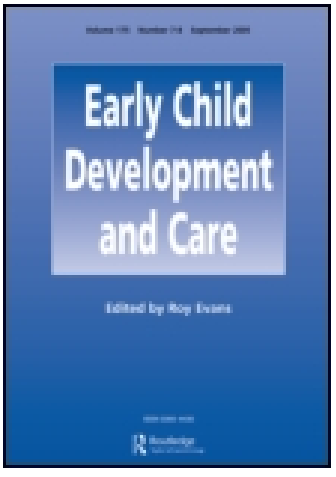

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Associations of caregiver stress with working conditions, caregiving practices, and child behaviour in home-based child care

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Associations of caregiver stress with working conditions, caregiving practices, and child behaviour in home-based child care

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Home-based child caregivers face unique stressors related to the nature of their work. One hundred and fifty-five home-based child care providers in Oregon, USA, participated in this cross-sectional correlational study. We investigated associations between indicators of caregiver stress and child care working conditions, the quality of caregiver practices, frequency of child behaviour challenges, and caregivers' tolerance for those behaviours. Levels of stress in this sample were moderate to low. Significant associations were found between greater caregiver stress with higher child–caregiver ratio, working in isolation, less frequently observed caregiver positive attention, more caregiver-reported child problem behaviours and lower tolerance for problem behaviours. A multiple regression analysis with these variables significantly contributed to 23% of the variance of caregiver stress. Number of hours worked, observed caregiver negative attention, and responsiveness to children were not associated with caregiver stress. Implications of these findings and the need for future studies are discussed.

Keywords: home-based child care; caregiver stress; quality of care; child problem behaviour; working conditions

1. Introduction

A significant number of young children spend a large portion of their day in the care of someone outside of their immediate family. Twenty-four percent of children under the age of six spend the majority of their day in a centre-based arrangement (child care, nursery school, preschool, or Head Start) and 14% are primarily cared for by a nonrelative in home-based child care (Federal Interagency Forum on Child and Family Statistics, 2010). With so many of our young children in care outside of home, it is important to consider the factors associated with the well-being of those who provide for their care, including a much overlooked factor: caregiver stress (Atkinson, 1992; Dillenburger, 2004; Groeneveld, Vermeer, van IJzendoorn, & Linting, 2012; Kingsley & Cook-Hatala, 1988).

Very few studies have examined the incidence of stress for child care providers and the effects of stress on caregiver well-being and child care quality. Chronic job-related stress can lead to job dissatisfaction (Moriarty, Edmonds, Blatchford, & Martin, 2001), high turnover (Todd & Deery-Schmitt, 1996), and burnout (Goelman & Guo, 1998),

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and is associated with the physical and psychological well-being of caregivers (Groeneveld et al., 2012). An examination of these factors is important because some evidence suggests that ongoing stress ultimately undermines child care quality, such as less positive caregiving in home-based child care (Groeneveld et al., 2012) and less caregiver sensitivity, lower stimulation, and poorer overall quality in centre-based child care (Ghazvini & Mullis, 2002; de Schipper, Riksen-Walraven, Geurts, & de Weerth, 2009). This study utilises cross-sectional data from home-based child care in Oregon, USA, to gain a better understanding about the correlates of caregiver stress. Specifically, we investigate the extent to which child care working conditions, quality of caregiving practices, and children's behaviour are associated with caregiver stress in home-based child care settings.

1.1 *Child care working conditions*

Working conditions in the child care field may be related to caregiver stress, particularly for child care businesses with limited resources. Commonly reported stressful child care working conditions include long hours (Curbow, Spratt, Ungaretti, McDonnell, & Breckler, 2000), low pay (Kontos, 1994), lack of public appreciation (Nelson, 1988; Walker, 2002), and challenging child behaviour (Curbow et al., 2000). Home-based child care providers report additional challenges over those providing centre-based care. The need for training in how to handle stress was highly endorsed by home-based child care providers (Rusby, 2002). Because the majority of home-based child care providers provide care by themselves, they experience extra stress due to the lack of social support (Kontos & Riessen, 1993) and working in isolation (Curbow et al., 2000; Mueller & Orimoto, 1995). With no coworkers, caregivers do not have someone to relieve them of their caregiving activities during the day, and they have no one to share successes and challenges or provide support.

