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UNIVERSITY OF SOUTHAMPTON
FACULTY OF SOCIAL AND HUMAN SCIENCES
School of Psychology

**Expressed Emotion and Adjustment in Families with Children with
Autistic Spectrum Conditions**

(Volume 1 of 1)

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This thesis is submitted in partial fulfillment of the degree of Doctorate in Clinical
Psychology

April 2012

Word Count: 19,998

Thesis Abstract

Expressed Emotion in families with Children with Autism Spectrum Conditions

Children with Autism Spectrum Conditions (ASC) present with social and communication deficits, and patterns of restricted and repetitive behaviours (APA, 2000). These difficulties have significant impacts for families, including increased levels of stress and mental health problems when compared to parents raising children with other developmental or intellectual conditions (e.g. Singer, 2006). Research has sought to understand this impact and to identify the factors that place parents at risk for poor adjustment outcomes so that interventions can be effectively tailored to facilitate improved outcomes for families. This thesis reviews the adjustment literature and considers how it fits within a widely used model of adjustment, the Double ABCX model (McCubbin & Patterson, 1983). It then goes on to consider the importance of the parent-child relationship for adjustment via the construct of Expressed Emotion (EE), and explores how this literature adds to our understanding of the adjustment process in families of children with ASC.

Next, the role of EE in the adjustment process of families of children with ASC is investigated. A mediation model is proposed that incorporates a measure of EE within the Double ABCX model. The validity of this model is tested in a sample of primary caregivers who have children with ASC. Whilst the results of the study indicate that EE does not have a mediating role in the adjustment of these families, the study has a number of limitations and suggestions for future research that are discussed in detail.

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Declaration of Authorship

I the undersigned confirm that the work that I have prepared as my thesis is entirely my own work. Reference to, quotation from, and discussion of the work of any other person has been correctly acknowledged within the work in accordance with University guidelines for production of a thesis.

Signed.

Date.

Acknowledgements

First, I would like to thank Professor Bob Remington and Dr Hanna Kovshoff for their continued support and guidance throughout this process. I am very grateful for their knowledge, feedback and comments on both the literature review and empirical paper.

I also thank all the parents who took part in this research, without their on-going commitment to extend our knowledge about ASC, this project would not have been possible.

Finally, I would like to thank Ivan and my friends and family for their incredible support and patience. This has been invaluable to me and I cannot thank them all enough.

UNIVERSITY OF SOUTHAMPTON
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School of Psychology

Literature Review

Does Expressed Emotion Help Us to Understand the Adjustment
Process in Families of Children with Autism Spectrum Conditions?

Natalie R. Peace

Applying American Psychological Association (APA) guidelines,
prepared for the submission to Clinical Psychology Review¹.

¹ See Appendix A for Instructions to Authors

Abstract

Having a child with an Autism Spectrum Condition (ASC) poses significant challenges to families. Children with ASCs present with social and communication deficits, which may be compounded by increased levels of behavioural problems (American Psychiatric Association; APA, 2000; Hastings, 2003). It is important to identify and manage the difficulties faced by families of children with ASCs as empirical evidence suggests that stress is higher in these families relative to those of typically developing children and children with intellectual conditions (e.g. Singer, 2006).

To understand how families adjust to raising children with ASCs, researchers have drawn on the Double ABCX model of family adjustment (McCubbin & Patterson, 1983). This model highlights the importance of family appraisals, resources and coping in determining adjustment outcomes. However, the model is limited because it does not consider the emotional tone that exists between a parent and child; a relationship that research has found to be important for both child and parent adjustment (O'Connor, 2002). The parent-child relationship can be characterised by the variable Expressed Emotion (EE; Brown, Carstairs, & Topping, 1958). Parental EE has been demonstrated as an important factor in how families of children with ASCs adjust (Benson, Daley, Karlof, & Robison, 2011; Greenberg, Seltzer, Hong, & Orsmond, 2006).

This literature review explores how the role of EE in the adjustment process can be understood in the context of the Double ABCX model. The review concludes that EE can be usefully considered in this model and that it is an important variable to include when measuring how families of children with ASCs adjust.

Introduction

The literature review will begin with an overview of Autistic Spectrum Conditions (ASCs) and will define the concept of adjustment, particularly in relation to having a child with an ASC within a family. It considers the Double ABCX model of family adjustment (McCubbin & Patterson, 1983) and reviews the literature on variables associated with adjustment in families of children with ASCs. One variable that is not considered in the Double ABCX model is the emotional tone between a parent and child, which is measured by parents' levels of Expressed Emotion (EE; Leff & Vaughn, 1985). Here, the EE literature is also reviewed, and is discussed according to the predictions of the Double ABCX model. The review concludes that combining both literatures furthers our understanding of the adjustment process to raising children with ASCs.

1.1 Searching Methods

Electronic databases (MEDLINE, PsycARTICLES, PsycINFO, and Web of Science) were used to search for articles published in English language peer-reviewed journals. Relevant articles included those that addressed adjustment in families with children who had ASCs and studies measuring EE in children with ASCs. The search terms used to identify papers included: autism spectrum conditions/disorders, parents, relationship quality, family cohesion, family social relationships, models of family adjustment, parent-child interactions, expressed emotion, parental mental health, child behaviour problems, and coping. Combinations of these terms were used and studies were included if they were relevant to the scope of the review. Reference lists were also used to identify further appropriate articles.

1.2 Autism Spectrum Conditions

ASCs are characterised by a pattern of qualitative impairments in communication and social development, and the presence of restricted and repetitive patterns of behaviour and interests (American Psychiatric Association; APA, 2000). In addition, behavioural symptoms of ASCs frequently include reactivity to feelings of frustration and self-stimulatory behaviour (APA, 2000). There are four conditions recognised under the heading of ASCs; Autism, Asperger Syndrome, Rett Syndrome and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS; APA, 2000). The level of cognitive and behavioural functioning and related symptoms are found to vary across individuals with an ASC; cases are classified on a continuum ranging from mild to severe (Volkmar, Lord, Baliey, Schultz, & Klin, 2004). More severe ASCs may be characterised by a child who is mute, with an intellectual disability, who is preoccupied with spinning objects, and actively avoids all social interactions. A child with a milder case (e.g. Asperger Syndrome), might have normal intelligence, speak in full sentences, but be unable to engage in a socially appropriate conversation, and be preoccupied with memorizing schedules or sports statistics (Lotspeich, 2000). In all four conditions, symptoms are present before age three and continue throughout life (Rosenblatt, 2008).

Research indicates that ASCs are genetic conditions, with polygenetic inheritance (Zhao et al., 2007). In particular, research has found that ASC traits for social motivation and range of interest/flexibility have the highest heritability and also the highest genetic correlation (Sung et al., 2005). Ongoing research continues to try to understand the underlying genetic basis for ASCs. The conditions affect individuals from all races, ethnicities and socioeconomic backgrounds (Ehlers &

Gillberg, 1993) and are four times more likely to be diagnosed in boys than girls (Carter et al., 2007).

Children with ASCs often experience difficulties with their mental health, such as depression, anxiety and Attention Deficit Hyperactivity Disorder (ADHD; Matson & Nebel-Schwalm, 2006; Simonoff et al., 2008). Approximately half of children with ASCs will have intelligent quotients (IQs) below 70 (Fombonne, 2003). Moreover, they may lack adequate support at school and one in five will face school exclusion (Batten, Corbett, Rosenblatt, Withers, & Yuille, 2006). In terms of prevalence, current estimates suggest that approximately 1 in 100 children have ASCs (Baird et al., 2006).

1.3 Adjustment

There is a strong interest in the sociological issues surrounding children with ASCs, and research has focused on their impact on the family unit and the family's subsequent adjustment. Adjustment is defined as the outcome of family efforts to achieve a new level of balance in family functioning following a stressful experience (McCubbin & Patterson, 1983). Having a child with an ASC may be considered such a stressor on the family system, where each family member may be influenced to some extent by this stress (McCubbin & Patterson, 1983). The stress associated with having a child with an ASC may be acute, such as when going through the stage of diagnosis, and/or it may be chronic, such as when parents have to deal with a range of challenging behaviour over time.

