Crossover of parents' work-family conflict to family functioning and child mental health[☆]

Andisheh Vahedi[a,*], Isabel Krug[a], Elizabeth M. Westrupp[b,c,d]

[a] Melbourne School of Psychological Sciences, The University of Melbourne, Parkville, VIC 3010, Australia
[b] School of Psychology, Deakin University, Geelong, VIC 3125, Australia
[c] Judith Lumley Centre, La Trobe University, Melbourne, VIC 3086, Australia
[d] Department of Pediatrics, University of Melbourne, VIC 3010, Australia

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ABSTRACT

We investigated potential crossover from mothers' and fathers' work-family conflict to their own and their partner's perception of inter-parental conflict and parenting irritability, and subsequent influences on children's and adolescents' mental health. Using a representative sample of Australian children ($N = 3061$), an autoregressive model tested four mediation paths for mother-reported child internalizing and externalizing problems (4–5 to 14–15 years), and a second model tested two mediation paths for adolescent-reported problems (8–9 to 14–15 years). Findings indicated that mothers' and fathers' parenting irritability (6–7 years) mediated the association between mothers' work-family conflict (4–5 years) and mother-reported child externalizing problems (8–9 years); and mothers' parenting irritability (12–13 years) mediated the association between fathers' work-family conflict (10–11 years) and mother- and adolescent-reported externalizing problems (14–15 years). Findings demonstrate the potential for work-family conflict to cross over to parenting, thus influencing long-term child mental health.

Introduction

Work-family conflict occurs when work responsibilities interfere with family commitments, or when family commitments interfere with work responsibilities (Byron, 2005). Recent family-oriented research has shown a link between parents' experiences of work-family conflict and detrimental family functioning and child mental health outcomes (e.g., Cooklin et al., 2014; Dinh et al., 2017; Strazdins, Obrien, Lucas, & Rodgers, 2013). When there is a conflict between parents' work and family responsibilities, children are more likely to experience internalizing and externalizing symptoms (Dinh et al., 2017; Strazdins et al., 2013). However, most research studies that investigated the associations between work-family conflict and child development, have focused on childhood outcomes using cross-sectional data (McLoyd, Toyokawa, & Kaplan, 2008; Strazdins et al., 2013; Vieira, Matias,

Ferreira, Lopez, & Matos, 2016), which has prevented examination of potential long-term crossover influences from childhood through to adolescence. Given the persistent nature of work-family conflict over time (Westrupp et al., 2016), it is important to understand how work-family conflict influences child mental health across childhood and adolescence. Previous research indicates that children are at a great risk of developing internalizing and externalizing problems when both parents experience high and persistent work-family conflict (Dinh et al., 2017). Therefore, the current study seeks to examine the degree to which mothers' and fathers' work-family conflict cross over to influence their own and their partner's perception of inter-parental conflict and parenting irritability, and consequently their child's internalizing and externalizing problems across 10 years ranging from early childhood to adolescence.

Theoretical framework

Bronfenbrenner (1979) is one of the first scholars who addressed parental work and employment as important environmental predictors of family functioning and child development. Bronfenbrenner's ecological theory conceptualizes the environment in terms of four nested levels, within which child development occurs. Microsystems are immediate settings in which a child actively participates, such as family and school. Mesosystems refer to the interaction between microsystems. Exosystems are the external contexts within which microsystems and children function, but children do not actively participate in them and are situated within macrosystems, which refer to the wider contextual systems of society and culture (Bronfenbrenner, 1979). This theory has matured over time and has been discussed in a form of process-person-context-time model (Bronfenbrenner & Morris, 2006; Tudge, Mokrova, Hatfield, & Karnik, 2009). The first element of this model focuses on the proximal processes including parent-child and parent-parent interactions and influences on child development. The second element is the biological and genetic aspects of the person including age and gender. The context element of this model includes the four inter-related environments as mentioned above. Finally, the time element of this model refers to the fact that developmental processes may vary based on the specific historical events and based on the age of individuals. In light of this model, parents' experiences in combining work and family responsibilities are exosystems, which may impact on their child development through proximal processes including parent-parent and parent-child interactions, and these influences may vary based on the gender of the parent and the child, and the phase of development (e.g., childhood and adolescence).

To understand the way in which work-family conflict influences other members of the family, the spillover-crossover process can also be taken into account (Bakker & Demerouti, 2012). Spillover refers to a within-individual transfer of experiences from one domain to another, influencing the individual's own behaviour in the receiving domain (Edwards & Rothbard, 2000). For example, a parent who has a demanding job may be in a bad mood at home, displaying more irritable and frustrated interactions with their family. Crossover refers to a dyadic, between-individual transmission of strain and stress through which one person's experiences influence another person's experiences (Westman, 2002). An example of this would be when a parent's frustrated mood and negative interactions with the child as a results of a demanding job (i.e., spillover) leads to behavioral and emotional problems in their children (i.e., crossover) (Cho & Ciancetta, 2016).

Based on the crossover theory (Westman, 2002), work-family conflict demands and associated strains may cross over to closely-related individuals, such as partners or children within a family setting. For example, the increased level of distress and frustration accompanied by work-family conflict has been found in various studies to be associated with increased negative interactions between partners (Cooklin et al., 2015; Westman, 2005). Likewise, in another study work-family conflict was associated with partners' experience of social undermining, referring to negative affect, negative evaluations and criticism between partners (Bakker, Demerouti, & Dollard, 2008). However, the crossover influences between partners and consequently to children's mental health needs further investigation, and is the main focus of the current paper.

Mothers' and fathers' work-family conflict

Traditionally, most of research on work and family focused on working mothers (for a review see Perry-Jenkins, Repetti, & Crouter, 2000), but interest in fathers' work-family experiences has increased from the 2000s (for a review see Bianchi & Milkie, 2010). Research evidence indicates that working fathers also experience challenges in combining work and family responsibilities. For example, in a large sample of working mothers (n = 4768) and fathers (n = 7692) from 48

countries with children under 18 years of age, 87% of fathers compared to 88% of mothers reported work-to-family conflict, and 42% of fathers compared to 55% of mothers reported family-to-work conflict (Hill, Hawkins, Märtinson, & Ferris, 2003). Further, mothers' and fathers' experiences of work-family conflict were positively associated with each other (Cinamon, Weisel, & Tzuk, 2007), suggesting fathers' work-family conflict as an additional source of influence that alter children's family environment (Strazdins et al., 2013). However, it is not clear whether mothers' or fathers' work-family conflict pose a more persistent influence on children's development over childhood and adolescence.

There is growing evidence of impacts of both mothers' and fathers' work-family conflict on children's internalizing and externalizing problems (Hart & Kelley, 2006; Strazdins et al., 2013). Internalizing problems signify a disturbance in emotions and moods, and generally refer to anxiety and depressive symptoms (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Externalizing problems are characterized by behaviors that are disruptive and harmful to others and are generally defined as irritability due to frustration, anger, hostility, aggression, inattention, impulsivity, and overactivity (Zahn-Waxler et al., 2000). Recent research studies have indicated that work-family conflict influenced children's internalizing and externalizing problems through parents' own functioning at home, for example, parenting behaviors and the couple relationship (Dinh et al., 2017; Strazdins et al., 2013). However, research has not yet addressed the crossover influences from mothers' and fathers' work-family conflict to the other parent's functioning at home and consequently on children's mental health over time. Moreover, given that factors related to work, family, and child characteristics including working hours, socio-economic position, number of children in the household, and child gender are antecedents of work-family conflict (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011; Westrupp et al., 2016), it is important to understand whether the crossover influences from work-family conflict to family functioning and child outcomes are present even when accounting for these other known influences.

