Social Psychiatry and Psychiatric Epidemiology (2021) 56:571–581
https://doi.org/10.1007/s00127-020-01944-3

ORIGINAL PAPER

Australian parents' work–family conflict: accumulated effects on children's family environment and mental health

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Received: 9 September 2019 / Accepted: 7 August 2020 / Published online: 19 August 2020

Abstract

Purpose Many parents struggle to balance their work and family responsibilities. Yet, little research in the field of social psychiatry has explored the emergence of work–family conflict (WFC) as an important social determinant of mental health, particularly for children. The current study used longitudinal Australian population-based data to investigate the impact of parents' accumulated experiences of work–family conflict on children's mental health. Levels of parent psychological distress, marital satisfaction and parenting irritability were examined as potential explanatory factors within the family environment.

Methods The study used five waves of data from the Australian Longitudinal Study of Australian Children (LSAC), a representative community sample of Australian children and their parents. Analyses were restricted to coupled, employed mothers (1903) and fathers (1584) who reported their WFC levels in all five waves. Structural Equation Modelling (SEM) was used to examine the association between accumulated experiences of work–family conflict across all time-points (AWFC) and children's mental health at wave 5. Family environment factors were assessed as possible explanatory mediators.

Results There was a significant association between AWFC and children's mental health at wave 5. Parent psychological distress, marital satisfaction and parenting irritability were all found to significantly explain this association (accounting for 66% of the total effect).

Conclusions Children whose parents have ongoing or accumulated difficulties managing their work and family responsibilities are more likely to have poorer mental health. This has important implications for family-friendly work arrangements and demonstrates the need to further understand the intergenerational impacts of parents' jobs on their children's psychological wellbeing.

Keywords Work–family conflict · Parents · Employment · Children · Mental health

Introduction

Families need jobs and income to flourish. Much research shows that employment provides material, social and latent benefits to workers [1]; resources which shape both workers', and their children's, mental health [2–4]. However, the nature of work and the labour-force has changed over recent decades. These changes include increased casual employment [5], longer work hours for a growing proportion of workers [6, 7], more mobility, connectivity and technology in workplaces [8], and growth in women's workforce participation (i.e. dual earner families). Alongside these changes, compelling research has emerged reporting that a substantial number of employed parents are finding it practically and psychologically difficult to successfully combine work and family-care commitments—an experience known as *work family-conflict*.

Work–family conflict (WFC) refers to the strains, stressors and/or overloads that arise when work and family demands are experienced as incompatible [9]. WFC is widespread; experienced by approximately one-third of Australian mothers and fathers [10]. There are now a substantial

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s00127-020-01944-3) contains supplementary material, which is available to authorized users.

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number of both cross-sectional and longitudinal studies reporting detrimental impacts on parents psychologically and on family relationships—including deterioration in both mothers' and fathers' mental health, marital satisfaction, and parent–child interactions [11, 12]. Recent research has shown that parents' transitions into and out of WFC flow on to impact their children's mental health [13]. This evidence of an intergenerational cross-over has raised concerns, as much population-based research has shown that good mental health early in life is a critical resource for future success in multiple domains—including education, employment, quality of relationships and health [14–18].

The question of how this process occurs remains to be explored. How do parents' experiences of WFC flow through the family unit to impact on children's mental health? Identifying these pathways is critical to understanding the psychological and social processes involved as well as developing effective interventions to either minimise WFC or increase targeted supports within the family unit. Bio-developmental frameworks of healthy child development posit that children's family environments are as critical to developmental outcomes as adequate nutrition, and safe physical environments [19]. Relationships that are responsive, nurturing and stable foster pro-social behaviours that promote growth and development, buffering from other risks [19]. Thus, children's family environments, notably the quality of parent–child relationships, drive children's developmental outcomes, particularly their mental health and wellbeing.

Previous Australian research supports three key pathways or mechanisms through which parents' jobs might 'flow on' to influence children's mental health—parent mental health, parent–child interactions, and inter-parental relationships. Cross-sectional research conducted by Strazdins et al. found support for these pathways using data from the Canadian National Longitudinal Survey of Children and Youth ($n = 6{,}156$ families) [20]. More recently, longitudinal analyses of five waves of data from the Longitudinal Study of Australian Children (LSAC) [13] have shown that transitions into and out of WFC correspond with increases and decreases in child mental health problems, respectively, and that these associations are mediated by parent wellbeing, parent–child interactions, and inter-parental relationships.