The concept of adjustment exists on a continuum of outcomes ranging from bonadjustment to maladjustment (McCubbin & Patterson, 1983), determined by a balance or imbalance (respectively) between the family demands of the stressors and

their ability to cope with them. Adjustment is conceptualised as the level of psychological distress experienced by family members, including stress, depression, anxiety and social adjustment problems (Manning, Wainwright, & Bennett, 2010). Family adjustment is an important area for further study given that knowledge about adjustment outcomes can provide a useful framework from which to target and plan family preventative and treatment interventions.

1.4 The Challenges of ASCs and the Effects on Families

It is recognised that families of children with disabilities face additional burdens compared to those raising typically developing (TD) children (Seligman & Darling, 1997). These include support with dressing, bathing or eating, which continue beyond the age that parents typically expect their child to be dependent (Seligman & Darling, 1997). Families may experience disruptions to their social lives through restrictive care schedules and increased financial burden from additional care, home or vehicle modifications (Reichman, Corman, & Noonan, 2008). Depending on the level of disability these experiences may continue into adulthood, when families may face decisions about long-term care, employment or further opportunities for their child to access social resources (Seligman & Darling, 1997).

Children with ASCs have difficulties with the social and reciprocal nature of conversation and formation of friendships. They may also misinterpret nonverbal social communication cues (e.g. gestures or facial expressions; White, Keonig, & Scahill, 2006). Children with ASCs may also find changes to routines distressing, be over-literal in interpretation and have hyper- or hypo-sensitivities to auditory, olfactory, tactile, or visual stimuli (Attwood, 2006; Rogers & Ozonoff, 2005). Additionally, they are at increased risk for the development of challenging behaviour

leading to behavioural problems (Hastings, 2002). Thus, families may find it difficult to interact and build relationships in conventional ways with their child, and their reliance on routine and structure may restrict or disrupt family activities and outings (Manning et al. 2010; Norton & Drew, 1994). These difficulties have financial and material implications for families; for instance, parents may enrol children in specialist intervention programmes, which take considerable time, energy and resources (Grindle, Kovshoff, Hastings, & Remington, 2009; Johnson & Hastings, 2002).

The difficulties are also found to impact upon parents' mental health, as they report higher levels of stress related to parenting when compared to parents of children with other disabilities (Dabrowska & Pisula, 2010; Weiss, 2002).

Dabrowska and Pisula (2010) measured parenting stress and coping styles in mothers and fathers of pre-school-age TD children, and those with ASCs and Down's syndrome (DS). They found that parents of children with ASCs reported significantly higher levels of stress and depression than parents of children in the other two groups. However, it is of note that Dabrowska and Pisula (2010) did not measure the presence of behaviour problems in children. This may have confounded the findings as the presence of behaviour problems rather than the ASC diagnosis may have been driving the significant relationship with parental stress levels.

Parents also experience elevated levels of depression compared to parents of children with other disabilities (Singer, 2006). In a meta-analysis of the severity of depression experienced by mothers of children with developmental disabilities (DD; including children with ASCs), Singer (2006) identified 18 studies that compared findings with a group of mothers of TD children. Overall, 29% of mothers with children with DD experienced clinically significant levels of depression. This was

10% higher than mothers of TD children. However, the samples sizes in the meta-analysis varied ($n = 21$ to 5,089) and consisted of predominately white, well-educated, mothers from high socio-economic backgrounds, limiting the generalisability of the findings.

Despite these limitations, these empirical findings highlight that at least a significant proportion of parents of children with ASCs experience negative impacts on their emotional well-being. Conversely, many families are found to adjust well and report high levels of satisfaction in raising a child with an ASC (Hastings & Taunt, 2002). Identifying risk factors associated with poor adjustment is an essential component in considering how to best support parents with the demands of raising a child with an ASC and where best to place the resources of services so that healthy levels of family adjustment can be reached and maintained (Weiss & Lunskey, 2011). High levels of parenting stress are found to reduce the effectiveness of early teaching interventions for children with ASCs (Osborne, McHugh, Saunders, & Reed, 2008); thus, intervening to reduce stress is important for both child and parent outcomes.

The Double ABCX Model of Adjustment

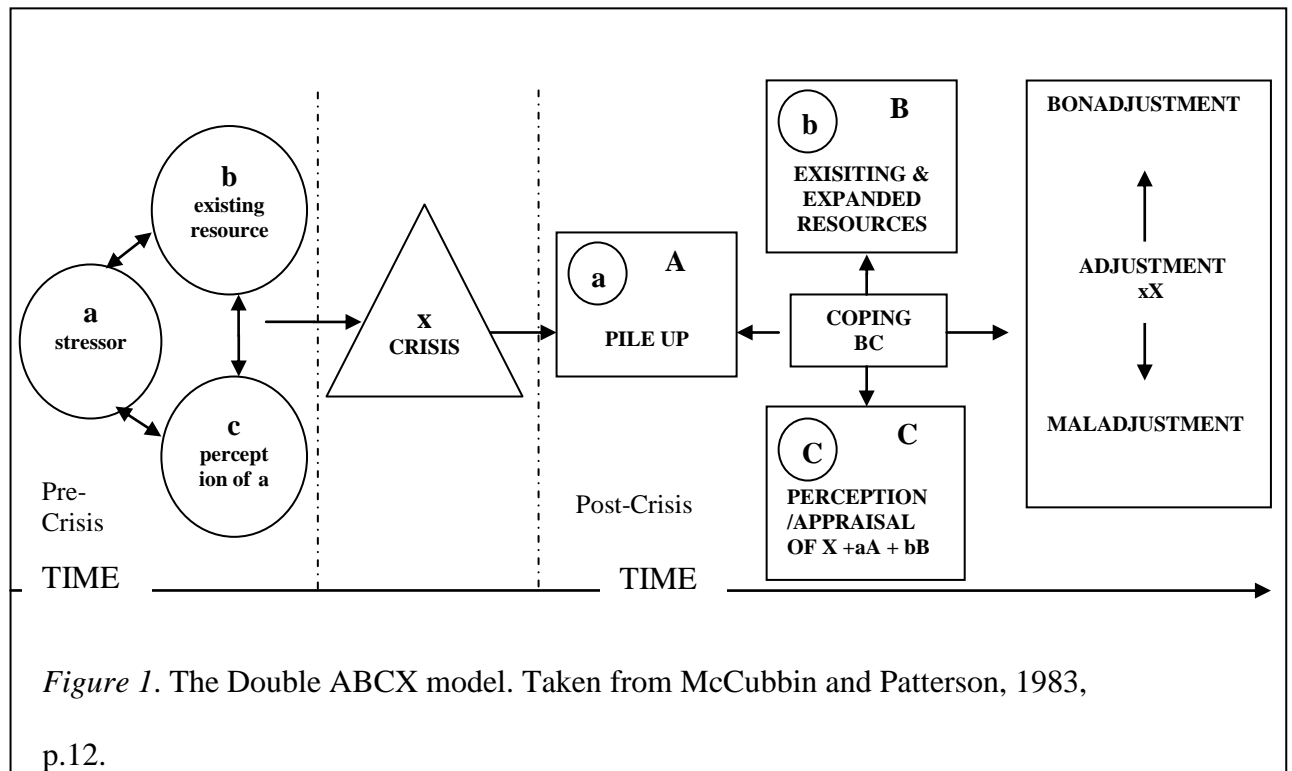
To increase our understanding about the factors that may put families at risk of adjustment difficulties, one can draw upon the Double ABCX model of adjustment (McCubbin & Patterson, 1983). The Double ABCX model originated from the ABCX family crisis model, which was designed to explain the adjustment outcomes in families facing a specific stressful event, for example where a father in a family left to go to war (Hill, 1949; 1958). The ABCX model focused on the protective factors preceding a potential crisis that determined the capacity of the family to cope with the stressful event. These pre-crisis factors included the resources of the family (e.g.

social support, finances) and the appraisals that the family made about the stressful event (e.g. seeing life changes and transitions as challenges to be met, or seeing stressors as uncontrollable and damaging; Hill, 1958). It was predicted that family resources and appraisals mediate the family's ability to adjust to the stressful event and prevent a crisis. Hill (1949) defined stress as distinct from a crisis. Stress was considered to be a demand-capability imbalance in the family, whereas a crisis was conceptualised as a continuous variable denoting the amount of disruptiveness or disorganisation in the family social system (Burr, 1973). This will occur when the family is unable to restore stability following stressful events (McCubbin & Patterson, 1983). Therefore, if a family is able to encounter stressors (a) and maintain stability over time, they may never enter a state of crisis. Hill's (1949) work placed an emphasis on the Resources (b), and Definition of the Stressor (c) which mediate and protect families from deteriorating in a Crisis Situation (x factor).