Crossover influences through parenting irritability and inter-parental conflict

Previous research has indicated that work-family conflict is associated with a range of family functioning variables, including parents' physical and mental health (Carlson et al., 2011; Cooklin et al., 2016; Westrupp et al., 2016), their level of stress and burnout (Allen, Herst, Bruck, & Sutton, 2000), the couple relationship quality (for a review, see Fellows, Chiu, Hill, & Hawkins, 2016), and parent-child interactions (Cooklin et al., 2015; Dinh et al., 2017). In this study we focus on the degree to which work-family conflict influences the within-family interactions. When a parent experiences difficulties in balancing their work and family responsibilities, their functioning as a partner and a parent may be impaired, thus increasing their frustrated and irritable interactions with their child (Cooklin et al., 2014, 2015), and their partner (Cooklin et al., 2015).

We propose parenting irritability and inter-parental conflict as two likely mechanisms explaining (i.e., mediating) the associations between work-family conflict and child mental health problems. Parenting irritability refers to parenting behaviors that are hostile, angry, inconsistent, and punitive toward children (Strazdins et al., 2013), and inter-parental conflict refers to verbal arguments, anger, and hostility between parents (Westrupp, Rose, Nicholson, & Brown, 2015). Both parenting irritability and inter-parental conflict have long been regarded as strong predictors of child developmental outcomes (Cummings, George, McCoy, & Davies, 2012; Repetti, Taylor, & Seeman, 2002). However, the possibility of longitudinal associations between parents' work-family conflict and childhood mental health problems through inter-parental conflict and parenting irritability remains unclear.

In addition to the transmission of negative effects from one parent to their child, work-family conflict experienced by one parent may also cross over to affect the other parent. For example, impairment in one

parent's functioning at home may increase the time pressures and caring responsibilities of the other parent (Hart & Kelley, 2006), thus increasing inter-parental conflict and the affected parent's parenting irritability. There has been some cross-sectional evidence supporting this hypothesis (Ferreira et al., 2018; Hart & Kelley, 2006). For example, in a cross-sectional study, mothers' and fathers' work-family conflict was positively associated with couples' report of marital conflict occurring in front of the child. Mothers' negative interaction with the child was positively associated with fathers' parenting stress, in particular, their distress in parenting, having dysfunctional interactions with the child, and perceiving the child as difficult (Hart & Kelley, 2006). Likewise, each parent's work-family conflict was concurrently associated with reductions in the other parent's engagement with the child (Ferreira et al., 2018).

The crossover influences from parents' work-family conflict to their parenting practices and inter-parental conflict have broader implications for child development. For example, mothers' work-family conflict and mothers' and fathers' parenting stress were positively associated with internalizing and externalizing symptoms in children (Hart & Kelley, 2006), and fathers' work-family conflict was concurrently associated with poor quality father-child interactions, which were in turn related to low child self-esteem (Lau, 2010). Likewise, parents' work-family conflict were associated with their own poor mental health (Strazdins et al., 2013) and high levels of parenting irritability (Vieira et al., 2016), which in turn were positively associated with child internalizing and externalizing problems (Strazdins et al., 2013; Vieira et al., 2016). According to these findings, work-family conflict has the potential to impact on child outcomes through within-family interactions.

Nevertheless, the bulk of existing evidence on the intersection between work-family factors and family functioning has been cross-sectional. More recently, longitudinal studies have investigated the associations between work-family conflict, family functioning, and child outcomes (Dinh et al., 2017; Ferreira et al., 2018; Vahedi, Krug, Fuller-Tyszkiewicz, & Westrupp, 2018). Dinh et al. (2017) found longitudinal associations between parents' work-family conflict and higher levels of child internalizing and externalizing problems through parenting irritability and marital dissatisfaction. Vahedi et al. (2018) found that initial work-family conflict at 4–5 years predicted more rapid increases in child internalizing problems over 4–5 to 14–15 years of age. Ferreira et al. (2018) found that mothers' and fathers' work-family conflict were concurrently and negatively associated with their own engagement with the child, and each parents' engagement with the child was positively associated with child behavioral self-control over time. Findings from these cross-sectional (Hart & Kelley, 2006; Lau, 2010; Strazdins et al., 2013; Vieira et al., 2016) and longitudinal studies (Dinh et al., 2017; Ferreira et al., 2018) suggest that parent-parent and parent-child interactions within the family setting are commonly compromised in the context of work-family conflict. Further, in altering the nature of the family environment, work-family conflict is also likely to affect children's emotional and behavioral problems. However, there are a few key gaps in the evidence to date that require further investigation.

Firstly, none of the studies investigated the crossover from each parents' work-family conflict to the other parent's functioning in the home environment. Although Ferreira et al. (2018) investigated the association between each parent's work-family conflict and their own and the other parent's engagement with the child, these associations were investigated cross-sectionally, which does not capture the concept of crossover occurring over time. Secondly, only three of the studies directly investigated the mediating mechanisms that link work-family conflict to child mental health (Dinh et al., 2017; Strazdins et al., 2013; Vieira et al., 2016), and of these, data from Strazdins et al. (2013) and Vieira et al. (2016) were cross-sectional, limiting the ability to make mediational inferences.

Thirdly, the majority of the existing studies have investigated the associations over early childhood (Hart & Kelley, 2006; Lau, 2010;

Strazdins et al., 2013; Vieira et al., 2016), and the longitudinal studies have examined influences either over the short-term (i.e., Dinh et al., 2017; Ferreira et al., 2018), or have not specifically examined mediation (Vahedi et al., 2018), limiting our understanding of whether the mediated patterns of associations persist over distinct periods in early to middle childhood and adolescence. Given the increasing rates of internalizing and externalizing problems in children and adolescents in the 21st century (Bor, Dean, Najman, & Hayatbakhsh, 2014), and the likelihood that childhood-era emotional and behavioral problems will persist into adolescence (Bornstein, Hahn, & Haynes, 2010), it is critical to explore contemporary factors that pose sustained influences on children's and adolescents' internalizing and externalizing problems. Work-family conflict is a persistent factor, with sustained influences on parents' own mental health (Westrupp et al., 2016), and their functioning as a partner and a parent in the home environment (Dinh et al., 2017). Therefore, it is likely that work-family conflict through sustained influences on the home environment, pose long-term influences on children's and adolescents' development.

Finally, the extent to which patterns of crossover associations differed for mothers' versus fathers' work-family conflict has not been examined yet. Given that women report higher levels of work-family conflict compared to men (Cinamon, 2006), and that employed mothers in Australia typically shoulder a greater share of childcare and household responsibilities compared to employed fathers (Craig & Sawrikar, 2009), it is expected for mothers' work-family conflict to pose a more persistent influence on children's and adolescents' internalizing and externalizing problems, compared to fathers.