Other literature demonstrating connections between WFC and depleted family environments shows that WFC is associated with poorer parent mental health and parenting stress [21, 22], increased irritability in parents and poorer couple relationship satisfaction [23]. In turn, these are associated poorer quality parent–child interactions such as less warmth, more irritability and less consistency [24]. Children who experience parental anger or hostility and high marital conflict have poorer social and emotional wellbeing [25, 26]. A growing body of research also shows that parents' work strains are salient to children. Children value their parents' work, but long hours in particular negatively influence children's views about the adequacy and quality of time they spend with parents [27, 28].

Together, this research provides reasonable evidence that parents' WFC is linked to children's mental health via children's family environments. Furthermore, advances in longitudinal research suggest that parental exposure to WFC is likely a causal determinant of child mental health. Dinh et al. [13] found that child mental health (and the family environment) deteriorated when parents *entered into* WFC (after adjusting for a broad range of potential fixed and time-varying confounders). However, Dinh's research also found that children's mental health and family environments were poorest when parents experienced *persistent* WFC over a 2-year period, but longer term impacts were not investigated. This finding raises important, and to date unexplored, questions related to the accumulation of WFC over time, and how it might impact on the family environment and children's mental health. WFC has largely been operationalised (but not necessarily theorised) as either a single 'exposure/event' or as a constant exposure that is either 'present' or 'not present' for parents. In reality, WFC is dynamic, with parents entering and exiting conflict at different times based on a range of work factors and family stages [21, 29, 30]. However, if we take the view that WFC is increasingly an *entrenched* experience for parents it is critical we take steps to identify how *accumulation* impacts mental health.

Studies of WFC using more than two waves of data are scarce (for exceptions see [31–33]). Theories of stress linking jobs to mental health posit that each 'episode' of WFC erodes employees' mental health, which in turn undermines their capacity to manage future WFC, thereby compounding strains over time [31, 34]. As such, these theories suggest that WFC and poor mental health are linked in a bi-directional 'loss spiral', with consequences for family environments and child mental health. Conversely, theories of adaptation suggest that parents may have WFC stressors arise, but ultimately adapt to persistent conflicts, returning to overall positive wellbeing despite the ongoing presence of the WFC stressor [33, 35]. Despite ample theory, to date, we believe no study has investigated the accumulated effects of WFC on children's mental health, or explored the mechanisms by which this impact might occur.

The current study

In the current study, we address this literature gap by tracking the accumulation of WFC (AWFC) for mothers and fathers over five waves of parent data from a large cohort study of Australian children spanning 10 years (child age 4–5 to 12–13 years). Our study focuses on the role of the family environment (for co-resident, couple-families), a critical social and developmental environment

for children, and the association between AWFC and children's mental health. Specifically, our two main hypotheses are:

Hypothesis 1 That children's mental health outcomes (aged 12–13) will be poorer when parents experience more instances/occurrences of AWFC over the prior 10-year period;

Hypothesis 2 That the relationship between AWFC and children's mental health outcomes will be explained by corresponding differences (i.e. deterioration) in the family environment—parent mental health, couple relationship satisfaction, and parent–child interactions.

The study adopts a structural equation modelling approach. We link the exposure of AWFC (i.e. number of experiences, or 'dose' of) over five waves of longitudinal data with three key aspects in the family environment—parent mental health, the quality of the parents' couple relationship, and parent–child interactions, and ultimately with children's mental health (at the final fifth wave). We focus specifically on irritable/impatient parenting behaviours as these are well-established risks for children's internalising and externalising behavioural problems [36, 37], and adjust for a range of demographic, employment and family covariates. Figure 1 provides further detail of the conceptual framework for the study, including the pathways hypothesised.