McCubbin and Patterson (1983) extended the ABCX model and formulated the Double ABCX model of family adjustment (Figure 1). The primary purpose of the revised model was to improve understanding of the adjustment process.

McCubbin and McCubbin (1996) stated that the ABCX model "ignores the highly complex and diverse processes involved in adaptation" (p. 4). McCubbin and Patterson (1983) suggested that considering the resources and appraisals of families simultaneously along with the types of coping strategies used, increased the applicability of the model. Moreover, the model also incorporated post-crisis variables, in addition to the pre-crisis factors, to reflect the relevance and importance of the way the family responds over time for subsequent adjustment (McCubbin & Patterson, 1983). The double lettering in the model (e.g. aA, bB, cC, xX) represents

the impact of time on each component (with lower-case letters representing pre-crisis and the upper-case letters representing post-crisis).



The components of the Double ABCX model are more precisely defined below and the research measuring adjustment in families with children with ASCs is reviewed within each corresponding component.

2.1 Stressor and Pile up of Demands (aA)

The Double ABCX model (McCubbin & Patterson, 1983) proposes that when faced with an initial stressor (a), families may move into a crisis state (x). The initial stressor is defined as a life event or transition impacting upon the family unit, which has the potential of producing change in the family social system. In addition to the initial stressor, the model suggests that families also experience a pile-up of demands

(A) that result from ongoing stressors and tensions following the event of a major stressor. The stressor plus the pile-up of demands are collectively referred to as the aA factor in the Double ABCX model. For example, a child's ASC diagnosis may represent the initial stressor (a) for some families. They may then experience continuing stressors and tensions because of an ongoing role (A), such as parenting a child with a disability (McCubbin & Patterson, 1983). These cumulative stressors require some form of change from the individual or family to occur in order to reach a state of stability, i.e. bonadjustment (McCubbin, 1998).

2.1.1 Behaviour Problems, Adaptive Behaviour and ASC Symptomology

Researchers have examined the role of ASC symptoms, adaptive behaviour, behaviour problems and family member mental health as stressors affecting how families with children with ASCs adjust. This research finds that the most significant factor affecting parental levels of stress is the severity of their child's behaviour problems (e.g. Hastings, 2003; Herring et al., 2006; Lecavalier, Leone, & Wilts, 2006; Manning et al., 2010). Hastings, Daley, Burns and Beck (2006) found that mothers raising children with ASCs reported significantly greater levels of stress when compared to mothers of children with Intellectual Disabilities (ID). However, this difference became non-significant once children's behaviour problems were controlled for.

Longitudinal studies have investigated whether child behaviour problems predict parental maladjustment over time. Lecavalier et al. (2006) measured child behaviour problems and parental stress in 81 families with children with ASCs at two time points one year apart. They found that child behaviour problems at time 1 were associated with increased parental stress at time 2 after controlling for stress at time 1;

however, further analysis revealed that there was also a reverse temporal relationship between parental stress and child behaviour problems. Thus, there was a bi-directional relationship between child behaviour problems and parental stress whereby parental stress could be understood as a maintaining factor for child behaviour problems (Hastings, 2002).

Research measuring the impact of ASC symptom severity and adaptive behaviour on adjustment reports mixed findings. Manning et al. (2010) conducted a study of the relationships between ASC symptoms (A), problem behaviours (A), social support (B), coping (BC), and cognitive appraisals (C) in a diverse sample of 195 families with a school-age child with ASC. They based the selection of their variables on the Double ABCX model. They measured adjustment (X) as the level of parental distress and the level of family functioning, which referred to level of family cohesion, expressiveness and conflict. They found that ASC symptom severity did not predict parental stress. Similarly, Lecavalier et al. (2006) and Hastings, Kovshoff, Ward, et al. (2005) reported that child adaptive behaviour was unrelated to parental stress.

In contrast, Siman-Tov and Kaniel (2010) measured parental stress and adjustment (X; quality of marriage and parental mental health), child's ASC symptoms (A) and parental resources (B; measured as social support, sense of coherence and locus of control). They found a significant positive correlation between the severity of a child's symptoms and parent's stress. However, it was not clear what aspects of the child's ASC symptoms led to the significant correlation. Furthermore, the study did not measure child behaviour problems, which may have confounded parents' reports concerning their child's symptoms.

A more precise examination of the impact of a child's ASC symptoms (the conceptualised stressor, aA) found an important role for the social impairments inherent in a diagnosis of an ASC. Davis and Carter (2008) explored child adaptive behaviour, ASC symptoms, parenting stress, depression and anxiety in parents of 54 children under the age of 3 ($M = 26.9$ months). Results showed that the most significant predictor of parenting stress was children's deficits in social relatedness and social interaction skills. Furthermore, mothers who reported that their child had low levels of social relatedness also reported higher stress related to the parent-child relationship. However, this study relied on a small unrepresentative sample that was measured at only one time point; therefore it is not possible to infer conclusions with regard to the direction of the variables.

The somewhat contradictory findings between the impact of child ASC symptoms and parental stress may arise because many studies use measures that "can be affected by the presence of behaviour problems and by the level of functioning of the child, thereby clouding the association between specific child characteristic and feelings of parental distress" (Lecavalier et al., 2006, p.173). Additionally, the age and developmental stage of the children included in the studies varied, which makes it difficult to make accurate comparisons between studies.

2.1.2 Family Mental Health as Stressors

McCubbin and Patterson (1983) suggested that families also experience additional stressors or pile up of demands (A) unrelated to the initial stressor, such as illness, poor partner mental health or job loss. One such variable that has been measured in families of children with ASCs is the impact of one parent's mental health on the other's adjustment. Hastings, Kovshoff, Ward, et al. (2005) found that mothers' and

fathers' stress was positively predicted by their partner's depression. Additionally, they found that fathers' positive perceptions of their child was negatively predicted by their partners' levels of depression; thus, when mothers were less depressed, fathers reported more positive perceptions of the child. No such relationship was found between mothers' positive perceptions and fathers' depression indicating gender differences in positive perceptions. This finding may possibly be explained by parents collaborating when completing the questionnaires, which may have led to inflated associations between the variables. Nonetheless, other empirical evidence suggests that there are gender differences in the way parents cope with stressors and differences in how parents are affected by child problem behaviour (Hastings, Kovshoff, Brown, et al., 2005; Hastings, Kovshoff, Ward, et al., 2005). There could also be gender differences in willingness to report depression and other emotional disorders (Galdas, Cheater, & Marshall, 2005). This research highlights the important role of the pile up of demands that families experience for adjustment. In particular, focusing solely on the effect of the child on family adjustment is simplistic and further research is needed to understand the complex interactions that impact on family members' adjustment levels

2.1.3 Role of the ASC Phenotype in Family Stress

One way in which the stressor and pile up of demands may vary between families may be inherent in the autism phenotype (Ingersoll & Hambrick, 2011). Researchers studying the genetic basis of ASCs, state they occur more frequently in biological relatives of persons with ASCs (e.g. Ingersoll & Hambrick, 2011; Szatmari et al., 2000). Therefore, some parents experience the stress of coping with ASC, not only in a child, but also in other family members including themselves (Ingersoll &

Hambrick, 2011; Marcus, Kuncle & Schopler, 2005). Piven, Palmer, Jacobi, Chidress and Arndt (1997) suggest that personality traits reflecting interpersonal difficulties may be present in mothers of children with ASCs. These traits have been considered as milder forms of the social impairment of their children. A recent study indicated a significant relationship between scores on a measure of the broader ASC phenotype and levels of depression in mothers (Ingersoll & Hambrick, 2011). However, at the current time it is not clear the extent to how this impacts upon the stress of mothers, it is however in need of future research.