The current study

The current study sought to investigate the longitudinal associations between both mothers' and fathers' experiences of work-family conflict and subsequent internalizing and externalizing problems in their children, through the potential linking mechanisms of mother- and father-report of inter-parental conflict and parenting irritability. Based on the reviewed literature and theory showing crossover from work-family conflict to family functioning, we hypothesized that both parents' work-family conflict would predict higher levels of inter-parental conflict and parenting irritability, and consequently increased internalizing and externalizing problems in children. Specifically, we sought to answer the following research questions:

1. Do mothers' and fathers' experiences of work-family conflict predict increases in their own and their partner's perception of inter-parental conflict and parenting irritability?
2. Do mothers' and fathers' experiences of work-family conflict predict increases in their children's internalizing and externalizing problems through their own and their partner's perception of inter-parental conflict and parenting irritability?
3. Are these patterns of associations persistent across different periods of childhood and adolescence?
4. Are the crossover influences from mothers' compared to fathers' work-family conflict more persistent over childhood and adolescence?

This study overcomes the limitations of previous research by implementing a robust method to test longitudinal mediation using an autoregressive model, depicted in Fig. 1. Given that a fundamental requirement of mediation is that one variable should precede the other variable in time (Cole & Maxwell, 2003; Holland, 1986; Jose, 2016), autoregressive models which control for the prior levels of the dependent, independent, and the mediator variables are the most rigorous method for testing longitudinal mediation (Cole & Maxwell, 2003). In addition, we analyze data in accordance with the actor-partner interdependence model (Cook & Kenny, 2005). According to this model the dyad is the highest unit of analysis, and individuals are nested within
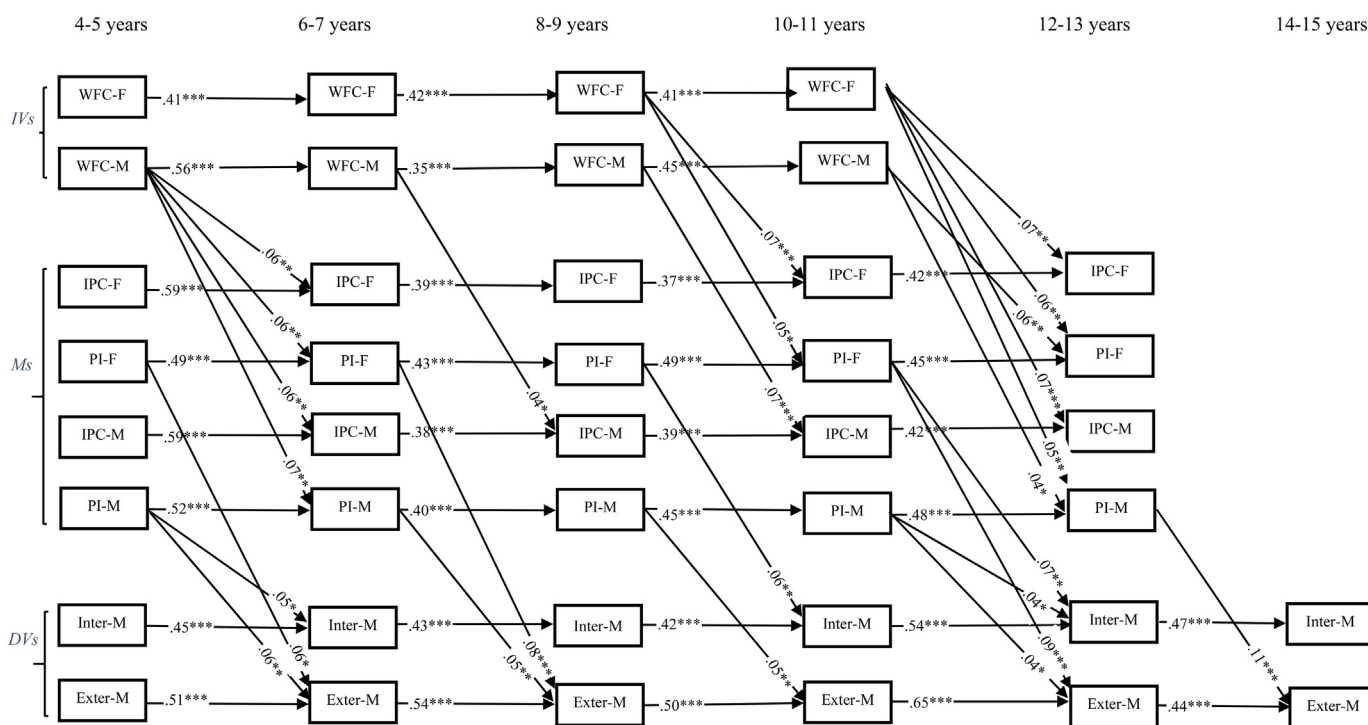
Fig. 1. Auto-regressive model with mother-reported child outcomes, testing mediation over four distinct developmental periods. F = father-report; M = mother-report; WFC = work-family conflict; IPC = inter-parental conflict; PI = parenting irritability; Inter = child internalizing problems; Exter = child externalizing problems; IV = independent variable; DV = dependent variable; M = mediator. Figures are standardized regression coefficients. Direct paths from IVs to DVs, non-significant associations (p > 0.05), and within-wave covariances are not depicted. Models were adjusted for child gender, number of children in the household, socio-economic position, mothers and fathers' working hours. N = 3061. *p < 0.05, **p < 0.01, ***p < 0.001.

the dyad. Therefore, one person's (or the actor's) independent variable (e.g., work-family conflict) can influence their own and their partner's dependent variable (e.g., inter-parental conflict and parenting irritability).

To address the potential for shared method variance (i.e., same-reporter bias), two models were run separately, one with mother-report of child internalizing and externalizing problems (Fig. 1) and one with adolescent-reported internalizing and externalizing problems (Fig. 2). For the latter model, adolescent-reported data were available starting from 10 to 11 years. Models tested whether mothers' and fathers' work-family conflict predicted internalizing and externalizing problems in children and adolescents, and whether these associations were explained by four potential mediators including mothers' and fathers' perception of inter-parental conflict and their parenting irritability, over distinct developmental pathways. Both mothers' and fathers' working hours, child gender, number of children in the household, and socio-economic position were specified as control variables in the models.

Method

Data

Data were from the kindergarten cohort of the LSAC, a nationally-representative cohort study of Australian children and their families (Soloff, Lawrence, & Johnstone, 2005). LSAC was approved by the Australian Institute of Family Studies Ethics Committee (Gray & Sanson, 2005) and used a two-stage cluster sampling using Australian postcodes and Medicare national public health system database to randomly select children. The families of 4983 children (59% initial response rate) participated in the Kindergarten cohort in 2004, when children were 4–5 years old (Time 1), and were followed at 6–7 years (Time 2, n = 4464; 90% retention from Time 1), 8–9 years (Time 3,

n = 4331; 87% retention from Time 1), 10–11 years (Time 4, n = 4169; 84% retention from Time 1), 12–13 years (Time 5, n = 3956; 79% retention from Time 1), and 14–15 years (Time 6, n = 3537; 71% retention from Time 1). Once a family attrited, there were no attempts to re-recruit them at subsequent waves. Parent and child reports were collected via face-to-face interview, or via paper or computer-based questionnaires.