Methods

Design

The current study used five waves of longitudinal data from the 'Kindergarten cohort' of Growing up in Australia, the Longitudinal Study of Australian Children (LSAC). LSAC is an omnibus study of children's health and development, assessing a wide range of child, parent and environmental variables using validated, brief measures. LSAC is a partnership between the Department of Social Services, the Australian Institute of Family Studies and The Australian Bureau of Statistics. Data were collected biennially from a nationally representative sample via parent face-to-face interviews and questionnaires. The Kindergarten cohort data collection commenced in 2004 [38, 39] when children were aged 4–5 years (Wave 1), and has continued to age 12–13 years (Wave 5). Of the contactable children selected and residing in the sampled postcodes, 4983 took part in LSAC (59% response rate) [40], with a high retention rate of 74% of the original sample ($n=3682$) participating in all five waves [41].

Participants

We limited the sample to employed mothers and fathers aged 24–65 years who reported their WFC status in all five waves (i.e. a balanced panel—those who dropped out of the study were excluded); and to co-resident couple-families. Fathers > 65 years ($n=319$) were also excluded, resulting in 319 fewer fathers than mothers. Therefore, the final analytic sample comprised of 1903 mothers and 1584 fathers.

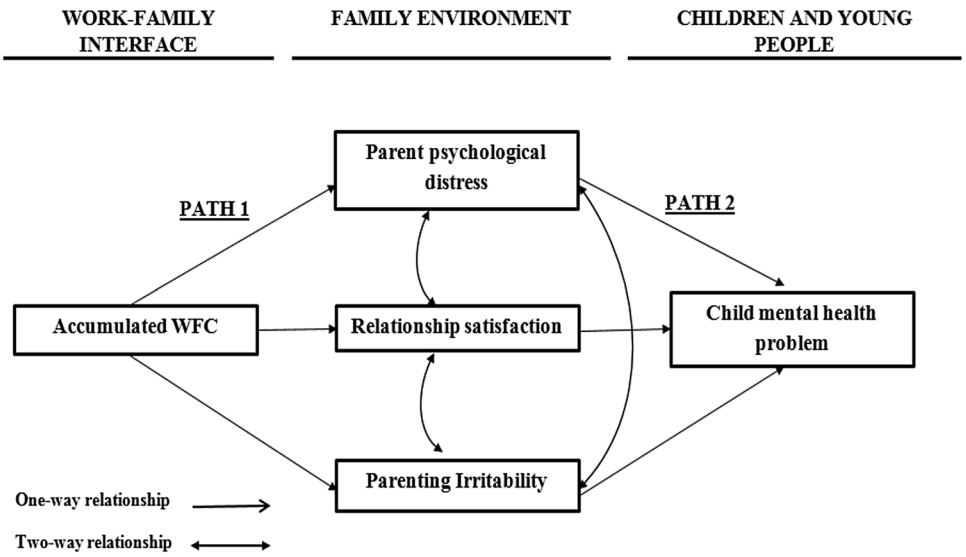

Fig. 1 Conceptualisation of family environment-related pathways from accumulating work–family conflict to children's mental health

Measures

Children's mental health was the outcome variable. Both parents completed the Strengths and Difficulties Questionnaire (SDQ) for the study child at all waves. Data reported at wave 5 was used here as 'parent-specific' reported SDQ scores (i.e. father reported SDQ scores in alignment with father reported AWFC and mother reported SDQ scores in alignment with mother reported AWFC). The SDQ is suitable for children aged 4–17 years. It contains four problem subscales with five items each assessing emotional symptoms, conduct problems, hyperactivity/inattention, and peer relationship problems [42]. Items are rated on a three-point scale (not true; somewhat true; certainly true) and summed across the subscales to give a total problems score (0–40), with higher scores indicating poorer mental health. The SDQ has high internal reliability ($\alpha = 0.81$), and adequate test–retest reliability (range from 0.61 to 0.77). It is common for SDQ scores to be standardized at each wave to represent relative ranking within age cohort to control for age variations. Standardised SDQ scores are used here. The four SDQ subscales are also used in supplementary analyses.

Work and family conflict (WFC) was assessed at each wave using four items adapted from Marshall and Barnett's [43] measure of strains between work and family. Two items assessed employment-related strains on family life and parenting (e.g., 'Because of my work responsibilities, my family time is less enjoyable and more pressured) and two assessed strains from family responsibilities that affect work. Responses ranged from 1 (strongly disagree) to 5 (strongly agree) and were averaged to obtain a total score of WFC as the four items load reliably onto a single construct [44]. A cut-off of > 3 was applied to classify 'high' WFC (versus 'low/no' WFC) scores for each wave of data [13, 21]. A total AWFC 'accumulation' variable was constructed from all waves of data, representing a count of 'high' WFC experiences within the full 10-year period.