2.2 Existing and Expanded Resources (bB)

The bB component of the Double ABCX model aimed to reflect how the capabilities and resources of the family may change and develop over time. The model identified two types of family resources: existing (b) and expanded (B). Both include those of individual (e.g. self-esteem, health), family (e.g. cohesion, relational support) and community levels (e.g. social support, availability of therapeutic interventions) (McCubbin & Patterson, 1983). Existing resources are those already established in the family system, such as a parent's ability to nurture their child or engage in hobbies and recreation activities, which serve to minimise the impact of the initial stressor (McCubbin & Patterson, 1983). Expanded resources are those that may be strengthened or developed in response to the additional demands emerging out of the initial crisis situation or as a result of the pile-up of demands. In the case of families with children with ASCs, examples of expanded resources include parents attending specialist support groups or developing their personal resources through going to counselling or engaging in parenting based interventions. Family members

may also take on new roles and responsibilities to meet a greater proportion of the family needs, for example, a mother may become a full-time carer.

2.2.1 Social Support

McCubbin and Patterson (1983) state that social support is the most important resource for adjustment. They share Cobb's (1976) definition for social support as "information that a family is cared for and loved, is esteemed and valued, and belongs to a network of mutual obligations" (Cobb, 1976, p. 300).

Social support is consistently found to be an important variable in moderating the impact of stress on parents' levels of adjustment when they have a child with an ASC (e.g. Dunn, Burbine, Bowers & Tantleff-Dunn, 2001). In a study testing the ability of the Double ABCX model to explain adjustment in mothers of children with autism, Bristol (1987) reported that family adjustment (measured as marital quality, depression and family functioning) was positively predicted by perceived adequacy of social support. These findings have been supported in a number of other studies (e.g. Gill & Harris, 1991). Moreover, recent research has found that higher levels of social support predicted lower levels of parental stress in mothers of children with ASC (Ingersoll & Hambrick, 2011; Manning et al., 2010; Siman-Tov & Kaniel, 2010).

2.2.2 Self-efficacy

Self-efficacy, an important personal resource, is found to affect parents' adjustment. It is defined as the perception of one's skills in a given domain (Hastings & Brown, 2002). Hastings and Brown (2002) measured parental self-efficacy, anxiety, depression, and child behaviour problems in mothers and fathers of children with ASCs. For mothers, self-efficacy *mediated* the relationship between child

behaviour problems and parental anxiety and depression. Therefore, high levels of behaviour problems directly influenced feelings of self-efficacy, which in turn influenced levels of anxiety and depression. For the fathers, self-efficacy *moderated* the effect of child behaviour problems on their levels of anxiety; therefore, fathers who had children with high levels of behaviour problems were more anxious when they also had low levels of self-efficacy. The differing effects of self-efficacy may be explained by the roles that mothers and fathers take when caring for their child. Mothers generally experience more direct contact with their child and therefore the impact of self-efficacy is important at all times regardless of the level of behaviour problems. However, fathers typically spend less time with their child and experience less frequent behaviour problems, therefore self-efficacy may act as more of a protective factor under conditions when fathers are faced with high levels of behaviour problems (Hastings & Brown, 2002). Whilst these findings were based on a small sample that was unlikely to be fully representative, statistically significant effects were found. This has important practical implications such that intervening to improve parental feelings of self-efficacy may theoretically lead to improvements in adjustment outcomes for both parents.

2.2.3 Family Cohesion

Another component of resources (bB) is family cohesion. This can be defined as “the emotional bonding that family members have towards one another” (Olson, 2000, p. 145). Theories of family cohesion state that both extremes of the cohesion continuum are considered maladaptive; very low levels of cohesion are characterised by disengaged members and very high levels of cohesion by enmeshed relationships (Minuchin, 1974). Disengaged families have rigid boundaries and are under-involved

which can produce anxiety (Minuchin, 1974). In contrast, enmeshed families are overly involved with and protective of their child's lives, which can have detrimental effects on the child because there may not be space for the child to become independent.

The theorised predictions with regard to cohesion were supported in a study of families of children with ASCs; Bristol (1987) found that high levels of cohesion were negatively associated with poorer adjustment. In a more recent study, Altieri and Kluge (2008) explored cohesion and coping behaviours in 26 pairs of parents of children aged 3-16 with ASCs. They found that highly cohesive and enmeshed families implemented more effective coping strategies than non-enmeshed families. Those families who were very low in cohesion were more likely to use avoidant-based strategies. This suggests that for parents of children with ASCs, an enmeshed, highly cohesive family may be more effective for coping and lead to better adjustment than non-enmeshed families. Within this group of children it may be unsurprising that families are more protective and involved given the demands and responsibilities associated with raising a child with an ASC. By working together individuals within the family may feel more supported and it can be hypothesised that they may subsequently have greater levels of adjustment and well-being (Altieri & Kluge, 2008). Although the sample in this study was small, a noteworthy point regarding their methodology is that the researchers ensured that parents did not collaborate when answering questions, increasing the validity of their results.

2.3 Perceptions/Appraisals (cC)

The subjective appraisals that a family has about the cause of the crisis (c) and how it is affecting them over time (C) are important elements in the model.

McCubbin and Patterson, (1983) state that the meaning the family give to the initial stressor, the ongoing situation (including any additional stressors, existing and expanded resources), and their perception of what needs to be done to bring the family system back in to balance, all contribute to mediate adjustment. Families of children with ASCs may define the 'crisis' of having a child with an ASC differently than families of children with other disabilities (Tunali & Power, 2002). In particular, many children may not be diagnosed until they are preschool or even school aged. In contrast, families of children with other disabilities may be diagnosed at birth (Greenspan & Wieder, 1997). This may result in different stressors and differing levels of support as families attempt to make meaning of their child's ASC diagnosis (Midence & O'Neil, 1999).

2.3.1 Types of Appraisals of Parents of Children with ASCs.

Tunali and Power (2002) compared the types of appraisals, adjustment and life satisfaction levels in mothers of children with ASCs and mothers of TD children. They found no difference between the two groups in adjustment (depression and marital quality) or life satisfaction levels. However, mothers of children with ASCs appeared to differ in what they valued (i.e. what was important to them in their lives), which was shown by the different types of appraisals they held. Compared to mothers of children without disabilities, these mothers placed less emphasis on their careers and more emphasis on their parental role, engaged in more leisure activities with extended family, placed less emphasis on others' opinions about their child's behaviour and stressed the importance of parental roles and spousal support when discussing marriage. Interestingly, for mothers of children with ASCs, these types of appraisals were associated with greater life satisfaction. Tunali and Power (2002)

argued that it was likely that mothers of children with ASCs had actively redefined their values, which had a positive impact upon their adjustment. They suggested that when faced with stressors, individuals may have "redefine[d] what constitutes fulfilments of that need, and develop[e] alternative means of achieving it" (Tunali & Power, 2002, p. 950) to help cope with uncontrollable, chronic stress. However, the differences in appraisals between the groups may in fact have stemmed from actual differences at the behavioural level in the nature of the mothers' experiences (e.g., mothers in this study may have had significant involvement from extended family members) rather than a redefinition process at the cognitive level (Tunali & Power, 2002). It is likely that both redefinition processes and behavioural adjustments change alongside each other (Tunali & Power, 2002). However, the study did not compare these appraisals with those of mothers with children with other disabilities. Therefore, it is unclear if the appraisals found in this study are unique to the experience of raising a child with an ASC, as they may reflect appraisals of mothers with children with disabilities more generally (Tunali & Power, 2002).

In support of Tunali and Power's (2002) findings, Manning et al. (2010) found that for primary care-givers of children with ASCs, cognitive reframing (defined as the individuals' capability to redefine stressful events to make them more manageable) was a significant predictor of adjustment. Higher levels of reframing were related to lower parenting stress and better family functioning (cohesion, expressiveness and conflict). Support for the mediating role of appraisals on level of parental stress was found by Plant and Sanders (2007). They measured parental appraisals related to care-giving tasks and child behaviour problems in 105 families with pre-school aged children with DD (including children with ASC). They found that parents who appraised their care-giving tasks more negatively and perceived care-giving as more

difficult, reported more challenging child behaviour during care-giving and reported higher levels of problem behaviour, than parents who appraised tasks positively. Moreover, a parent's cognitive appraisal of their child's level of disability directly influenced their level of stress; parents who had children with more severe disabilities were more likely to perceive care-giving responsibilities in a more negative way, and to perceive the tasks associated with caring for their child as beyond their control (Plant & Sanders, 2007). This subsequently contributed to greater levels of parental stress. Additionally, parental appraisal was found to be a better predictor of parental stress than child behaviour problems. Whilst these results support the Double ABCX model's predictions, it is noteworthy that Plant and Sanders (2007) relied upon self-report data, and used a sample that was unrepresentative due to their relatively high socioeconomic status. It is therefore unclear if parental appraisals impact on adjustment in the same way for parents from lower socioeconomic backgrounds.

