared to children whose mothers scored lower in work-family conflict at 4–5 years. Our study brings a population health perspective to the investigation of child development, by extending the research focus beyond more traditional family environment factors (e.g., family relationships and parenting). We show that dynamics in relation to parents' work-family experiences are important determinants of family functioning and child mental health. When mothers' work demands and family responsibilities are in conflict, their children's mental health may be threatened across childhood and adolescence.

Our findings do not support the notion of loss and gain spirals (Hobfoll, 1989) in relation to the work-family interface and child mental health. Given the ongoing reciprocal associations between mothers' work-family conflict and their own mental wellbeing (Westrupp et al., 2016), as well as emotional transmission from one family setting to another (Almeida et al., 1999), we expected that children's mental health problems would have reciprocal associations with maternal work-family conflict and enrichment over time. However, mothers' conflicting roles appeared to have a consistently adverse influence on their children, but not vice versa. Although the majority of employed mothers in our study reported that their work-family responsibilities were rewarding and enriching, work-family enrichment was not found to protect against child internalizing and externalizing problems over time. It is possible that work-family enrichment may only pose short-term positive influences on children (Strazdins et al., 2013; Vieira et al., 2016), whereas in the longer term the more dominant influence of work-family conflict may mitigate the benefits posed by work-family enrichment.

Although the notion of gain spirals in the conservation of resources

theory (Hobfoll, 1989) was not supported in our study, our findings do suggest that when children have fewer internalizing symptoms, mothers may be more likely to benefit from combining work and family roles. Therefore, it is possible that support systems or interventions focused on improving child mental health outcomes may have the additional benefit of making it easier for mothers to combine work and family roles, and thus increase mothers' opportunities to experience work-family enrichment. This approach has some parallels with previous research, which found links between the presence of higher levels of family support, which is to have accommodating and understanding family members (including children and spouse) with increased work-family enrichment (Annor, 2016).

We found that initial work-family enrichment when children were 4–5 years contributed to more rapid decreases in inter-parental conflict over the subsequent 10 years of childhood and adolescence. This finding supports and extends the crossover theory which posits that work-family experiences and associated demands, strain, and stress can crossover between closely related individuals within a family setting (Westman, 2002). Our findings show that positive influences associated with the work-family interface can also cross over and enhance family functioning. In addition, higher levels of inter-parental conflict at 4–5 years predicted more rapid increases in child externalizing problems over 4–5 to 14–15 years, which is consistent with the extant literature showing detrimental influences of inter-parental conflict on child adjustment (e.g., Cummings et al., 2012).

We found no evidence for longitudinal associations between work-family conflict and inter-parental conflict, despite previous research suggesting that work-family conflict is concurrently associated with poorer quality relationship between parents and higher levels of inter-parental conflict (Cooklin et al., 2015b; Hart and Kelley, 2006). It is possible that conflicting work and family roles may increase the level of conflict between couples over shorter intervals, but not in the longer term. For example, Rantanen et al. (2008), found no associations between work-family factors and marital adjustment, parental stress, and psychological distress over one- and six-year time lags. Therefore, the lack of longitudinal associations may be due to the length of the measurement intervals. In longitudinal research, the timing of assessment plays an important role in the accuracy of the parameter estimates, given that change may have occurred before or after the occasion of measurement (Timmons and Preacher, 2015).

This pattern of findings for which work-family conflict is unrelated to change in inter-parental conflict, does not support interparental conflict as a mediating factor explaining the association between work-family conflict and child behavioral problems. However, if the time-frame for assessment was too long in the present study, then our model may not have been sensitive in detecting the dynamics between these variables. As such, we recommend further testing with differing time intervals (e.g., six-month intervals) to evaluate whether this mediation effect might exist. If the paths are unsupported in further studies, it suggests need for consideration of other factors that may instead explain how work-family conflict influences child outcomes, including parent-child interactions (Dinh et al., 2017; Ferreira et al., 2018) and parental psychological distress (Strazdins et al., 2013; Westrupp et al., 2016).

##### 4.1. Strengths and limitations

The use of the rich population-level data from LSAC, with repeated measures of work-family variables and child mental health outcomes, allowed for the examination of longitudinal relations across 10 years of childhood and adolescence. The large sample size and available data at multiple time-points allowed the use of latent growth curve modelling, which is a well-accepted method for modelling change over time (Martens and Haase, 2006). Given the complexity of developmental processes, a solely linear approach limits understanding of the true shape of change over time. Therefore, the inclusion of non-linear

components in our model allowed for a more accurate description of the developmental changes in variables of interest (Grimm et al., 2011).

Our study focused on mother-report on all variables, which may have resulted in shared method variance biasing the results. However, there is evidence to suggest that monomethod research (i.e., using the same data collection method to assess all constructs) may represent a more accurate overview of the true associations between the constructs compared to heteromethod research (i.e., the use of different methods to assess constructs) (Lance et al., 2010). In the context of a single informant, the effect of increased shared method variance is counterbalanced by the attenuating effect of the measurement error.

Moreover, given that our focus was on testing whether the rate of change in each variable depended on initial levels of the other variables, time was centered at the first (initial) time point (i.e., Time 1 = 0). This may have impacted the results and subsequent interpretation of our findings. Therefore, we conducted a sensitivity analysis to test the results with time centered on its mean for all variables, and the majority of associations remained consistent and did not change our conclusions. The altered results are available upon request.

#### 4.2. Theoretical and practical implications

Our findings provide further evidence that mothers' work-family conflict is a determinant of child mental health. With increasing rates of maternal participation in the labor market, our findings indicate that a large proportion of children in the population may be adversely or positively affected by workplace policies that influence mothers' work-family experiences. Thus, a prevention and early intervention focus aimed at considering how workplace policies and practices give rise to work-family conflict, and how changes may be introduced to mitigate work-family conflict, is warranted. Policies should focus on facilitating a family-friendly work environment for working mothers. For example, workplaces may consider how best to provide mothers with greater flexibility in terms of their working hours, location, and work arrangements (Kossek et al., 2011). The majority of existing policies are focused on supporting working mothers in the early years of giving birth. However, our study findings indicate that early childhood (i.e., 4–5 years) is a key time when mothers' work-family conflict poses detrimental influences on child mental health, with enduring effects for children's development over middle childhood and into adolescence. In this context, it is important that family-friendly work arrangements and paid parental leave policies be extended to include parents of school-aged and older children, rather than being solely focused on parents of infants. Likewise, workplace endeavors focused on training family-supportive supervisors may be beneficial in preventing work-family conflict (Hammer et al., 2009).

#### 5. Conclusions

This study contributes to the body of research by considering how the labor market plays a role on children's health via influences on mothers' work and family functioning. Our findings support bidirectional pathways between the work-family interface and child outcomes. We found that mothers' work-family conflict at 4–5 years was associated with more rapid increases in child internalizing problems; and initial internalizing problems were associated more rapid reductions in mothers' work-family enrichment. Bidirectional pathways between work-family conflict and child mental health were not evident. Initial work-family enrichment was associated with larger reductions in interparental conflict, and initial inter-parental conflict was found to be associated with more rapid increases in child externalizing problems. Work-family enrichment was not found to be protective against child internalizing/externalizing problems. As regards future research, more studies are needed to consider both mothers' and fathers' work-family experiences and potential contributions to health inequalities. In addition, research is needed to understand how supporting fathers to

access family-friendly work arrangements might also benefit mothers and children.

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#### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2018.06.031>.

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