Three potential mediators in the family environment were investigated. Mediator 1: Mothers' and fathers' self-reported mental health was assessed using the Kessler 6-item (K6) measure of psychological distress (six nonspecific symptoms of distress and anxiety) [45]. The K6 is a common, well-validated mental health screener for identifying psychological distress in the community [46, 47]. Parents reported how often they felt each symptom (e.g., sad, nervous, worthless) from none (0) to all of the time (4). Responses were summed to give a continuous measure of distress (range 0–24).

Mediator 2: Marital dissatisfaction was assessed using mothers' and fathers' response to the item: "Which best describes the degree of happiness, all things considered, in your relationship?" Responses were on a seven-point scale from 1 (extremely unhappy) to 7 (perfectly happy) and dichotomized (< 5) to reflect overall marital dissatisfaction (yes/no). Mediator 3: Parent-to-child interaction was assessed by mothers' and fathers' self-report of parenting irritability using five items (ten-point scale), assessing frequency of hostile, harsh or rejecting behaviours toward the child [39]. Items were averaged with higher scores indicating more frequent irritable interactions.

Additional covariates included in the analyses were parents' age (24–34; 35–44; 45–65 years), education (university vs. no university qualification), health problems (five-item checklist, e.g., chronic pain, difficulty breathing; recoded to above or below the mean number of health problems), and weekly work hours. Analyses also accounted for child characteristics including child gender, age, health status (excellent/very good), and special health needs. The final item asks if the child has a health condition which has lasted or is expected to last 12 months which causes him/her to use medicine prescribed by a doctor or medical care, mental health or education services.

Family characteristics controlled for included quintiles of equalized household income (total household income from all sources), calculated by applying the OECD-modified equivalent scale (1 to the household head, 0.5 to each additional adult and 0.3 to each child), number of children in the household, having an infant in the family (0 = no infant, 1 = an infant), and *neighbourhood* socioeconomic disadvantage (mean = 1000; the higher the index, the less disadvantaged the location).

Data preparation

The analysis sample included only those parents who provided WFC data in all waves of the study. In each wave, approximately 10% of respondents did not provide answers for 5% or more of the other included variables. Compared to those with complete data, those with missing data were more likely to report WFC, to be more distressed, to be socioeconomically disadvantaged (lower education, fewer work hours, lower occupational status, poorer job quality) and to have a higher care burden (infant, more children, child with special health care needs). Missing data were imputed using a chained regression procedure, a suitable approach for imputing incomplete large, national datasets [48]. All model variables were initially included in the analyses using one imputed dataset. The models in the main paper were then repeated using ten imputed datasets. The averaged results from the models with ten imputed datasets are reported (although the variations from the results with one imputed dataset were both rare and minimal).

Statistical methods

Structural Equation Modelling (SEM) was used to investigate the research hypotheses. The modelling examined each theorised pathway in the hypothesised model:

1 Path 1, between parents' accumulated WFC (waves 1–5) and the family environment (at wave 5);
2 Path 2, between impacts on the family environment (at wave 5) and children's mental health outcomes (at wave 5—noting that these are statistical mediators rather than precursors to child mental health given they were assessed at the same wave);
3 The full model including all pathways to assess the direct effect of accumulated WFC on children's mental health after accounting for changes in the family environment.

The reported models included no 'lagged' controls for either parent or child mental health from prior waves, as the intention of the study was to examine the accumulated impact of WFC across all five waves on mental health at the final wave. It is assumed that adverse impacts on the family environment and mental health accumulate at each time-point WFC is experienced. However, additional supplementary analyses explored the effects of AWFC on the family environment and children's mental health after adjusting for the effect of any recent prior parent or children mental health problems (at wave 4) (see Supplementary analyses Table S3 and S4). Supplementary analyses also examined whether the *timing* of work–family conflict accumulation at earlier or more recent ages/stages in child development—might have an impact (see Supplementary Tables S5 and S6).