2.4 Coping (BC)

The model emphasised that coping strategies (BC) have both cognitive and behavioural components, wherein resources, perceptions, and behavioural responses interact as families try to achieve a balance in family functioning (McCubbin & Patterson, 1983). In the model, coping strategies that are either problem-focused (those aimed at solving the problem or doing something to change the source of stress) or emotion-focused (strategies aimed at reducing or managing feelings of distress associated with the stressor) mediate the effects of stress on an individual's well-being (Hastings, Kovshoff, Brown, et al., 2005).

The application of the Double ABCX model to explain adjustment in mothers of children with Asperger syndrome was explored by Pakenham, Samios and Sofronoff

(2005). They measured adjustment (xX; levels of anxiety, depression, social adjustment and subjective health status), pile up of demands (aA; having a child with Asperger syndrome), resources (bB; social support), appraisal of the stressor (cC; the parental stress associated with the parenting role) and coping strategies (BC). Results indicated that maternal coping style significantly predicted adjustment outcomes in mothers, whereas no such role was found for social support or parental perceptions.

Hastings, Kovshoff, Brown et al. (2005) measured coping strategies in 46 parents of pre-school and school-age children with ASCs. They found that parents of children with ASCs who adopted “active-avoidance” (emotion-focused) coping styles had greater levels of stress and mental health problems, compared to those using problem-focused strategies. Gender differences in coping were also found; mothers used more emotion-focused and problem-focused coping strategies than fathers (Hastings, Kovshoff, Brown et al., 2005).

Benson (2010) extended the above findings by measuring the coping methods employed by 113 mothers of children with ASCs. He explored how coping styles were related to mothers’ distress, anger, well-being and children's behaviour problems. Like Hastings, Kovshoff, Brown, et al. (2005), initial analysis found that avoidant coping strategies were associated with increased levels of depression and anger. In further analysis of these findings, Benson (2010) found that the severity of child behaviour problems moderated the effect of coping on maternal distress. Specifically, when child behaviour problems were less severe, avoidant coping exerted a significant positive effect on distress. However, when child problem behaviours were more severe, avoidant coping had no effect on distress. Benson (2010) stated that relying on avoidant styles of coping when children have less severe levels of challenging behaviour may be problematic for parents. This research

highlights that avoidant coping had a negative impact on parental distress but that this impact depended on the severity of the child's behaviour problems. It is possible that parental appraisals for their child's behaviour impacted on this finding; parents may have been more likely to attribute more severe problem behaviours to their child's diagnosis, whereas less severe problem behaviours may have been attributed as the child's fault. The research regarding appraisals indicates that they will influence parents' subsequent adjustment and ability to cope (e.g. Plant & Sanders, 2007).

The coping studies above employed correlational designs therefore no causal inferences can be made. Longitudinal data reviewing how coping changes over time may provide further information in regard to how coping mediates parental distress.

2.5 Adjustment (xX)

Adjustment (xX), the conceptual outcome of the model, occurs when a family has reached a balance of demands and capabilities on individual, family and community levels. Adjustment is characterised on a continuum from bonadjustment to maladjustment and is measured by family outcomes, such as mental or physical health or family functioning (Lavee, McCubbin, & Patterson, 1985). Research on adjustment has been incorporated into the research studies reviewed above.

2.6 Critique of the Double ABCX Model and Adjustment Literature

2.6.1 Strengths of the Model

The Double ABCX model accounts for many of the variables that are found to be important for adjustment in families of children with ASCs and it explains the relationships expected between the variables for determining adjustment outcomes. The model recognises that families may develop or gain from the experience of

raising a child with an ASC (Hastings & Taunt, 2002; Kayfitz, Gragg, & Orr, 2010) and that simply having a child with an ASC does not necessarily lead to maladjustment. The literature reviewed demonstrates that the meaning and perceptions that a family member has about the stressor and the resources they use are more important for adjustment than the actual behaviour experienced or social support available (e.g. Manning et al., 2010). The meaning that individuals give to challenging situations is widely found to impact upon their subsequent mental health (e.g. Butler, Chapman, Forman & Beck, 2006). Therefore, many psychological therapeutic approaches aim to assess and modify the beliefs individuals give to a stressor or situation to support recovery (e.g. Young, Rygh, Weinberger & Beck, 2008). Thus, it is perhaps unsurprising that appraisals and perceptions have such an important role in adjustment outcomes.

2.6.2 Limitations of the Model

Although the model is framed as a one of 'family' adjustment, most research within the area has been limited to maternal report or occasionally, paternal report (e.g. Manning et al., 2010). Therefore, it could be argued that the studies do not measure family adjustment; rather they measure parental adjustment (McCubbin & McCubbin, 1996). Research indicates that other family members, such as siblings and grandparents often have an important role in supporting families and, as such, their adjustment and perspectives are important to consider (Margetts, Le Couteur, & Croom, 2006). Moreover, Family Systems Theory indicates that sibling adjustment is an important area for study since having a sibling with child ASC may impact upon the non-ASC sibling's adjustment (Seligman & Darling, 1997). Indeed, research suggests that siblings of children with ASCs are at an increased risk of maladjustment

(e.g. Petalas, Hastings, Nash, Lloyd, & Dowey, 2009); however, research directly measuring the Double ABCX model in families of children with ASCs has only rarely included sibling or grandparent perspectives.

Measurement Limitations. The studies reviewed above measure adjustment and its component parts using a variety of self-report measures, which limits the comparisons that can be drawn between studies because they do not consistently measure the same thing. Furthermore, the literature suggests that negative appraisals are important in adjustment, yet the measures used vary and are limited in their ability to ascertain global accounts of the appraisals that parents hold about their child, instead they focus on specific appraisals related to care-giving tasks. Future researchers measuring adjustment should collect data about parental appraisals using alternative methods, such as interviews or observations from a wider variety of informants (Manning et al., 2010). This may help to improve our understanding about the following: the nature of parental appraisals; how closely the measures used in the studies relate to actual parenting behaviour; and provide information which may lead to improvement in the measures that researchers typically use. A suggested improvement in the measurement of adjustment, may be to utilise the recently developed Brief Family Distress Scale (Weiss & Lunskey, 2011), which has important practical and clinical implications for such families. This measure provides a quick way of measuring families' levels of distress and crisis, which can enable professionals to respond quickly.

The research indicates that both self-efficacy and parental appraisals act as mediating variables, which contribute to our understandings about how, or why, child stressors may affect parental adjustment. However, this does not permit conclusions to be drawn about causation; in order to test the implied causal role of the mediators,

longitudinal data is needed (Hastings & Brown, 2002). This will allow researchers to establish if there is a temporal relationship between child stressors, mediating variables and parental adjustment (Hastings, 2007).

Sample Limitations. The studies measuring adjustment included a narrow representation of socio-economic groups and parental education levels. The majority of studies included participants who were white, well educated, from high socioeconomic groups and two-parent families (e.g. Hastings, 2003; Hastings, Kovshoff, Ward, et al., 2005). This significantly limits how representative the findings are, especially given that the socio-economic status (SES) of families supporting children with disabilities is often significantly lower than families supporting TD children (Blackburn, Spencer & Read, 2010; Emerson, 2003). More socio-economically inclusive research is needed to fill this gap.

With the exception of Hastings (2003), Lecavalier et al. (2006) and Hastings and Brown (2002) who used teacher ratings of child behaviour, the majority of studies used measures that were completed by parents themselves. This increased the risk that socially desired responses were given (e.g. Plant & Sanders, 2007). Taking independent assessments of child behaviour and parental mental health will improve the validity of the findings (Psychogiou, Daley, Thompson, & Sonuga-Barke, 2007). However, it should be noted that child symptoms, such as problem behaviours, are context dependent and therefore results based on teacher and parent reports may vary due to the differing environmental circumstances (Hastings, 2003).