Inclusion and exclusion criteria

Children were included in the final sample if the caregivers who completed the questionnaires were the biological, step, adoptive, or foster mother and father of the child (excluded mothers n = 205, excluded fathers n = 1262). The sample was limited to working parents who were employed part-time, full-time, or were on leave from paid work (excluded mothers n = 431, excluded fathers n = 22). Given that the nature of inter-parental conflict may vary within single or separated families, the sample was limited to participants who resided in a couple-parent family, (i.e., married or cohabiting relationship) for at least 5 out of 6 time-points (excluded families n = 1). Participants were included if they had data available on at least one of the variables (excluded families n = 1). Table 1 presents descriptive statistics for the included and excluded participants. A total of 3061 children were included who were on average 57 months old (SD = 2.65) at baseline, and their mothers' and fathers' weekly working hours were on average 24 (SD = 14.74) and 48 (SD = 13.33) hours, respectively. Approximately half (51%) of the included children were boys. Included children compared to excluded children were more likely to be from socially advantaged backgrounds and to have more siblings. They were also less likely to speak a language other than English at home and to be of Aboriginal or Torres Strait Islander origin.
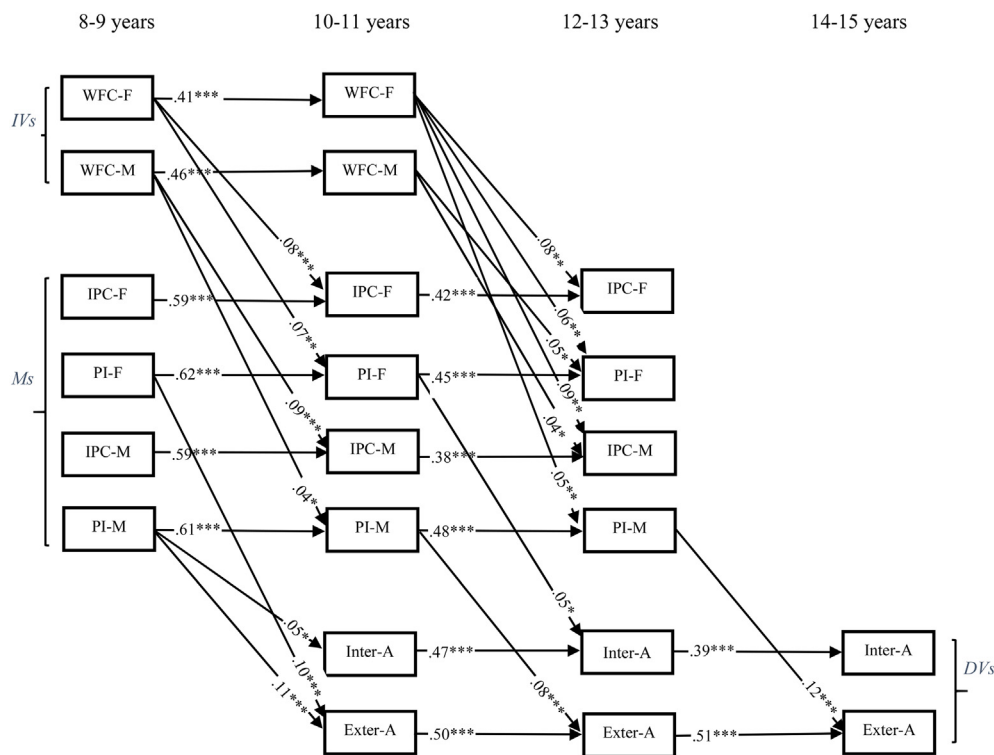
Fig. 2. Auto-regressive model with adolescent-reported outcomes, testing mediation over two distinct developmental periods. F = father-report; M = mother-report; A = adolescent-report; WFC = work-family conflict; IPC = inter-parental conflict; PI = parenting irritability; Inter = child internalizing problems; Exter = child externalizing problems; IV = independent variable; DV = dependent variable; M = mediator. Figures are standardized regression coefficients. Direct paths from IVs to DVs, non-significant associations (p > 0.05), and within-wave covariances are not depicted. Models were adjusted for child gender, number of children in the household, socio-economic position, mothers and fathers' working hours. N = 3061. *p < 0.05, **p < 0.01, ***p < 0.001.

Measures

Work-family conflict

A four-item adaption of the strain scale developed by Marshall and Barnett (1993) was used to assess mothers' and fathers' experiences of work-family conflict. Parents rated the degree to which employment-related constraints impacted their family life and parenting, and vice versa (e.g., "Because of my work responsibilities my family time is less enjoyable and more pressured"). Items were rated on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and a work-family conflict score was calculated by averaging all the items. Recent Australian research has shown high reliability for this scale ($\alpha = 0.71$) (Strazdins et al., 2013). In the current study, the mother and father work-family conflict scales at each time-point had good internal consistency (mother work-family conflict αs = .67–.76, father work-family conflict αs = .61–.80).

Inter-parental conflict

A four-item adaption of the Inter-Parental Conflict Scale, a subscale of the Co-parental Communication Scale (Australian Institute of Family Studies, 2005) was used to assess verbal inter-parental conflict. Mothers and fathers reported on the frequency of verbal conflict with their partner (e.g., "How often do you argue?"), on a five-point Likert scale ranging from 1 (*never*) to 5 (*always*). Items were averaged to create an

inter-parental conflict score. This measure has previously shown high reliability (αs = .81–.96) (Ahrons, 1981). In the current study, internal consistency was high across all time-points (mother-report αs = .76–.82, father-report αs = .79–.81).

Parenting irritability

Mothers and fathers reported on the frequency of their hostile, angry or rejecting behaviors toward the child using four items (e.g., "How often are you angry when you punish this child?") of a five-point scale ranging from 1 (*never*) to 5 (*all the time*) (Zubrick, Lucas, Westrupp, & Nicholson, 2014). A parenting irritability score was calculated by averaging the items. This measure has shown high reliability in an investigation of the psychometric properties of the parenting measures in LSAC (H-index = 0.85–0.92) (Zubrick et al., 2014). This scale showed acceptable internal consistency in the current study (mother-report αs = .61–.73, father-report αs = .62–.72).

Internalizing and externalizing problems

The Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) was used to assess child internalizing and externalizing problems. The internalizing problems score was a mean of five items that assessed childrens' emotional symptoms (e.g., "My child… is often unhappy, depressed or tearful"). The externalizing problems score was a mean of 10 items that assessed conduct problems (e.g., "My child… fights with

Table 1
Characteristics of included and excluded participants at baseline.

Variable	Included participants, %	Excluded participants, %	χ^2 (φ)
Male sex	51.03	50.68	.06 (.003)
Child age in months, mean (*SD*)	56.85 (2.65)	56.99 (2.63)	28.11* (.08)
Low socio-economic position	10.75	39.32	563.64*** (.34)
Two or more children in the household	91.57	83.77	70.99*** (−.12)
Main language not English	17.70	18.99	15.88*** (−.06)
Aboriginal or Torres Strait Islander	1.93	6.66	73.23*** (.12)

Note. Included participants, *N* = 3061; Excluded participants, *N* = 1922. Aboriginals and Torres Strait Islander people are indigenous Australians.

other children or bullies them") and hyperactivity-inattention symptoms (e.g., "My child… is restless, overactive, cannot stay still for long"). Mothers and children/adolescents reported on the items on a three-point scale from 0 (*not true*) to 2 (*certainly true*). Mother reports were available across all six time-points, but adolescent-reports were only available starting from Time 4. This measure has shown strong psychometric properties in Australian and non-Australian studies (e.g., total difficulties score α = 0.79) (Stone, Otten, Engels, Vermulst, & Janssens, 2010; Strazdins et al., 2013). Both scales showed acceptable internal consistency in the current study (mother-reported internalizing αs = .58–.73, mother-reported externalizing αs = .78–.81, adolescent -reported internalizing αs = .69–.75, adolescent -reported externalizing αs = .75–.77).