To inform decisions regarding whether to separate the analyses by parent gender and whether to use either 'primary parent (predominantly mothers in LSAC)' or 'parent-specific' SDQ child outcome scores, preliminary analyses tested the interaction term between parent gender and AWFC initially for 'parent 1' reported SDQ—this interaction was not found to be significant. The interaction with 'parent-specific' SDQ child outcome scores was also tested and again was not significant. These preliminary analyses indicated that the effects of AWFC on child SDQ was not dependent on parent gender. Thus, subsequent models included AWFC data from both mothers and fathers, with mother's AWFC used in association with mother-reported family environment and child mental health, and the same for fathers. Given the potential for reporting bias, supplementary analyses were repeated substituting reports on the child SDQ from the alternate parent (see Supplementary Tables S1 and S2). Finally, additional supplementary analyses examined the effect of AWFC on the family environment and for each of the Child SDQ subscales (see Supplementary Tables S7 and S8).

Results

Descriptive characteristics and work–family conflict accumulation

Sample characteristics are described in Table 1. There were 1903 mothers with reported data and 1584 fathers. On average, mothers experienced 1.4 occurrences of high WFC over five waves, whereas fathers experienced 1.5 occurrences of high WFC. Table 2 shows SDQ scores (unstandardized) for children based on the number of waves of parent WFC experienced, for mothers' AWFC, fathers' AWFC and a combined count of either parents' AWFC (this final count was used in the SEM analyses). Child SDQ scores increased with each additional wave of WFC experienced (Table 2).

Structural equation model—examining each pathway

Initially a structural equation model without the mediating pathways was constructed to determine the total effect of AWFC over time in association with children's mental health outcomes at wave 5 (i.e. Hypothesis 1). This model showed a significant association between AWFC and child SDQ score. Each additional occasion of high work–family conflict was associated with a 0.50 ($p < 0.001$) increase in children's standardised SDQ scores at wave 5 (this model included all parent, child and family socio-demographic covariates—see the total effect co-efficient in Table 4).

A full structural equation model including the hypothesised mediating pathways (and the adjusted covariates) was then constructed to determine the role of the proposed mediating factors (i.e. Hypothesis 2). Table 3 shows the results for the model. The first column shows the coefficients for the pathways between AWFC and the family environment mediators (Path 1). This column shows that each additional occasion of work family conflict was associated with higher psychological distress scores, lower marital satisfaction, and more irritable parenting. The second column in Table 3 shows that, in turn, poorer parent mental health, lower marital satisfaction (to a lesser extent) and a more irritable parenting style were all associated with poorer outcomes for children at wave 5. Figure 2 shows the effects for the key variables tested in pathways 1 and 2. In this final full model, once the mediators and covariates were included, the remaining direct effect of parents' AWFC on child mental health was reduced to 0.18, but remained statistically significant ($p < 0.05$) (see Table 4). The model accounted for 66% of the association between AWFC and subsequent child mental health (with

Table 1 Sample characteristics for mothers and fathers

	Mothers ($n=1903$)		Fathers ($n=1584$)	
	% or Mean	SD	% or Mean	SD
Accumulation of WFC				
Number of high WFC waves over 5 waves				
0 (%)	37.2		33.8	
1 (%)	24.5		25.8	
2 (%)	18.1		16.7	
3 (%)	10.6		12.1	
4 (%)	5.3		8.0	
5 (%)	4.3		3.6	
Average	1.4	(1.4)	1.5	(1.4)
Family environment (explanatory) variables				
Parent mental health score (0–24)	2.6	(3.1)	2.4	(2.8)
Irritable (hostile) parenting score (1–5)	2.1	(0.6)	2.1	(0.6)
Marital satisfaction (% yes)	81.9		92.0	
Family's characteristics				
Number of siblings	1.5	(0.9)		
Low SEP (%)	18.0			
Medium SEP (%)	46.3			
High SEP (%)	35.6			
SEIFA index	1015.0	(80.9)		
Study Childs's characteristics				
Good health (% yes)	88.4			
Having a special health care need (% yes)	8.5			

34% remaining unexplained) (as can be calculated from the proportion of the total effect explained by the indirect effect in Table 4).

Supplementary analyses

Supplementary analyses substituting reports on the child SDQ from the alternate parent are show in Tables S1 and S2. While the results for pathway 1 remain unchanged (i.e. they replicate Table 3), the results for pathway 2 were substantially attenuated, particularly in relation to the association between parent mental health and child SDQ. A statistically significant association remained between irritable/hostile parenting and child SDQ.