Parent-Child Relationship. The literature suggests that parenting behaviour and the parent-child relationship are important factors for successful adjustment (e.g. Dosseter, Nicol, Stretch, & Rajkhowa, 1994; O'Connor, 2002). However, studies measuring the Double ABCX model have not included a measure of these. Including

such a measure would provide a useful adjunct to our understanding about adjustment because it may highlight important areas for intervention; those aimed at improving the parent-child relationship may have a positive impact on both parent and child adjustment individually (Hastings & Lloyd, 2007; Laghezza, Mazzeschi, Riso, Chessa & Buratta, 2010). Furthermore, the impairments in social skills, which are inherent in ASC diagnoses, can impact on the quality of the parent-child relationship (e.g. Davis & Carter, 2008) and is, therefore, another important aspect of adjustment to measure.

Expressed Emotion and Adjustment

3.1 Expressed Emotion and the Parent-Child Relationship

Research suggests that the relationship between parent and child is an important part of the child's development (Guralnick, 1998; Hooley & Parker, 2006). Establishing reciprocity with the child, and providing warm, nonintrusive, and developmentally sensitive interactions, are suggested as some of the important characteristics for optimal child development (Guralnick, 1998). Parent attitudes and the quality of the parent-child relationship play key roles in the development trajectories of children with ASCs (Benson, Daley, Karlof & Robison, 2011; Psychogiou, et al., 2007). In particular, Belsky (1984) states that parents are the primary managers of a family's emotional climate and, in recent years, the construct Expressed Emotion (EE) has been used as a measure of these important family features (Benson et al., 2011). EE can be defined as a measure of the emotions and attitudes expressed by one family member regarding another (Leff & Vaughn, 1985). In research with children, EE has two dimensions, (1) criticism, which encompasses

feelings of negativity and resentment, and (2) emotional over-involvement (EOI), which comprises extreme over-protective and self-sacrificing behaviour (Magana et al., 1986). A relative is classified as high in EE if they demonstrate high levels of criticism and/or EOI (Benson et al., 2011; Magana et al., 1986).

3.2 Background and Development of the Measurement of Expressed Emotion

EE was initially developed to assess the impact of family environments on the rate of relapse in adults with schizophrenia (Brown, Carstairs, & Topping, 1958). Research indicated that high EE was predictive of relapse (Kavanagh, 1992; Leff & Vaughn, 1985). Consequently, high EE is now regarded as a significant family-level stressor, leading to an increased risk of relapse and poor outcomes in individuals with schizophrenia (Hooley & Gotlib, 2000).

Researchers have explored the role of EE in other conditions, including children with ASCs. Before the relevant research findings are discussed, a summary of the measurement of EE is provided as this highlights some important issues regarding to the appropriateness of measuring EE in children. Furthermore, the main measurement terms are defined to aid the reader's understanding.

The first method developed to measure EE was the Camberwell Family Interview (CFI; Leff & Vaughn, 1985), which is a semi-structured interview considered to be the “gold standard” method for measuring EE in families of psychiatric clients (Hooley & Parker, 2006). The coding of the interview concentrates on five dimensions: (1) Emotional Over-Involvement (EOI), (2) Criticism, (3) Hostility, (4) Warmth, and (5) Positive Remarks. It has demonstrated good concurrent and predictive validity within schizophrenia research (Hooley & Parker, 2006). The CFI has also been used with children with various disabilities, although

the relative speaks about his or her thoughts and feelings about the child's symptoms and behaviours at the current time rather than during an episode of psychiatric illness (Bolton et al., 2003).

Since the CFI involves significant time demands to administer and code (Wearden et al., 2000), Magana et al. (1986) developed the Five Minute Speech Sample (FMSS) as a briefer measure of EE for use with adults. The coding for the FMSS differs in several ways to the CFI; for example, it does not code for Hostility, Positive Comments or Warmth but does code for quality of the relationship with the individual (measured in the comments made about the relationship the relative has with the individual; Magana et al., 1986). According to the FMSS, a person is rated as high EE when they display EOI, if they make one or more critical comments (assessed by content or tone), and have an overall negative relationship rating (assessed along a continuum). Low EE is assigned in the absence of these codes. The FMSS is found to be a reliable and valid measure in adults, high levels of inter-rater reliability have been reported ($r = .73$; Magana et al., 1986), and high levels of agreement were found between the CFI and FMSS. Moore and Kuipers (1999) found an overall concordance rate of 89.7% when comparing the two methods in staff interactions with service-users. However, the FMSS has consistently been found to generate a large proportion of false negatives, which may result from the instruction to rate conservatively within the FMSS (Daley, Songua-Barke, & Thompson, 2003).

The FMSS has been used to measure EE in families of children with mental health problems and disabilities, including ASCs (e.g. Beck, Daley, Hastings, & Stevenson, 2004; Hastings et al., 2006). However, the developmental appropriateness of using the FMSS with these client groups has been questioned, since children move through various developmental stages as they age and therefore parents face different

parenting tasks at these different stages (Seligman & Darling, 1997). These factors may alter the manner that EE should be interpreted. The coding structure of the FMSS regards statements of love and appreciation for the individual as indicative of high EOI. However, this rating may be inappropriate in young children, where parental affection is actually more likely to be associated with healthy child functioning (Benson et al., 2011; McCarty & Weisz, 2002). In addition, the FMSS does not code for warmth, unlike the CFI; however, warmth is recognised as an important contributor to normal child development (O'Connor, 2002). Consequently, two modified coding manuals for the FMSS have been developed for parents of children to address these issues: the Pre-School Version of the FMSS (P-FMSS, Daley et al., 2003) and the Autism Specific Five Minute Speech Sample (A-FMSS; Daley & Benson, 2008). For the purposes of this review the scales of the A-FMSS are fully defined in Appendix B.

Daley & Benson (2008) stipulate that high EE is assigned using the A-FMSS if the speech sample contains at least one negative global code on initial statement, warmth or relationship quality, *and* a higher number of critical comments than positive comments are present. A rating of moderate or borderline EE is assigned if the speech sample contains at least one negative global code on initial statement, warmth or relationship quality, *or* more critical comments than positive comments. Finally, a rating of low EE is assigned in the absence of either high or borderline EE. However, since the A-FMSS has not been compared against the CFI, its concurrent validity is uncertain (Benson et al., 2011). Studies that have utilised the above measures are now reviewed in relation to the role of EE in adjustment.

3.3 Expressed Emotion Research in Children

3.3.1 Expressed Emotion and Children with ASCs

Three studies that have specifically measured EE and its relationship to adjustment variables in families of children with ASCs were located in the literature. Benson et al. (2011) measured EE and several parent and child characteristics in 104 mothers of children aged 6-9 with ASCs using the A-FMSS. Overall, 9.6% of mothers were classified as high EE, 13.5% as moderate EE, and 76.9% as low EE. The majority of high EE ratings were based on critical codes. The authors found less evidence for EOI; fewer than 3% of mothers were rated as high in EOI, indicating that EOI may be less useful as an indicator of EE in parents of children with ASCs. Benson et al. (2011) reported that the A-FMSS had acceptable validity in relation to its expected relationships with parent and child characteristics. Specifically, EE had significant negative relationships with child social competence, verbal child language use, maternal educational involvement, maternal network size (social support) and family cohesion. However, due to the correlational nature of the study it is not possible to state cause and effect. The results also indicated that high levels of cohesion and social support were related to the emotional climate between a parent and child. This suggests that all three variables have an important role in adjustment. However, again it is not possible to draw conclusions as to their potentially causal nature; longitudinal studies would be required to do this.

In Benson et al's (2011) study, EE was unrelated to child gender, child age, maternal education level, child behaviour problems and maternal depression. Interestingly, Benson and colleagues reported that the mothers in the study did not consider their child to be responsible for his or her symptoms and behaviour. According to Attribution Theory (Weiner, 1985) if one person judges another's

behaviour to be controlled by external factors, they will have more positive emotions towards that person. This may partly explain the absence of the relationship between child behaviour problems and criticism. This study highlights that it is important to consider the child's positive social skills in an analysis of EE and adjustment, rather than to focus on behaviour problems alone.