Additional unique conditions are experienced by caregivers in home-based child care. Home-based child care providers also report challenges related to serving children with a wide range of ages, having the child care space in their own home, and perceptions that they are not offering a professional service (Rusby, 2002). Other salient stressors reported by home-based child care providers are the need to buy supplies with their own money and caring for their own children in addition to the other children in their care (Curbow et al., 2000; Todd & Deery-Schmitt, 1996). Child behaviour is another potential stressor: home-based child care providers consistently report a need for training to deal with the children's challenging behaviours (Bailey & Osborne, 1994; Mueller & Orimoto, 1995; Rusby, 2002).

These numerous challenges are likely to have a negative impact on child care providers. Over time, repeated stress can lead to burnout, which contributes to turnover and undermines child care quality (Goelman & Guo, 1998; Whitebook, Sakai, & Howes, 1997). It is not surprising to see estimates of 30% per year turnover for centre-based child care providers (Whitebook & Sakai, 2003) and between 37% and 59% per year for home-based child care providers (Nelson, 1990). Whitebook and Sakai (2003) found that more than half of the child care providers and about one-third of directors from 92 child care centres left their job within a four-year period. The more highly trained staff that earned the lowest wages and had coworkers with lower levels of training were the most likely to leave their jobs. It appears that the most skilled child care providers do not stay in the field for very long. Turnover is particularly problematic

because it impacts programme quality (Helburn & Howes, 1996; Phillips, Mekos, Scarr, McCartney, & Abbott-Shim, 2000) and can have a negative impact on children. Stability in the child care environment is important to children's well-being. In an examination of the relationship of daily stability in child care and children's well-being, de Schipper, van IJzendoorn, and Tavecchio (2004) found that children felt more at ease with fewer care arrangements and stable care environments. Studies have documented the negative effect of turnover on children's emotional and language development (Kontos, Howes, Shinn, & Galinksy, 1995; Phillips et al., 2000; Whitebook, Howes, & Phillips, 1990), yet little is known about the direct relationship between stress among child care providers and the social and emotional well-being of children in their care.

1.2 *Quality of caregiving practices*

While there is ample evidence in the parenting and school-based literature that stress negatively impacts caregiving behaviours, little is known about the ways in which feelings of stress are related to caregiving practices in the child care environment, particularly in home-based child care. We could locate only one study that has documented the effects of stress on home-based caregiver practices. In a correlational study, Groeneveld et al. (2012) found that caregivers who report higher overall stress showed lower sensitivity and fewer verbal interactions with children. These findings are particularly troubling given the critical importance of sensitivity on children's development.

Given the lack of research regarding stress among child care providers, we summarise additional evidence from the parenting and teacher literature to illustrate potential associations between stress and the quality of caregiving. Parenting stress is associated with reduced responsiveness, increased expression of negative affect (Deater-Deckard, 2005; McKelvey, Fitzgerald, Schiffman, & Von Eye, 2002), less affection, and fewer positive interactions (Crnic, Gaze, & Hoffman, 2005). Stress can precipitate harsh, reactive parenting (Pinderhughes, Bates, Dodge, Pettit, & Zelli, 2000) and the use of less effective parenting strategies (Calkins, Hungerford, & Dedmon, 2004; Crnic et al., 2005).

As with parents, stress in the school setting affects a teacher's capacity for sensitivity and responsiveness. Special education teachers reporting frequent and intense stress report that they feel less sensitive to the needs of their students, and therefore are less likely to notice and appreciate positive behaviour, and more likely to use aversive methods to modify student behaviour (Wisniewski & Gargiulo, 1997). Gilliam (2008) reported that expulsions from preschools were significantly higher for teachers reporting high stress. Reduced sensitivity and responsiveness in early childhood education can have lasting effects. Warm and nurturing relationships between teachers and young children are a significant factor in children's immediate and long-term social–behavioural and cognitive development (Hamre & Pianta, 2001). Attending to the well-being of teachers and caregivers of young children would likely benefit children's developmental progress.