Socio-demographic variables

A range of socio-demographic variables were reported by mothers including child age in months, child gender coded as 1 (*male*) and 2 (*female*), child Indigenous status coded as 0 (*not Aboriginal/Torres Strait Islander*) and 1 (*Aboriginal/Torres Strait Islander*), number of children in the household coded as 0 (*only child*) and 1 (*two or more children*), main language spoken at home coded as 0 (*not English*) and 1 (*English*), and mothers' working hours. Fathers also reported on their working hours.

Socio-economic position

A continuous composite variable, as used in other studies, was formed based on household (i.e., both parents if available) income, education, and occupational prestige (Blakemore, Strazdins, & Gibbings, 2009). This continuous variable was calculated based on the full study cohort and was subsequently divided into three quartiles: 1 (*lowest 25%*), 2 (*middle 50%*), and 3 (*highest 25%*).

Statistical analysis

Variables were cleaned and derived in Stata version 13.1 (StataCorp, 2013). Path analysis was conducted in Mplus version 7.4 (Muthén & Muthén, 1998–2015). Item-level missingness was handled in Stata using mean imputation if 1 item or less was missing for each measure. The dataset included scale-level missingness on all variables. Table 2 demonstrates descriptive statistics of the model variables including number of observations, means and standard deviations, skewness/Kurtosis, the range and the percentage of missingness for each variable. Little's MCAR test indicated that paternal work-family conflict, mother-reported internalizing problems, and adolescent-reported externalizing and internalizing problems were Missing Completely at Random (MCAR) and all other variables were Missing at Random (MAR). Missingness in these variables was associated with child gender, number of children in the household, socio-economic position, and mothers' and fathers' working hours, which were statistically controlled for. To handle scale-level missingness the default method in Mplus, maximum likelihood estimation was used. This method ensures that all available data are used under the assumption that data are missing at random and missingness is a function of observed covariates and outcomes (Muthén & Muthén, 1998–2015).The model shown in Fig. 1 included mother-reported child outcomes and tested longitudinal associations between repeated measures of mothers' and fathers' work-family conflict (4–5, 6–7, 8–9, 10–11 years), mothers' and fathers' report of inter-parental conflict and parenting irritability (4–5, 6–7, 8–9, 10–11, 12–13 years), and child internalizing and externalizing problems (4–5, 6–7, 8–9, 10–11, 12–13, 14–15 years). This model allowed investigation of four mediation pathways. The model shown in Fig. 2 included adolescent-reported outcomes and tested longitudinal associations between mothers' and fathers' work-family conflict (6–7, 8–9, 10–11 years), mothers' and fathers' report of inter-parental conflict and parenting irritability (8–9, 10–11, 12–13 years), and adolescent internalizing and externalizing problems (10–11, 12–13, 14–15 years). This model allowed investigation of two mediation

pathways.

In each model, dependent variables (i.e., child internalizing and externalizing problems) were regressed onto (i) the four mediators (i.e., mothers' and fathers' inter-parental conflict and parenting irritability) from the prior time-point and (ii) the independent variables (i.e., mothers' and fathers' work-family conflict) from two time-points prior. Mediators were also regressed onto the independent variables from the prior time-point. The two models were specified to account for within-wave covariances. In order to account for the role of covariates, all model variables were regressed onto child gender, number of children in the household, socio-economic position, and mothers' and fathers' working hours.

Both models were tested using two analysis steps. In the first step, direct and indirect associations were modeled and Mplus cluster and stratification options were used to account for the complex survey design of the LSAC data (Daraganova & Sipthorp, 2011). Indirect associations were tested using the Mplus INDIRECT command. In the second step, bias-corrected bootstrapping (1000 bootstrap samples) with replicate weights was requested to improve the performance of confidence intervals for the indirect effects (MacKinnon, Lockwood, & Williams, 2004).

For model fit indices, in addition to the chi-square statistic, which is less informative with large sample sizes (Byrne, 2013), the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR) are reported. Cut off values to indicate a good fit are as follows: RMSEA ≤ 0.06, CFI > 0.90 (acceptable fit), CFI > 0.95 (good fit), and SRMR ≤ 0.08 (Hu & Bentler, 1999). To determine the significance levels of the direct and indirect effects, both the *p*-values and the bias corrected confidence intervals from the bootstrapped results are reported. Mediating effects can be interpreted as statistically significant when confidence intervals do not include zero (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Results

Preliminary analysis

Means, standard deviations, and residual covariances between endogenous variables are presented in Supplementary Tables 1 and 2. Patterns of correlations were consistent across time, and were in the expected direction. In particular, parental work-family conflict was positively associated with father- and mother-reported inter-parental conflict and parenting irritability, and child internalizing and externalizing problems. Inter-parental conflict and parenting irritability were also positively associated with child internalizing and externalizing problems.

Model results

Mother-reported child outcomes

The model presented in Fig. 1 fit the data well, χ^2 (650, $N = 3061$) = 2807.05, p < 0.001, RMSEA = 0.03, 90% CI [0.032, 0.034], CFI = 0.95, SRMR = 0.07. Model results indicated that higher work-family conflict for mothers' and fathers' at 4–5 years were not directly associated with higher mother-report of internalizing or externalizing problems in children at 8–9 years. However, mothers' work-family conflict at 4–5 years was associated with increased inter-parental conflict and parenting irritability as reported by both mothers and fathers at 6–7 years. Mothers' and fathers' reports of higher parenting irritability at 6–7 years were both associated with higher mother-report of child externalizing problems at 8–9 years. The association between mothers' work-family conflict and mother-report of child externalizing problems was fully mediated by mothers' and fathers' parenting irritability, total indirect = 0.01, p = 0.002, 95% CI [0.004, 0.02], specific indirect via mothers' parenting irritability = 0.003, p = 0.04, 95% CI

Table 2
Descriptive statistics of the model variables.