Using the FMSS, Greenberg, Seltzer, Hong and Orsmond (2006) investigated the bi-directional relationship between maternal EE, behaviour problems and ASC symptoms in mothers of 149 individuals with ASCs aged 11- 48.9 years, over an 18-month period. Like Benson et al. (2011), they found that most families did not show high EE (72.5%) indicating that the many families in the study had warm and positive relationships with their children. They found that high levels of EE (based upon criticism) were associated with increasing levels of behaviour problems and more severe ASC symptoms over time. These findings contrast with those of Benson et al. (2011) and may reflect differences between the coding of the criticism dimension in the A-FMSS and the FMSS. The FMSS has a low threshold for coding parental criticism and therefore the relationships that have been found in other studies between behaviour problems and criticism may be a result of the FMSS coding system (Benson et al., 2011). Additionally, the age of the children in the two studies varied greatly and it is recognised that the demands associated with parenting a child with ASC change and develop as the child ages (Marcus et al., 2005). For instance, ASC symptoms that children present are found to vary according to age; Smith, Seltzer, Tager-Flusberg, Greenberg and Carter (2008) found that adolescents had significantly more repetitive behaviours and restricted interests than younger children. Additionally, adolescence is recognised as a time of additional stress for parents since adolescents go through various transitions, which can lead to parental burnout

(Marcus, 1984). Therefore, adjustment in the two groups may be affected by different stressors and the groups may utilise different resources when coping (Smith, Seltzer et al., 2008). This may affect levels of EE and thus comparisons between the studies are made with caution.

In an extension of the Greenberg et al. (2006) study above, using the same sample and timeframe, the FMSS codes were expanded to measure the impact of positive aspects of the parent-child relationship (e.g. warmth and praise) upon behaviour problems and child's ASC symptoms (Smith, Greenberg, Seltzer, & Hong, 2008). Results indicated that maternal warmth, praise and relationship quality, were related to subsequent reductions in behaviour problems and abatement of ASC symptoms. This further highlights the importance of including positive processes when measuring EE and adjustment. They reported that EE remained stable over time, which the authors suggested may indicate that emotional expressiveness is an enduring quality of families. In the studies above independent observations of child-parent behaviour were not carried out and therefore the extent to which EE ratings corresponded to actual parenting behaviour is unclear.

As the literature exploring the role of EE in families who have children with ASCs is a relatively new field, it may be informative to draw upon research measuring EE in other areas, such as in parents raising children with ID or behaviour problems. This may increase our understanding about the role that EE has for adjustment in families of children with disabilities and suggest future research directions.

3.3.2 Expressed Emotion and Children with Behaviour Problems

Studies measuring EE and child behaviour problems have consistently found relationships between high EE and high levels of child behaviour problems (e.g.

Baker, Heller, & Henker, 2000; Daley et al., 2003; Peris & Baker, 2000). Using the FMSS, Baker et al. (2000) measured parental well-being and the prevalence of high EE among 112 mothers of pre-school children with behaviour problems (as indicated by clinical cut off scores on the Child Behaviour Checklist, CBCL; Achenbach, 1991) over a 2 year period at two time points. The children were divided into three groups based on their CBCL score; high, moderate, and low levels of behaviour problems. When the EE components were analysed, high EE was rated because of the presence of criticism rather than EOI attitudes. Other significant findings of this study included a positive relationship between EE and maternal depression and stress, as well as high levels of EE being more prevalent in the high problem behaviour group. Regression analyses indicated that parental stress was the best predictor of child behaviour problems. Once more however, conclusions regarding causation could not be ascertained due to study's cross-sectional design.

Using the CFI, Bolton et al. (2003) measured the associations between EE, parental attributions and depression in 61 mothers of children (aged 4-11) with behaviour problems (measured using the CBCL; Achenbach, 1991). They found that mothers who were rated as high EE (61%) were more likely than mothers rated as low EE (39%) to make external attributions that judged the cause of the problem behaviour to be personal to, and controlled by, the child (e.g. "he won't get dressed...that's just his laziness"). This was particularly true for mothers who scored highly for criticism. Mothers expressing lower warmth were more likely to attribute the control of behaviour problems to the child and reported higher levels of behaviour problems than those mothers expressing higher warmth. Here, maternal depressed mood was a predictor of maternal criticism and analysis suggested that EE may function as a mediator between maternal depression and ratings of child problem

behaviour. These findings suggest that EE is related to depression and to the attributions that mothers make. Again this may be understood within the Attribution Theory of Emotion (Weiner, 1985). Therefore, when parents in this study believed that the cause of the child's behaviour was internal to that child they were more likely to express criticism (Bolton et al., 2003). EE is a reflection of parental attitudes and feelings about the child; therefore, it may not be surprising that associations were found with the attribution measure.

In a longitudinal study, Boger, Tompson, Pavlis, Briggs-Gowan, and Carter (2008) measured the role of family and parental factors in the development of EE in 276 mothers whose pre-school age child presented with social-emotional and behaviour problems. They assessed mothers when their child was 12 months and 36 months old, and additionally, a sub-sample of mothers ($n = 60$) were assessed when their child was between the age of 5.5 years and 7.6 years. They investigated whether baseline quality of marriage, life stress, parenting stress and family expressiveness predicted EE at follow-up. Results indicated that level of family expressiveness was the only variable to predict EE at follow-up. However, family expressiveness was only measured in a single family member, thus, multiple informants may have provided more accurate information about a family's level of functioning (Boger et al., 2008). Despite the strength of the study brought by its longitudinal design, the results should be interpreted with caution since it is unclear if they reflect family functioning or parental functioning, leading to difficulties in generalising the findings.

This research highlights that associations are reliably found between high EE and high levels of child behaviour problems (e.g. Baker et al., 2000). In particular, high EE was predominately rated because of the presence of parental criticism rather than EOI; a finding also found in the research measuring EE and children with ASCs

(e.g. Benson et al., 2011). An important relationship has also been found between high EE, the types of attributions that mothers have about their child, and their levels of depression (Bolton et al., 2003). Whilst conclusions regarding cause and effect cannot be made because of the research design most often employed, it can be hypothesised that when considered within the framework of the Double ABCX model, high EE (based on the criticism code) and negative attributions may have a significant impact on family maladjustment.

3.3.3 Expressed Emotion and Children with ID

Approximately half of children with ASCs have co-morbid IDs (Fombonne, 2003) and therefore, the relationship between EE and adjustment found in ID research may have some shared associations with the ASC population. Furthermore, studies measuring EE in families of children with IDs often include mixed aetiology groups, including those with an ASC diagnosis (e.g. Beck et al., 2004; Hastings et al., 2006).

Dossetor et al. (1994) used the CFI to measure EE in 92 mothers of children aged 14-19 years old who had IDs and behaviour problems. They found that high EE was exhibited in 35% of mothers. Their results indicated a strong association between high EE and parents' poor psychological well-being, poor quality of marriage, and low levels of practical social support. Furthermore, higher criticism was significantly related to greater behaviour problems and less severe ID. However, the study again was constrained by the cross sectional design.

Lam, Giles and Lavender (2003) measured the relationships between the appraisals that parents made about behaviour problems, their coping strategies and the perceived adequacy of social support available. Using the CFI with 47 carers (20 fathers and 27 mothers) of children with ID, they found that 40.4% were classed as

high EE; of these, 29.8% were high criticism and 21.3% were high EOI. Unlike previous findings, results indicated that there were no significant differences between the high and low EE groups based upon the total number of child behaviour problems or the amount of support available to parents. However, analysis found that the high EE group appraised their social support as significantly less helpful, considered a higher number of behaviour problems as a “definite problem”, and reported higher levels of stress and burden than those low in EE. Moreover, warmth was negatively correlated with the carers’ overall evaluation of problem behaviours and high EE significantly predicted an increase in parental stress. These results support the findings in the adjustment literature and suggest that the way parents make sense of and understand stressors and resources are more important for subsequent adjustment than the quantity of stress or resources experienced. However, this study was limited because it did not measure the IQ of children and therefore the sample could have included children above the cut-off for ID; this may have confounded the accuracy of the results. In contrast to the other studies reviewed, Lam et al. (2003) included fathers in their sample. They reported that mothers were significantly more critical than fathers and had significantly more face-to-face contact with the child. However, to achieve an accurate measurement of EE a high level of face-to-face contact between parent and child is required (Leff & Vaughn, 1985). Consequently, the findings relating to mothers may be more representative of EE associations.