Supplementary analyses explored the results for the models firstly adjusting for parent mental health, and then also children's mental health, at the prior time-point (wave 4). The effects for both pathways remained significant, but were notably reduced from the original unadjusted model (Supplementary Tables S3 and S4). Further supplementary analysis examined whether the timing of work–family conflict experiences (i.e. earlier vs more recent) might have an impact. A binary variable was included representing whether work–family conflict was experienced recently (i.e. at either wave 4/5). The effect of this variable was not statistically significant ($B=0.29$, SE $=0.19$, $p=0.125$) and both pathways testing the potential mediators remained significant with the exclusion of a significant association between marital satisfaction and child SDQ (Supplementary Tables S5 and S6).

A final set of supplementary analyses explored whether accumulated work–family conflict might have different effects and/or mediating pathways depending on child mental health subscale. Overall, the results for each subscale were similar to those found for the main SDQ outcome (see Supplementary Tables S7 and S8). AWFC was found to be associated with each of the child mental health subscales to a similar extent. In terms of the role of the family environment, both parent mental health problems and irritable parenting were significantly (and independently) associated with all child mental health subscales, but marital satisfaction was not associated with any of the subscales.

Discussion

The current study analysed longitudinal data from a national cohort of Australian primary-school aged children and their parents and is one of the first to discover an association between parents' work–family conflict and their children's mental health. The findings show that conflicts between work and family play a substantial role in shaping children's family environments (i.e. particularly irritable parenting

Table 2 Children's average SDQ scores in association with number of waves of WFC

	Children's SDQ		
	Mean	SD	N
Number of mothers' high WFC over five waves			
0	5.5	(4.3)	707
1	6.5	(4.8)	467
2	7.0	(5.7)	345
3	7.8	(5.9)	202
4	7.4	(5.1)	101
5	7.7	(5.0)	81
Average across all waves	6.5	(5.0)	1903
Number of father's high WFC over five waves			
0	5.8	(4.4)	536
1	6.2	(4.4)	409
2	7.0	(5.0)	264
3	7.3	(5.6)	192
4	8.0	(5.3)	126
5	9.0	(6.5)	57
Average across all waves	6.6	(4.9)	1584
Number of parents' high WFC over five waves—when data from both parents' is included			
0	5.6	(4.3)	1243
1	6.4	(4.6)	876
2	7.0	(5.4)	609
3	7.6	(5.7)	394
4	7.7	(5.2)	227
5	8.3	(5.7)	138
Average across all waves	6.5	(4.9)	3487

behaviour) to deliver measurable effects on child socio-emotional development. The results suggest to some extent that there is a dose–response effect, whereby for each additional occasion of high work–family conflict there is a cumulative adverse effect across a 10-year period on both the family environment and child mental health.

The findings accord with the hypothesis that work–family conflict is a 'transmissible' stressor that affects the home environment and the mental health of all family members. Thus, they are consistent with those from Dinh et al. [13], who used the same dataset and showed that entry into work–family conflict corresponds with deterioration in child mental health, and that persistent work–family conflict over a 2-year period is associated with even greater detriment. However, the current results go further to shed light on what can happen when work–family conflict persists over the longer term. Based on the current results, we can propose that parents who experience additional spells of work–family conflict, also experience fewer relational resources in the family environment. There is a large body of literature to support the association between work–family conflict and each of the mediators tested—parent mental health, marital satisfaction and irritable parenting. The current study builds on this literature to additionally show how long-term work–family conflict might translate into greater adversity in these fundamental indicators of family health and connection. This is consistent with the idea of a 'loss spiral' in resources—that there is an accumulation of negative impacts over time as work–family conflict places strains on families that continue to compound, with measurable adverse effects

Table 3 SEM coefficients representing pathways 1 and 2

Path 1—accumulated WFC to Family mediators			Path 2—family mediators to child MH		
	Coef	SE		Coef	SE
AWFC—parent MH probs	0.49***	(0.03)	Parent MH probs.—child MH probs	0.21***	(0.02)
AWFC—marital satisfaction	− 0.12***	(0.01)	Marital satisfaction—child MH probs	− 0.12*	(0.07)
AWFC—irritable parenting	0.07***	(0.01)	Irritable parenting—child MH probs	3.30***	(0.10)