Variable (time)	n	M	SD	Skewness	Kurtosis	Min	Max	Missing	Variable (time)	n	M	SD	Skewness	Kurtosis	Min	Max	Missing
Fathers' WFC (1)	2256	2.79	.72	−0.03	−0.04	1	5	42%	Mothers' IP (4)	2696	2.13	.64	0.54	−0.14	1	4	12%
Fathers' WFC (2)	2201	2.90	.75	−0.02	−0.14	1	5	44%	Mothers' IP (5)	2540	2.12	.67	0.68	0.21	1	5	17%
Fathers' WFC (3)	2023	2.71	.70	−0.01	0.04	1	5	33%	Mother-reported Intern (1)	3057	0.33	.32	1.10	1.03	0	2	0.13%
Fathers' WFC (4)	2084	2.65	.68	−0.03	0.06	1	5	25%	Mother-reported Intern (2)	2799	0.30	.32	1.34	2.05	0	2	9%
Mothers' WFC (1)	1778	2.61	.87	0.06	−0.54	1	5	26%	Mother-reported Intern (3)	2512	0.29	.33	1.47	2.46	0	2	18%
Mothers' WFC (2)	1698	2.76	.87	0.13	−0.31	1	5	28%	Mother-reported Intern (4)	2698	0.35	.37	1.31	1.73	0	2	12%
Mothers' WFC (3)	2032	2.59	.81	0.05	−0.35	1	5	34%	Mother-reported Intern (5)	2544	0.36	.37	1.25	1.41	0	2	17%
Mothers' WFC (4)	2291	2.59	.78	0.10	−0.19	1	5	32%	Mother-reported Intern (6)	2308	0.35	.38	1.49	2.30	0	2	25%
Fathers' IPC (1)	2454	2.18	.56	0.40	0.41	1	5	20%	Mother-reported Extern (1)	3056	1.13	.70	0.60	0.05	0	4	0.16%
Fathers' IPC (2)	2294	2.05	.56	0.51	0.37	1	5	25%	Mother-reported Extern (2)	2798	0.90	.62	0.82	0.51	0	3	9%
Fathers' IPC (3)	2078	2.02	.57	0.76	1.17	1	5	32%	Mother-reported Extern (3)	2509	0.84	.64	0.97	0.84	0	3	18%
Fathers' IPC (4)	2156	2.00	.58	0.57	0.24	1	5	30%	Mother-reported Extern (4)	2698	0.84	.64	0.94	0.80	0	4	12%
Fathers' IPC (5)	1948	2.00	.61	0.87	1.43	1	5	36%	Mother-reported Extern (5)	2544	0.74	.61	1.10	1.29	0	4	17%
Mothers' IPC (1)	2644	2.19	.58	0.51	0.45	1	5	14%	Mother-reported Extern (6)	2307	0.68	.60	1.24	1.75	0	4	25%
Mothers' IPC (2)	2785	2.01	.55	0.55	0.41	1	5	9%	Adolescent-reported Intern (4)	2695	0.57	.44	0.68	−0.03	0	2	12%
Mothers' IPC (3)	2409	2.07	.58	0.57	0.28	1	5	21%	Adolescent-reported Extern (4)	2695	1.06	.67	0.56	−0.07	0	3	12%
Mothers' IPC (4)	2693	2.08	.59	0.53	0.16	1	5	12%	Adolescent-reported Intern (5)	2566	0.48	.41	0.88	0.36	0	2	17%
Mothers' IPC (5)	2531	2.06	.61	0.64	0.56	1	5	17%	Adolescent-reported Extern (5)	2566	0.96	.64	0.59	0.02	0	4	17%
Fathers' IP (1)	2467	2.27	.59	0.35	−0.14	1	5	19%	Adolescent-reported Intern (6)	2293	0.56	.46	0.78	−0.02	0	2	25%
Fathers' IP (2)	2289	2.07	.58	0.67	0.48	1	5	25%	Adolescent-reported Extern (6)	2293	0.96	.65	0.61	0.10	0	4	25%
Fathers' IP (3)	2096	2.16	.62	0.55	0.10	1	5	32%	Child gender	3061	1.49	.50	0.06	−2.00	1	2	0%
Fathers' IP (4)	2165	2.17	.63	0.51	0.04	1	5	29%	Number of children	3061	1.31	.62	−0.31	−0.66	0	2	0%
Fathers' IP (5)	1955	2.13	.64	0.58	−0.04	1	5	36%	Mothers' working hours	2099	23.78	14.78	0.82	1.25	0	105	31%
Mothers' IP (1)	3038	2.17	.58	0.52	0.16	1	5	1%	Fathers' working hours	2951	47.48	13.19	0.66	3.07	0	126	4%
Mothers' IP (2)	2785	2.15	.56	0.49	0.03	1	4	9%	Socio-economic position	3060	2.20	.64	−0.22	−0.68	1	3	0.03%
Mothers' IP (3)	2501	2.13	.61	0.62	0.23	1	5	18%									

Note. N = 3061. *n* = sample size, *M* = mean, *SD* = Standard Deviation, WFC = work-family conflict, IPC = inter-parental conflict, PI = parenting irritability, Intern = Internalizing problems, Extern = Externalizing problems. Time 1 = 4–5 years old, Time 2 = 6–7 years old, Time 3 = 8–9 years old, Time 4 = 10–11 years old, Time 5 = 12–13 years old, Time 6 = 14–15 years old.

[0.001, 0.01], specific indirect via fathers' parenting irritability = 0.005, p = 0.02, 95% CI [0.002, 0.01].

Regarding the associations between work-family conflict at 6–7 years, parenting irritability and inter-parental conflict at 8–9 years, and child internalizing and externalizing problems at 10–11 years of age, results indicated that neither mothers' nor fathers' work-family conflict were directly or indirectly associated with mother-report of child internalizing or externalizing problems. However, mothers' work-family conflict at 6–7 years was associated with higher mother-reported inter-parental conflict at 8–9 years, and mothers' and fathers' parenting irritability at 8–9 years were associated respectively with higher mother-reported externalizing and internalizing problems in children at 10–11 years.

Mothers' work-family conflict at 8–9 years was directly associated with mother-report of adolescent internalizing and externalizing problems at 12–13 years, total effect on internalizing problems = 0.07, p = 0.001, 95% CI [0.01, 0.10], total effect on externalizing problems = 0.05, p = 0.005, 95% CI [0.01, 0.08]. Fathers' work-family conflict at 8–9 years was also directly associated with higher mother-reported internalizing problems in adolescents at 12–13 years, total effect = 0.04, p = 0.02, 95% CI [0.01, 0.08]. Although these associations were not mediated by inter-parental conflict or parenting irritability at 10–11 years, results indicated that mothers' and fathers' work-family conflict at 8–9 years were associated with their own perception of inter-parental conflict and parenting irritability at 10–11 years. Both mothers' and fathers' parenting irritability at 10–11 years were associated with higher mother-reported internalizing and externalizing problems at 12–13 years.

Finally, model results indicated that mothers' and fathers' work-family conflict at 10–11 years were not directly associated with higher mother-reported internalizing or externalizing problems at 14–15 years. Mothers' work-family conflict at 10–11 years was associated with higher mother- and father-reported parenting irritability at 12–13 years. Fathers' work-family conflict at 10–11 years was associated with increased mother- and father-reported inter-parental conflict and parenting irritability at 12–13 years. The association between fathers' work-family conflict at 10–11 years and mother-reported externalizing problems at 14–15 years was fully mediated by mothers' parenting irritability at 12–13 years, total indirect = 0.01, p = 0.01, 95% CI [0.002, 0.01].

Adolescent-reported outcomes

The model presented in Fig. 2 fit the data well, χ^2 (217, N = 3061) = 913.73, p < 0.001, RMSEA = 0.03, 90% CI [0.03, 0.035], CFI = 0.96, SRMR = 0.06. Model results indicated that mothers' work-family conflict at 8–9 years was directly associated with adolescent-report of internalizing problems at 12–13 years, total effect = 0.07, p = 0.001, 95% CI [0.03, 0.11]. In contrast to the Fig. 1, fathers' work-family conflict at 8–9 years was not directly associated with higher adolescent-reported internalizing problems at 12–13 years. Similar to the Fig. 1, no mediating association was evident through inter-parental conflict or parenting irritability at 10–11 years, and mothers' and fathers' work-family conflict at 8–9 years were associated with their own report of inter-parental conflict and parenting irritability at 10–11 years. Mothers' and fathers' parenting irritability at 10–11 years were associated respectively with higher adolescent-reported externalizing and internalizing problems at 12–13 years.