1.3 *Caregiver stress and children's challenging behaviour*

There is a lack of literature regarding child care provider stress and child behaviour, thus we draw from studies of young children and parents. Challenging child behaviour has been related to higher parenting stress (Barry, Dunlap, Cotten, Lochman, & Wells,

2005; Ross & Blanc, 1998), though the direction of effect is unclear. Parenting stress has also been shown to be associated with lower tolerance for children's misbehaviours (Mäntymaa, Puura, Luoma, Salmelin, & Tamminen, 2006; Patterson, Reid, & Dishion, 1992; Tolan, Guerra, & Kendall, 1995; Whittaker, Harden, See, Meisch, & Westbrook, 2011). Recently, researchers suggest child problem behaviours may contribute to parental stress, and at the same time, higher parental stress may lead to increased child problem behaviour (Barry et al., 2005). Indeed, Neece, Green, and Baker (2012) found a bidirectional and transactional relationship between parenting stress and child behaviour problems.

Effectively guiding active, mobile, and independent young children whose self-regulatory capacities are still developing can be challenging under the best of conditions (Campbell, 2002). Studies of parent and teacher behaviour suggest that there is variability in caregiver's response to challenging behaviour of young children, with caregivers in some settings experiencing significantly more stress than others in response to the same behaviour (Pianta & Stuhlman, 2004; Webster-Stratton, 1990). Given the evidence for reduced sensitivity and responsiveness in conditions of stress among caregivers, and the unique stressors and isolation experienced by home-based child care providers, it is possible that children in home-based care are especially vulnerable to the effects of stress felt by their caregivers. Moreover, it is possible that individual factors, such as self-efficacy, and contextual factors, such as isolation and lack of social support, affect caregivers' levels of stress.

1.4 *This study*

The purpose of this article is to examine the correlates of caregiver stress in home-based child care. We examined the concurrent associations between caregiver stress and (1) child care working conditions, such as work hours, child–caregiver ratio, and whether providing care alone or with coworkers, (2) the quality of caregiver practices, such as positive and negative interactions with children, and responsiveness to children, and (3) frequency of child behaviour challenges, as well as caregiver's tolerance for those behaviours. We expect that (1) long work hours, large child–caregiver ratio, and working alone will be associated with greater stress, (2) positive caregiver interactions with children and responsiveness will be associated with lower stress and that negative caregiver interactions with children will be associated with higher levels of stress, and (3) greater stress will be associated with more frequent child problem behaviour and lower tolerance for problem behaviour. We use direct observations and caregiver reports of child problem behaviours, expecting that the caregivers' view of problem behaviour may be more related to stress than problem behaviour assessed by objective observers.

2. Method

2.1 *Participants*

Registered and certified child care homes were selected from six counties in the state of Oregon in the USA with populations ranging from 104,059 to 714,657. Child care homes were selected from neighbourhoods with schools that had more than 45% students eligible for free and reduced lunches, which represented income levels below the state average. To be eligible for participation, home-based child care providers

must have had at least two preschool-age children in attendance, been able to understand and speak English, and planned to stay in the child care business for the coming year. The primary child care provider (typically the owner of the child care business) was invited to participate in the study. In larger child care homes in which the owner primarily managed the business or cared for infants, the child care provider who most often cared for the preschool-age children was invited to participate instead of the owner. A total of 155 providers of home-based child care agreed to participate in the study.

Ninety-eight percent of caregivers were female, and 64% were Caucasian, 12% were Hispanic or Latino, 8% African American, 4% Asian or Hawaiian or Pacific Islander, 7% were multiracial, and 5% were of other or unknown ethnicity or race. Approximately 16% of providers had a high school diploma or General Education Development test, 52% had some college, and 28% had an AA degree or higher. On average, caregivers provided child care for 10 years.