AWFC accumulated work–family conflict (a count across 5 time-points), *MH* mental health. *$p < .1$ (10%), **$p < .05$ (5%), ***$p < .01$ (1%)

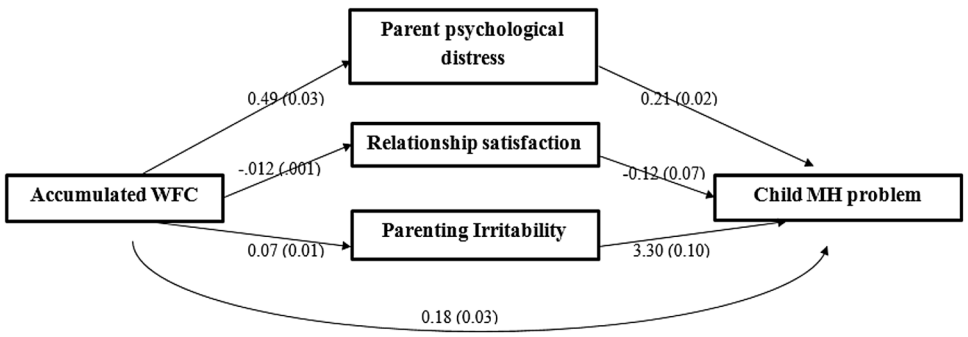

Fig. 2 SEM model showing the coefficients (and standard errors) for pathways 1 and 2

Table 4 Total effect, indirect (mediation) effect, and direct effect

Total effect	0.50*** (0.05)
Indirect effect	0.33*** (0.03)
Direct effect	0.18*** (0.05)

on children's mental health [31]. It is not consistent with the idea that parents and families 'adapt' to experiences of work–family conflict, and 'acclimatise' to these conditions after an initial period of adjustment.

The current study showed no obvious differences between mothers and fathers in terms of how their experiences of work–family conflict were linked to children's mental health. Multiple experiences of work–family conflict were common for both employed parents—as shown clearly in Table 1 where the percentages of mothers and fathers who experienced either none or multiple (1–5) experiences were very similar. These findings accord with recent research suggesting that work–family conflict, and the associated adversities, are a problem for both mothers and fathers. A recent meta-analysis by Shockley et al. suggests there are more similarities in the experience of work–family conflict for mothers and fathers than there are differences [49]. Similarly, research by Cooklin et al. [21] has demonstrated that the mental health impacts of work–family conflict on parents is substantial for both mothers and fathers.

Implications

While parents' workplaces may appear to be far removed from children, the current study suggests that distal environments can shape children's development through their effects on more proximal family environment factors [50]. Workplaces not only supply critical resources to parents and family, but they can also erode the family environment by generating work–family conflict. We know that work–family conflict is clearly common in Australian parents (i.e. point-prevalence ~ one-third), and that work–family conflict is a measurable risk to children's relational environment (the family). There is, therefore, a need to redress work–family conflict via workplace and public policy. Importantly, research by Dinh et al. [13] shows improvements in the family environment and children's mental health when parents' work–family conflict is reduced.

In recent years, research has highlighted the importance of mentally health workplaces [51, 52], and the role that adverse psychosocial job stressors (such as high strain, insecurity and poor supervisory support) play in eroding employees' mental health [53, 54]. The current study extends this literature to suggest that work–family conflict is also an important social determinant of mental health. Much recent discussion has pointed towards flexible work, as a critical enabler for parents to manage their work and family responsibilities conjointly [55, 56]. But, the findings are not conclusive [57] and there is a long way to go in implementing flexible work practices successfully across a variety of employee preferences, workplaces and industries [58].

Strengths and limitations

Notable strengths of this study included the use of five waves of longitudinal data which enabled us to study accumulation in work–family conflict; most previous research has largely treated work–family conflict as static. Furthermore, data from both parents in dual-earner families were available, allowing us to explore the potential for differential effects for mothers and fathers. The current study adopted a broad age range for the children (4–13 years), examining WFC from preschool to the cusp of adolescence. Most family-friendly workplace policy focusses only on 'return to work' after parental leave. The current findings suggest that work–family conflict and its adverse effects are not limited to the early parenting years. Finally, our structural equation modelling approach allowed us to illustrate the role of the family environment as a potential mediator and adjust for a broad range of potential parent, child and family-level confounders.