Similar to the findings from Fig. 1, mothers' and fathers' work-family conflict at 10–11 years were not directly associated with higher adolescent-reported internalizing or externalizing problems at 14–15 years. Mothers' work-family conflict at 10–11 years was associated with higher mother- and father-reported parenting irritability at 12–13 years. Fathers' work-family conflict at 10–11 years was associated with increased mother- and father-reported inter-parental conflict and parenting irritability at 12–13 years. The association between fathers' work-family conflict at 10–11 years and adolescent-reported

externalizing problems at 14–15 years was fully mediated by mothers' parenting irritability at 12–13 years, total indirect = 0.01, p = 0.02, 95% CI [0.002, 0.01].

Discussion

Combining work and family responsibilities is an extremely common experience for parents around the world, but can be accompanied by role difficulties with implications for family functioning and child mental health. The current study (a) investigated the longitudinal associations between mothers' and fathers' work-family conflict and both mothers' and fathers' perception of inter-parental conflict and parenting irritability; (b) assessed the longitudinal associations between mothers' and fathers' work-family conflict and their children's internalizing and externalizing problems through each parents' perception of inter-parental conflict and parenting irritability; and (c) took on a developmental perspective by assessing patterns of these associations over childhood and adolescence.

Our findings showed that both parents' work-family conflict influenced their own and their partner's functioning, in terms of inter-parental conflict and parenting irritability. Mothers' and fathers' parenting irritability (6–7 years) mediated the association between mothers' work-family conflict (4–5 years) and mother-reported child externalizing problems (8–9 years). Mothers' parenting irritability (12–13 years) mediated the association between fathers' work-family conflict (10–11 years) and mother- and adolescent-reported externalizing problems (14–15 years). Mothers' compared to fathers' work-family conflict had a more persistent influence on family functioning and child mental health outcomes over childhood and adolescence. The crossover influences from fathers' work-family conflict to family functioning and child outcomes were only evident during adolescence.

Crossover of work-family conflict to parents and children

Our findings contribute to the theoretical understanding of the crossover effects from mothers' and fathers' work-family conflict to children's mental health, and the extent to which each parents' experience of work-family conflict influences the family system, including their own and the other parents' perception of inter-parental conflict and their interactions with their children over childhood and adolescence. We found that both mothers' and fathers' work-family conflict has the potential to crossover to the other parent and influence their parenting irritability and perception of inter-parental conflict. The crossover influences to parenting irritability in turn cross over to children's and adolescents' mental health. These findings are in line with Bronfenbrenner's process-person-context-time model and suggest that the distal context of parents' work-family conflict relates to children's and adolescents' externalizing problems through proximal processes of parent-child interactions (Bronfenbrenner & Morris, 2006).

We add to the existing literature by showing the ongoing influences of mothers' work-family conflict on children's and adolescents' externalizing problems, and longitudinal influences of fathers' work-family conflict on adolescents' externalizing problems, through parenting irritability. We found that mothers' work-family conflict at 4–5 years was indirectly associated with child externalizing problems at 8–9 years through mothers' and fathers' parenting irritability at 6–7 years, and fathers' work-family conflict at 10–11 was indirectly associated with adolescent externalizing problems at 14–15 years through mothers' parenting irritability at 12–13 years. These findings add to the findings from prior studies which focused on short-term influences of work-family conflict on parent-parent and parent-child interactions, and child mental health outcomes (Cooklin et al., 2014, 2015; Dinh et al., 2017; Hart & Kelley, 2006; Strazdins et al., 2013).

Our study also adds to findings from Vieira et al. (2016), Dinh et al. (2017), and Ferreira et al. (2018), showing associations between parent

work-family conflict and parent-child interactions. However, these cross-sectional or short-term follow-up studies provided evidence on transmission of associations with one parent only, or from mothers' experience of work-family conflict to both parents' parenting. In contrast, we found evidence for crossover influences between mothers and fathers. Our findings highlight the mutual influences of parents' work-family conflict on the other parent's parenting behaviors over time. Perhaps, the relative absence of a parent due to conflicting work and family roles, demands more negative interactions between the other parent and their child.

Findings from our study confirm the robustness of the crossover influences from parents' work-family conflict to family functioning and child behavioral problems by accounting for the role of work, family, and child factors that could impact on these associations. Model results were unaffected by mothers' and fathers' working hours, socio-economic position, number of children in the child household, and child gender which is consistent with previous research (Dinh et al., 2017; Westrupp et al., 2016).

Timing effects

The most consistent pattern evident in our findings was an association between mothers' and fathers' experience of work-family conflict, and their subsequent ratings of family functioning. However, there were subtle differences at different developmental stages. When children were 4–5 years, mothers' (but not fathers') work-family conflict was associated with subsequent family functioning, thus directly influencing both parents' perception of inter-parental conflict and their parenting irritability, and indirectly influencing child externalizing problems four years later via both parents' parenting irritability at 6–7 years. These dynamics changed over time, in particular, there was less evidence for these associations over 6–7 to 10–11 years.

At 8–9 years, we found that mothers' and fathers' work-family conflict were associated with subsequent family functioning by influencing their own perception of inter-parental conflict and parenting irritability, fathers' work-family conflict influencing adolescents' internalizing problems as reported by mothers, and mothers' work-family conflict influencing mother-reported externalizing and mother- and adolescent-reported internalizing problems in adolescents four years later. At 10–11 years, mothers' and fathers' work-family conflict continued to influence family functioning by fathers' work-family conflict influencing their own and the other parents' perception of inter-parental conflict and parenting irritability, fathers' work-family conflict indirectly influencing mother- and adolescent-reported externalizing problems at 14–15 years through mothers' parenting irritability at 12–13 years, and mothers' work-family conflict influencing their own and father's parenting irritability over the next two years.

The timing differences and nuances in patterns of influences from work-family conflict to family functioning and child mental health can be better understood in the context of changes in the family environment and family relations at different child developmental stages. In particular, early childhood (i.e., 4–5 to 6–7 years) is the time when care demands and work-family conflict may peak (Bianchi & Milkie, 2010). At this age, children progress through primary school and their participation in school and out of school activities can lead to further time restrictions for parents (Westrupp et al., 2016). Similarly, the early years of adolescence (i.e., 10–11 to 12–13 years) are characterized by physical, emotional, social, and cognitive changes due to the onset of puberty, which can further influence family relationships and parent-adolescent interactions (Allison, 2000). Therefore, as evidenced by the findings from our study, the crossover influences from work-family conflict during early childhood and early adolescence are explained by parents' heightened irritability in their interactions with their children.

The finding that mothers' as opposed to fathers' work-family conflict had a more persistent influence on family functioning and child mental health over childhood and adolescence may be explained by enduring social patterns in Australia. Despite changing gender ideologies about traditional parenting roles, differential expectations of mothering and fathering roles still exist (Lamb, 2000; Milkie, Mattingly, Nomaguchi, Bianchi, & Robinson, 2004). Results from a study analyzing data from the Australian Bureau of Statistics Time Use Survey indicates that compared to fathering, mothering involves more time commitment, more physical labor, more multitasking, and more responsibility for children (Craig, 2006), which consequently lead mothers to experience more work-family conflict than fathers (Craig & Sawrikar, 2009). Therefore, mothers' work-family conflict is likely to pose a more persistent risk for child development. With almost two third of couple mothers being employed in Australia, the number of dual-earner parents are on the rise (Baxter, 2013), which means a large proportion of children in the population may be adversely or positively affected by workplace policies that influence parents' work-family experiences. Our findings provide evidence on how parents' experiences of work-family conflict which are influenced by broad level social policies, may filter down to influence children's development.