2.2 *Procedures*

Study assessments included a child care provider questionnaire that comprised the Child Care Provider Survey (Rusby, Smolkowski, Marquez, & Taylor, 2008; Rusby, Taylor, & Marquez, 2004) and the Index of Teaching Stress (ITS; Greene, Abidin, & Kmetz, 1997), as well as three site visit observation assessments. The questionnaire was mailed to the child care provider and asked caregivers to provide information about themselves and their child care and to report on their feelings of stress, the overall behaviour of preschool-age children in their care, and their tolerance for those behaviours. Prior to collection of questionnaire data, 6% of caregivers dropped from the study and 91% of participating caregivers completed the questionnaire. The site visits included three 30-minute direct observations in which specific child care provider and child behaviours were tallied. On average the site visits occurred seven weeks apart. Random reliability checks were completed on 17% of the observations throughout the study. Following the direct observations, the observers completed ratings of caregiver responsiveness and the quality of child–caregiver interactions. The first site visit assessment was completed on 99% of the child care homes, the second on 95% of the homes, and the third on 91%.

2.3 *Measures*

2.3.1 *Caregiver stress*

Participating caregivers completed the 43-item subscale of the ITS (Greene et al., 1997), which measures the child care providers' perceptions of job-related stress (e.g. need for support). The subscale particularly focuses on caregivers' feelings of efficacy and the ways in which they are impacted when dealing with children's challenging behaviours. Item responses range from 1 to 6 ('strongly disagree' to 'strongly agree'). This measure was previously used in a study with preschool teachers (Biglan, Layton, Hankins, Jones, & Rusby, 2011), and the alpha for the scale with preschool teachers was 0.91. We adapted this measure for child care providers (i.e. changing the wording to accurately reflect the setting; 'teacher' to 'caregiver', 'teaching' to 'providing child care', and 'school' to 'child care home'). For this study we used two of the subscales: self-doubt, which reflects feelings of low job-related self-efficacy, and loss

of satisfaction, which measures feelings of low job satisfaction. Each of these scales had good reliability, 0.89 and 0.85, respectively. We averaged these two subscales to represent caregiver job-related stress as they were highly correlated ($r = 0.82, p < 0.001$), and when combined, had an improved reliability of 0.93.

2.3.2 *Child care working conditions*

We selected salient working conditions that were reported in previous literature as being stressful for child care providers to be included in the analyses. These include long hours, large child–caregiver ratios, and providing child care alone with no co-worker support. On the Child Care Provider Survey, home-based child care providers were asked for the number of hours worked and average of hours worked each day, the number of children enrolled in their child care home, and how many assistants worked in their child care.

2.3.3 *Caregiver practices*

Direct observations of the child care providers' positive attention (praising, encouraging, approving, and providing tangible rewards) and negative attention (criticising and providing tangible punishment) were tallied for 30 minutes during each of the child care home visits. Research assistants were trained on the observations using a code book with definitions, examples, and nonexamples, and practiced coding with videos and live coding in child care homes that were not participating in this study to achieve adequate reliability. The codes were computed into rate-per-minute, and one-way random effects intraclass correlation coefficients (ICCs) were calculated to assess the interrater reliability (McGraw & Wong, 1996; Shrout & Fleiss, 1979). Excellent interrater ICCs were obtained (Landis & Koch, 1977), 0.79 for caregiver positive attention to children and 0.95 for negative attention.

Following the direct observations, research assistants completed the Caregiver Interaction Scale (CIS; Arnett, 1989) to measure caregiver sensitivity and involvement. The positive interaction subscale of the CIS was used in this study; reliability alpha = 0.89 and interrater ICC of 0.60. The assessors also completed ratings of caregiver responsiveness on the Observation Record of Caregiving Environment (ORCE; NICHD Early Child Care Research Network, 2000) during each site visit. Responsiveness to children was rated on a 1 to 4 scale ('not at all' to 'highly characteristic'), with reliability alpha = 0.91 and interrater ICC of 0.61.