There are, however, a number of important limitations to acknowledge. While LSAC is broadly representative, disadvantaged families are under-represented. Our focus on dual-earner families resulted in single parents and single-earner families being excluded. Thus, the associations between accumulated work–family conflict and family environments need to be explored in these other family types. Furthermore, the sample is restricted to parents who are employed with WFC reports at all waves. Some parents who are adversely affected by WFC may have stopped work, resulting in underestimation. Overall, the average SDQ score in the current sample appears to be lower than in other Australian community samples [59, 60]—likely due to the focus on partnered and working parents.

LSAC is a broad omnibus study examining children's development, limiting the range of mental health and family environment variables available for analysis. While the measures included in the LSAC are typically robust and well-validated items (including the K6 and the child SDQ), we were limited by what measures have been included by the study custodians. We use all parent-report measures including for the main child mental health outcome, likely incurring reporting bias. Parents experiencing persistent work–family conflict may have fewer emotional resources (e.g. patience, consistency) to manage challenging child behaviours and, therefore, perceive and report their child as having more problems and being 'difficult'. This is in part, reflected in the supplementary analyses which show reduced effects when the alternate parent's child SDQ scores are adopted. Also, work–family conflict occasions

were assessed 2 years apart, and thus we have no information between these time-points. Experiences of work family conflict are often dynamic, and therefore both episodic as well as sustained chronic periods should be investigated in the future.

We acknowledge that the supplementary models including lagged variables representing parent mental health and children's mental health at wave four are likely over-adjustments; however, including these additional supplementary analyses provides some interesting insight into the contribution of recent mental health experiences. We considered adjusting for baseline child mental health in the analyses, but given mental health is substantively different for children at aged 4–5 than it is at age 12–13, this option was dismissed. Finally, while the study design and conceptualisation (i.e. Fig. 1) supports the hypothesis that experiences of accumulated work family conflict are linked to subsequent poorer mental health in children via the family environment, and is one of the first to take an 'accumulation approach', some caution is needed when interpreting the findings as a causal relationship. We note that the variables representing the family environment are statistical mediators rather than precursors to child mental health given they were assessed at the same wave (i.e. wave 5). It is also important to emphasise that there are bi-directional relationships between parents' struggles to balance work and family, the family environment and children's mental health. While our analyses align with our hypotheses, that accumulated WFC has subsequent impacts for the family environment and children's mental health, this does not discount the possibility that the family environment and child mental health impact on WFC and its accumulation over time. Further analyses exploring the bidirectional pathways concurrently (such as longitudinal cross-lagged analysis) would be useful for contrasting the strength of the causal directions.

Conclusions

Children's mental health and socio-emotional development is a critical resource for future success across the lifespan. The current findings suggest that parents' experiences of work–family conflict accumulate over time and are linked to children's mental health via changes in the family environment (particularly irritable parenting behaviour). There were no measurable differences between the effects for mothers and fathers, suggesting work–family conflict is a potential risk factor regardless of parent gender. To date, parents' work–family conflict has largely been ignored as a target for intervention in workplaces, public policy and health promotion—and virtually no attention has been given to the likely adverse effects of persistent or chronic work–family conflict. More attention should be given to this modifiable social determinant given a large number of children are potentially vulnerable to the effects of this contemporary social dilemma.

Acknowledgements and funding This work was supported by an Australian Rotary Health – Mental Health Research Grant. AC and JN were supported through the Roberta Holmes Transition to Contemporary Parenthood Program, Judith Lumley Centre, La Trobe University. This article uses unit record data from Growing Up in Australia, the Longitudinal Study of Australian Children. The study is conducted in partnership between the Australian Government Department of Social Services (DSS), the Australian Institute of Family Studies (AIFS), and the Australian Bureau of Statistics (ABS). The findings and views reported are those of the authors and should not be attributed to DSS, AIFS or the ABS.

Ethics approval The LSAC study was approved by the Australian Institute of Family Studies Ethics Committee and all participants gave informed consent prior to inclusion.

Conflict of interest The authors declare that they have no conflict of interest.

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