Nevertheless, fathers' experience of work-family conflict may be more detrimental for older children in their adolescence years. This is consistent with previous research indicating that working fathers whose youngest child was an adolescent experienced more strain in spending time with them (Milkie et al., 2004). Perhaps this is due to the changing nature of children's needs and desires as they grow older, and parents' varying beliefs about the amount of time they should be involved in their children's lives (Milkie et al., 2004). For example, mothers may be more concerned about the care they provide to younger children who have less independence (Hays, 1998). However, both parents may believe that they should be more available to their children in their adolescent years to protect them from risky behaviors (Kurz, 2002). Despite the changing nature of parent-child relationship during childhood and adolescence (Masten & Coatsworth, 1998), our findings indicate that both parents' experiences of work-family conflict and their parenting irritability apply long-term influences on child mental health throughout childhood and adolescence.

Inter-parental conflict and parenting irritability

We investigated the longitudinal influences of inter-parental conflict and parenting irritability on children's and adolescents' internalizing and externalizing problems. We found stronger patterns of associations for parenting irritability compared to inter-parental conflict. In each of the four mediation pathways tested, parenting irritability reported by mothers, fathers, or both parents was associated with increased child or adolescent internalizing or externalizing problems. These findings are consistent with the extant literature (Morris et al., 2002; Scaramella & Conger, 2003), and indicate that negative parent-child interactions throughout childhood and adolescent years can have long-term influences on children's and adolescents' mental health. Moreover, we found that parenting irritability explained the association between parents' work-family conflict and children's and adolescents' externalizing problems, which adds to those of previous studies that reported short-term mediation influences (Dinh et al., 2017; Strazdins et al., 2013; Vieira et al., 2016).

Although inter-parental conflict has consistently been reported as a key risk factor for child adjustment (Cummings et al., 2012; Cummings & Davies, 2010; Davies, Coe, Martin, Sturge-Apple, & Cummings, 2015), our findings did not support a significant association between inter-parental conflict and child internalizing and externalizing problems. Thus, while results indicted a longitudinal link between work-family conflict and inter-parental conflict which adds to the previous cross-sectional findings (Cooklin et al., 2015; Hart & Kelley, 2006), inter-parental conflict was not a mediator in the link between work-family conflict and child mental health outcomes. The lack of significant associations between inter-parental conflict and child outcomes may be due to the measure used in the current study which only

assessed verbal arguments between parents rather than children's direct exposure to the conflict (Hart & Kelley, 2006).

It is also possible that inter-parental conflict conveys a negative influence on children through the mediating role of parenting, as opposed to directly influencing children's mental health. This hypothesis has previously been supported by research. For example, a meta-analytic review of 39 articles indicated a relation between higher levels of inter-parental conflict and poor parenting behaviors, including higher parenting irritability and lower parental acceptance (Krishnakumar & Buehler, 2000). Likewise, one study found that parenting fully mediated the associations between inter-parental conflict and child internalizing and externalizing problems (Kaczynski, Lindahl, Malik, & Laurenceau, 2006). Future research may benefit from examining an extended mediation model with work-family conflict predicting inter-parental conflict (Cooklin et al., 2015; Hart & Kelley, 2006), inter-parental conflict predicting poor parenting (Krishnakumar & Buehler, 2000), and poor parenting in turn predicting child mental health outcomes (Barber, 2002; Morris et al., 2002).

Strengths and limitations

This study used a large, representative sample of Australian children. The use of an autoregressive model allowed a strong and unbiased assessment of mediation over 10 years of childhood (Jose, 2016), and examination of four mediation pathways within one model. Moreover, the use of multiple informants, including both mother- and father-report of work-family conflict, inter-parental conflict and parenting irritability, and both mother- and adolescent-report of internalizing and externalizing problems, provided a comprehensive overview of family dynamics, and attenuated the possibility of biased results. However, we note that adolescent reports were only available from age 10–11 years and father reports of child mental health outcomes were not included in our study. Therefore, further research is needed to assure the robustness of the main effects. We also acknowledge that some of the measures in our study indicated low internal consistency despite their good psychometric properties reported in previous studies. In addition, our findings may be biased by attrition that is common in longitudinal studies, and our selection criteria which led to a sample that is more representative of the socially advantaged groups. Moreover, the design of the study included only double-earner families who resided in a couple or cohabiting household. Therefore, the associations between work-family conflict and child mental health in single-earner or single-parent families need to be further investigated. In addition, work-family policies may be different in other countries in terms of maternal and paternal paid and unpaid leave policies, health insurance, child cash payments, etc. (Lombardi & Coley, 2017). Therefore, the level of work-family conflict experienced by a non-Australian sample may have different consequences on the family functioning and child mental health outcomes.

Implications for policy and intervention

In Australia, after the birth of a child, fathers tend to work long hours and mothers shoulder a greater proportion of child care. Australian mothers manage the demands of parenting by reducing their working hours to part-time, and use of formal and informal child care (Bianchi & Milkie, 2010; Craig, Mullan, & Blaxland, 2010). As children grow older, mothers increase their working hours, and children's participation in school and out of school activities may further increase their parenting demands (Westrupp et al., 2016). Our findings indicate that during early childhood mothers' but not fathers' work-family conflict has negative impact on family functioning and children. However, in adolescence the disparity in family roles between mothers and fathers appears to be less. Previous research has indicated that schedule flexibility is most relevant and beneficial for employees who are married, partnered, or are parents (Michel et al., 2011). Therefore, perhaps

policies that encourage a more equal distribution of work and family responsibilities between men and women would alleviate the burden on mothers. For example, enabling and encouraging fathers to use paid paternal leave and more flexible work arrangements is likely to increase fathers' physical and emotional support to their partner, which in turn can help primary care givers (who are in most cases mothers) to adopt a more optimal and manageable balance between their work and family roles (Feldman, Sussman, & Zigler, 2004).

From the intervention perspective, the findings of the current study may be useful in conducting parental education, parenting interventions, and conflict management training for families who experience work-family conflict. Current and prospective parents need to be educated about the potential for work-family conflict to have ongoing influences on their interactions with their partner and children, and consequently on their children's mental well-being. Previous research has highlighted the need for family-focused interventions for parents in the workplace (Byron, 2005), and suggested that workplaces should be an environment where parents can improve their parenting knowledge as well as their work performance (Sanders, Haslam, Calam, Southwell, & Stallman, 2011). In light of findings from the current study, implementing interventions that target parenting techniques and both partners' communication skills, that is, programs that promote less conflicted and more emotionally close family relationships, have the potential to reduce the negative crossover influences from the work-family interface to children's mental health.

Conclusion

In conclusion, we found that parents' work-family conflict increased children's exposure to a more conflicting home environment, in terms of parenting irritability and inter-parental conflict. Parenting irritability in turn, posed consistent influences on internalizing and externalizing problems across childhood and adolescence. Mothers' work-family conflict posed a more persistent influence on internalizing and externalizing problems across childhood and adolescence, while fathers' work-family conflict showed detrimental influences on externalizing problems during adolescence. Findings highlight the need for professionals and policy makers to improve the circumstances for dual-earner families, which is anticipated to yield developmental benefits for children and adolescents.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appdev.2019.01.001.

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