2.3.4 *Child behaviour*

Child care providers answered questions about the overall density of problem behaviours that children exhibited in their child care and their tolerance for those behaviours. The measure comprises five items: (1) child argues with you (the caregiver), (2) refuses to obey you, (3) loses temper or gets angry, (4) says mean things to other children, and (5) hits, pushes, or physically fights other children on a seven-point frequency scale of 'Never in the past month' to '5 or more times per day'. For each problem behaviour, child care providers rated 'How tolerable is it if a child frequently exhibits the behaviour' on a five-point Likert-type scale, where 1 is 'not at all tolerable' and 5 is 'extremely tolerable', a rating scale similar to that used in a study on elementary

teachers' tolerance (Safran & Safran, 1984). A reliability alpha of 0.86 was obtained for the density of problems scale and 0.90 for the tolerance scale.

During the site visit observations, assessors tallied the number of times any preschool-age child exhibited physical aggression (e.g. hitting, kicking, biting, taking a toy away from another child, throwing things at another child) and noncompliance (not following the caregivers' direction to do something or stop doing something). The rates-per-minute of these two codes were added to create a composite score of children's negative behaviour. Also, observers coded the occurrence of a negative emotional outburst (a child displays a negative emotional outburst that depicts anger, sadness, and/or fear; not including outbursts because of physical injury). The interrater ICC for children's negative behaviour was 0.67 and negative emotional outburst was 0.83.

2.4 *Analytic procedures*

Univariate descriptive analyses were performed on sample characteristics and measures of interest. Pearson's r correlation coefficients were used to measure the strength of relationship between caregiver stress and caregiver work conditions, caregiver practices, child behaviour, and caregiver tolerance for child problem behaviours. Variables with a significant relationship to caregiver stress were then included in a multiple regression model with caregiver stress to test the strength of relationships between the explanatory variables and caregiver stress after accounting for the common variance among the independent variables. The multiple regression was run with the degrees of freedom associated with the total number of bivariate tests run to account for the cost of testing those variables removed (Harrell, 2001). In the model results, the R^2 statistic measures the proportion of variance in the dependent variable captured by the explanatory variables. All analyses were conducted using IBM SPSS version 19.

3. Results

3.1 *Descriptive statistics and bivariate correlations*

The means and standard deviations of caregiver stress, the child care job factors, caregiver practices, child behaviour, and caregiver tolerance for problem behaviour are displayed in Table 1. On average, the home-based child care providers were not very stressed; they modestly to slightly disagreed with the items indicating stress. On average, 10 children were enrolled in the child care homes with a child–caregiver ratio of 7 to 1.

The home-based child care providers worked an average of 60 hours per week and 53% provided the child care by themselves. On average, child care providers were observed providing positive attention to children more than four times that of negative attention. Caregivers on average also had quite a bit of positive interactions with children and were very responsive. Child care providers reported an average of one to four child problem behaviours per week and found them rarely to somewhat tolerable. We observed a child behaviour problem about once every 5 minutes and a negative emotional outburst about once every 13 minutes on average.

Table 1 also presents the associations of caregiver stress with these variables. The job factors that were significantly associated with caregiver stress were the child–caregiver ratio and coworker support. A higher child–caregiver ratio was associated with higher stress and those providing child care by themselves had higher stress. Hours

Table 1. Descriptives of measures and correlations with caregiver stress.

	Mean	SD	Correlation	*p*-Value
Caregiver stress	2.30	0.80	–	–
Child care work conditions				
Child–caregiver ratio	7.05	3.42	0.22	0.024
Hours worked per week	59.88	17.95	0.01	0.950
Coworker support	47%	0.50	−0.29[a]	0.002
Caregiver practices				
Observed positive attention (RPM)	0.53	0.18	−0.22	0.027
Observed negative attention (RPM)	0.12	0.13	0.07	0.455
CIS positive interaction scale	2.91	0.41	−0.03	0.793
ORCE responsiveness	3.11	0.47	−0.05	0.590
Child behaviour				
Caregiver-reported behaviour problems	3.32	1.40	0.30	0.001
Caregiver-reported tolerance	2.30	1.00	−0.29	0.002
Observed negative behaviour (RPM)	0.22	0.14	0.08	0.397
Observed negative emotional outburst (RPM)	0.08	0.10	−0.03	0.780

Note: RPM = rate per minute.

[a]This is a dichotomous variable, so a Spearman correlation was run.

worked was not associated with stress. Lower observed frequency of caregivers' positive attention was associated with higher stress. However, negative attention, positive interactions, and responsiveness were not related to stress. Caregivers reported that more frequent child problem behaviours and lower tolerance for those behaviours were also associated with higher stress. However, observed children's problem behaviours and negative emotional outbursts were not related to stress.

3.2 *Regression model for correlates of stress*

The results of the multiple regression analysis are presented in Table 2. The child–caregiver ratio, lack of coworker support, low caregiver use of positive attention, caregiver-reported density of children's problem behaviours, and caregiver low tolerance for problem behaviours significantly contributed to 23% of the variance of caregiver stress. It appears that child–caregiver ratio did not substantially contribute to the

Table 2. Regression model – correlates of caregiver stress.

	B	SE	*β*	*t*	*p*
Child–caregiver ratio	−0.001	0.026	−0.005	−0.05	0.962
Coworker support	−0.357	0.188	−0.222	−1.90	0.061
Observed positive attention	−0.900	0.471	−0.178	−1.91	0.059
Caregiver report: child behaviour problems	0.110	0.052	0.195	2.10	0.038
Caregiver report: tolerance	−0.194	0.076	−0.247	−2.56	0.012

Note: $R^2 = 0.23$, $F = 2.16$, $p = 0.020$.

variance of caregiver stress when the other variables' contributions are accounted for in the model.

To illustrate these relationships, the index of caregiver stress was dichotomised into those reporting an average score of 3 or below (indicating low stress) and those scoring above 3 (indicating moderate stress). About 80% of caregivers reported low stress and 20% reported moderate or greater stress. Although using this substantive cut-off value produced unbalanced groups, it aides the interpretation of results by providing a visual display of mean differences between caregivers experiencing low stress and moderate stress for observed and caregiver-reported variables. Figure 1 displays the observed caregiver use of positive attention and observed child negative behaviours in child care homes of caregivers reporting low compared to moderate stress. Caregivers reporting low stress were more likely to provide positive attention than caregivers reporting moderate stress; however, observed child problem behaviours were about the same. Figure 2 displays caregivers' reports of child problem behaviours and their tolerance for those behaviours for caregivers with low stress compared to moderate stress. Caregivers who report low stress report fewer problem behaviours and more tolerance than do those who report moderate stress.

4. Discussion

The primary aims in this correlational study were to examine factors in home-based child care related to caregiver stress, including child care working conditions, the quality of caregiver practices, and the frequency of and caregiver's tolerance for child behaviour challenges. Studies have found that stress among child care providers can have negative effects on the quality of care they provide to children, which, in turn, can affect child social–emotional development. We hypothesised that greater stress would be related to long work hours, a large child–caregiver ratio, and working alone. Greater stress was also expected to be associated with less positive and responsive caregiving practices, more frequent child problem behaviours and a reduced tolerance for such behaviours. This study was unique in that it combined self-report with observational measures in home-based child care. We expected that caregivers' view

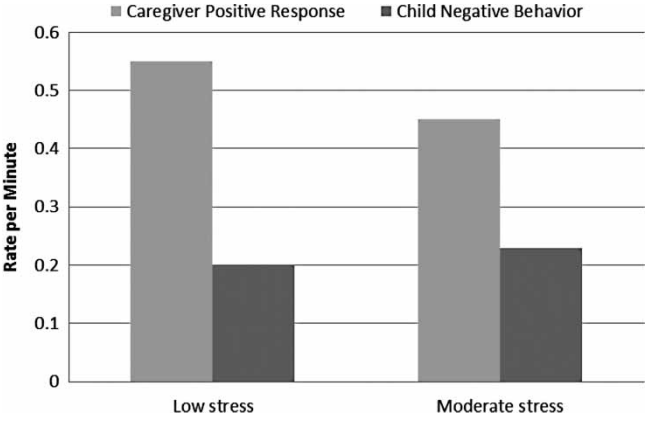

Figure 1. Observed caregiver and child behaviours for caregivers with low and moderate scores on stress index.

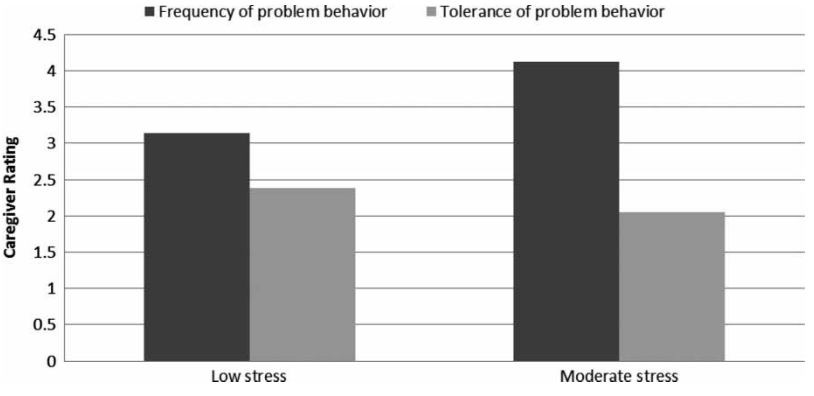

Figure 2. Frequency and tolerance of child misbehaviour for caregivers with low and moderate scores on stress index.

of problem behaviour would be more related to stress than independent observations of problem behaviour.

A multiple regression analysis that included child–caregiver ratio, isolation, caregiver use of positive attention, and caregiver report of frequency of and tolerance for child misbehaviour, and that accounted for 23% of the variance in caregiver stress, gives us a preliminary look at primary contributors to caregiver stress in the home-based child care environment.

4.1 *Stress levels of home-based child care providers*

The mean rating in the measure focused on caregivers' perceptions of stress and their feelings of efficacy in dealing with children's challenging behaviours was relatively low. On average, caregivers moderately to slightly disagreed with the items indicating stress. Those caregivers who were one to two standard deviations above the mean reported slight to moderate agreement with items indicating stress. There is much to be learned about levels of stress in the home-based care environment. Few recent studies have been conducted and existing studies have primarily relied on self-reported data and qualitative reports. Findings regarding levels of stress in earlier studies of home-based child care were mixed, with one reporting relatively low levels of stress (Kontos, 1994) and others reporting higher levels of stress among caregivers (i.e. Atkinson, 1992; Todd & Deery-Schmitt, 1996). These earlier studies incorporated different measures of job stress not specifically related to perceptions of self-efficacy and support in dealing with children's challenging behaviours. More research is needed to illuminate specific factors that are associated with levels of stress among home-based child caregivers.

4.2 *Work factors and stress*

A higher child–caregiver ratio was associated with greater stress in this study. However, when included in a model with other working conditions, caregiver practices, and the frequency of and tolerance for children's problem behaviours, the child–caregiver ratio was far from significant. These results indicate that not having a caregiver to

provide support on the job is the most salient work-related condition associated with caregiver stress for home-based child care providers. Fifty-three percent of caregivers in the current sample worked alone and a significant association was found between stress and working in isolation. As with other factors examined in relation to stress in home-based child care, findings regarding stress and isolation differ between studies. Some studies have found working alone to be stressful (Curbow et al., 2000; Mueller & Orimoto, 1995), while others have not (Kontos & Riessen, 1993).

Although we hypothesised that the number of hours worked per week would be related to stress, the relationship was not significant. This lack of finding might be due to our measure of stress, which focused primarily on stress related to a need for support and challenges with children's problem behaviour rather than occupational stress in general. Another possibility is that, due to the nature of their work, home-based care providers expect to work long hours. Although the 60 hours per week average in the current sample is higher than averages in other studies in the USA (Atkinson, 1992; Curbow et al., 2000; Todd & Deery-Schmitt, 1996), ranges of 40–50 hours per week were typical.

4.3 *Stress and caregiving practices*

The finding of an association between lower observed frequency of caregivers' positive attention and higher stress fits with our hypothesis. Due to the correlational nature of this study, it is possible that other caregiver beliefs and experiences not measured in this study, such as personal efficacy or stress, underlie this relationship. For example, caregiver depression has been linked with perceptions of stress and is associated with reduced sensitivity and positive attention towards children, both in parents (Gordon, Burge, Hammen, & Adrian, 1989; Richel, 2012) and teachers (Mashburn, Hamre, Downer, & Pianta, 2006).

Contrary to our expectations, negative attention, positive interactions, and responsiveness were not related to caregiver-reported stress. It might be that levels of stress in this sample were not sufficiently high to evoke the sort of response reported in the parenting and teacher literature. It is also possible that the stress does not affect home-based child care providers' behaviours in the same ways as it does parents' and teachers' behaviours. As noted in the Introduction, Groeneveld et al.'s (2012) correlational study, which found associations between lower sensitivity and frequency of verbal interactions with higher stress, does seem to suggest a relationship between stress and caregiving practices; however, the measure of stress used differs from that of this study. Additional research is needed to elucidate processes underlying the interaction between stress and caregiving interactions with children in home-based child care.

4.4 *Caregiver stress and children's behaviour*

Higher stress in this study was related to caregivers' reported frequency of child problem behaviours and lower tolerance for those behaviours, but not observed negative child behaviours and negative emotional outbursts. One possibility for this finding may be due to the differences between the two measures of child problem behaviour (one is retrospective and one is collected in real time). With retrospective reports, saliency biases – the tendency to remember and report situations that had a particularly negative impact on the reporter – may impact the report (Gorin & Stone, 2001). Thus, caregivers may be reporting higher problem behaviours because they are

recalling situations that particularly stressed them out. Another possibility for this finding is that perceptions guide actions: caregivers under stress might be biased towards more negative reports of normative child behaviour due to a negative response set. The association we found between caregiver stress and tolerance for child misbehaviours aligns with the findings from a study on mothers and their toddlers (Creasey & Jarvis, 1994). It is possible, too, that those who are less tolerant of child misbehaviour are more likely to notice and report more problem behaviours, which lowers self-efficacy and causes more work-related stress. As noted in the Introduction, researchers are increasingly endorsing a transactional model for caregiver stress and child problem behaviours where caregiver stress is both an antecedent and a consequence of child problem behaviours (Neece et al., 2012).

4.5 *Study limitations*

This study was cross-sectional and correlational in that it investigated concurrent associations of caregiver stress with other measures of the home-based child care environment, caregiver practices, and children's behaviour, and therefore it is not possible to infer causality in this study. Additional longitudinal studies in home-based child care that examine the effects of caregiver stress on child care quality and on children's development are needed to shed light on relationships between stress and factors that impinge on child adjustment.

Our study sample came from one state, Oregon, in the USA, thus, generalisability may be limited. Although the sample includes both rural and urban child care homes, and fair representation of African Americans and Latinos, there is limited representation of some ethnic groups, such as Asian and American Indian caregivers.

It is also important to note that the ITS (Greene et al., 1997) measures caregiver's perceptions of job-related stress relevant to dealing with children's challenging behaviours. With this measure, it is difficult to compare these results with results from other studies of stress in child care, most of which use broader measures of stress.

4.6 *Future implications*

With so many of our young children in care outside of home it is surprising that little is known about the associations between stress and factors in home-based settings where caregivers typically work long hours, often alone without coworker support. This study contributes to our understanding of home-based child care providers' stress. More research with home-based child care providers that utilises multimethod measurement, such as self-report and observational measures of child behaviour, will help us understand more about the mechanism underlying associations between caregiver stress and challenging child behaviour. Ultimately, increased understanding of the effect of stress on home-based caregivers will allow us to develop interventions and policies to support the well-being of those individuals who care for our young children, which is likely to lead to more positive caregiving and contribute to the healthy development of our children.

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