The literature has sought to explore whether EE is a characteristic of parental factors (e.g. parenting beliefs) or if it is driven by child factors (e.g. behaviour problems). Beck et al. (2004) used the FMSS with 33 mothers of children with ID (including 7 children with ASCs), aged 4-14 years old. They compared levels of maternal EE towards the child with ID and with a TD sibling in the same family,

which enabled them to study the relative contribution of ID variables to the emotional relationship between parent and child. Results indicated that 60% of mothers were classified as high EE towards their child with ID. High EE mothers had children with significantly more behavioural problems and maternal EE towards the child with ID was significantly more negative than EE towards the child without ID. This finding suggests that maternal EE was associated with child factors. However, it is unclear if high EE was present because of the ID or the behaviour problems of the child. In this study high EE may have been a result of a parental response to child factors rather than a parental characteristic or trait. When considering the variables that drive high EE, researchers in the field have stated that "it is likely that the characteristics of child influence parental EE and parental EE may influence child adjustment" (Psychogiou et al., 2007, p. 465).

Longitudinal studies can provide answers to the causation question. Such research is important because it may provide useful findings concerning how EE impacts on adjustment over time and highlight areas for intervention. Hastings et al. (2006) investigated the cross-sectional and longitudinal relationships between EE, parental well-being and child behaviour problems using the FMSS in mothers of children with ID (including a subsample of children with ASCs) at two time points, two years apart. They found that 48% of mothers were rated as low EE, 13.3% were rated as high EE on both EOI and criticism, 21.3% were high in criticism and 17.3% were high in EOI at the first time point. The cross-sectional analysis ($n = 75$) found that mothers high in criticism had children with more behaviour problems and higher levels of maternal distress than mothers low in criticism. The longitudinal analysis ($n = 56$) indicated that EE ratings remained moderately stable over the 2 year period; however, high EE did not predict child behaviour problems at follow-up. This result

does not support the findings with regard to the role that EE has in behaviour problems in adolescents with ASCs (e.g. Greenberg et al., 2006). These differences may have occurred due to the varying developmental stages that the children were at. It is possible that EE impacts differently at various stages of development and these findings may reflect differences in EE's effects on children with ID and ASCs (Benson et al., 2011). In light of the relatively small sample size, attrition rate and differences in the diagnosis of the children these results are interpreted with caution because they could be unrepresentative of families of children with ASCs.

3.4 Critique of the Expressed Emotion Literature

The literature reviewed concerning EE in families of children with ASCs, behaviour problems and ID highlights an important role for EE in the adjustment of families. The frequency of high EE varies both within and between groups, which may be due to methodological differences in the way EE is measured and due to the varying diagnostic groups included in the studies reviewed. However, EE is identified as an important area to include when considering adjustment in families of children with ASCs, ID and behaviour problems (Hastings & Lloyd, 2007).

The research reviewed found that high EE was related to child social competence, family cohesion, family expressiveness and social support (e.g. Benson et al., 2011). However, the findings for the relationship between high EE and child problem behaviour in children with ID, behaviour problems and ASCs are mixed. This may be explained by the different stressors that arise from parenting children in the various diagnostic groups or from the methodological differences in the studies.

The relationship between EE, attributions and appraisals have important implications for the adjustment process in families raising a child with an ASC.

Dossetor et al. (1994) suggested that high EE reflects how families may be unable to positively reappraise stressful situations, which contributes to poorer adjustment. This supports the predictions of the Double ABCX model by indicating that how parents of children with ASCs appraise and understand their child's difficulties are important factors for subsequent adjustment outcomes.

Whilst a number of relationships have been found between adjustment variables and EE, it is not possible to make conclusions with regard to their cause and effect because the studies were correlational. This type of design is limited because it does not meet the basic standards for inferring causality. Longitudinal designs overcome this difficulty since they use repeated measures on the same group of participants over a period of time. However, longitudinal designs take a substantial amount of time to gather results and can also succumb to high attrition rates. Several such studies have been undertaken, although they have predominantly focused on the role of EE in predicting child outcomes. The results of these studies are mixed and indicate that for children with ID, high EE does not predict child behaviour problems over time, but for adolescents and adults with ASCs it does. Replication of these studies is required to increase the reliability of these conclusions.

3.4.1 Methodological Limitations of the Expressed Emotion Literature

Sample Limitations. Studies that have measured EE in families with children with ID and behaviour problems have included mixed aetiology groups; this makes it difficult to make accurate comparisons between studies. Further studies are needed with other etiological groups to reflect differences in the clinical features of the varying diagnostic groups (Laghezza et al., 2010). The differing sample sizes and age ranges of participants further compound comparisons of the empirical findings; thus,

the research measuring EE to date is not representative of all families with children with ASCs. Moreover, the findings only reflect the characteristics of those parents who opt to take part in studies (e.g. Siman-Tov & Kaniel, 2010) and it is possible that those families differ in EE and adjustment levels when compared to families who do not opt to take part in research.

Measures of Expressed Emotion. Researchers measuring EE in children have utilised the CFI, FMSS, P-FMSS or A-FMSS. The differences in the coding systems of these measures mean that comparisons that are drawn between studies must be made tentatively. For example, in comparison to the CFI, the FMSS is found to code for fewer high EE parents (Moore & Kuipers, 1999). Furthermore, the most recent developments in the coding of EE highlight the importance of the developmental stage of the child and the specific diagnostic category that the child presents with for assigning accurate EE codes (e.g. Benson et al., 2011). Therefore, future research should ensure that the most appropriate method for measuring EE in children is used; this will increase the reliability and validity of the findings and make conclusions that are more representative of the presenting needs of the sample.

Limited Research Measuring Expressed Emotion in Children with ASCs. To date, few studies have measured EE in families with children with ASCs. One explanation relates to historical issues where families were blamed for their child's difficulties, which may have resulted in limited research being conducted about the impact of ASCs on the family (Greenberg et al., 2006). From the research reviewed here it appears that EE has some important relationships with adjustment in families (Hastings & Lloyd, 2007; Laghezza et al., 2010), although, at present, the specific role of EE in family adjustment is unclear. Hastings and Lloyd (2007) highlight that parents are not to be blamed when considering the role of EE; rather they state that

"EE is part of the normative experience of having to deal with a very demanding situation" (p. 344).

As in the adjustment literature, research measuring EE predominantly includes mothers; very little is known about fathers' levels of EE and how this relates to family adjustment. EE is a measure of the *home environment*, therefore, it is important to consider whether differences exist between mothers and fathers or whether EE is a reflection of common experiences with the child (Psychogiou et al., 2007). Furthermore, implications of high EE environments for other family members, such as siblings and grandparents have yet to be explored (Hastings & Lloyd, 2007).

Expressed Emotion and the Double ABCX model

One way to understand the role of EE in the adjustment process is to consider how it fits with the Double ABCX model of adjustment. This may be most appropriately done by considering whether the two major dimensions from which EE is measured (criticism and EOI) relate to the factors specified in the Double ABCX model, namely the resources, appraisals and coping styles of parents. In EE terminology, 'criticism' refers to critical attitudes the parent makes about the child (Magana et al., 1986). Parents with these attitudes show unambiguous dislike, disapproval, or resentment of the child's behaviour or personality. The Double ABCX model considers 'appraisals' as having three component aspects. Firstly, the meaning the family gives to the initial stressor (e.g. having a child with a disability), secondly, the associated caregiving strains that arise over time (e.g. the daily stressors relating to parenting a child with a disability), and finally the 'resources' that are utilised (e.g. viewing social support or professional support as helpful). It is suggested that

criticism may be viewed as a measure of the appraisals that the parent makes about the child as a person and the type of relationship they have together. The term EOI refers to marked overprotection, self-sacrificing behaviours or excessive expressions of feelings for the child (Magana et al., 1986). This dimension may relate to the coping style of parents. In the Double ABCX model, coping refers to how families attempt to avoid stressors, manage the challenges of the situation, and maintain the family system's integrity and morale (McCubbin & Patterson, 1983). It is possible that parents who are high EOI do so as a way of managing feelings of anxiety and stress in response to their child's behaviours and symptoms (Carr, 2006; Dossetor et al., 1994). These dimensions appear to theoretically fit on to the Double ABCX model, with criticism arguably fitting the most closely.

In children with ASCs, behaviour problems, social symptoms of ASCs, parental resources and appraisals are all found to correlate with parental adjustment. The EE research finds that child social competence, family social support, levels of cohesion and, in some cases, behaviour problems correlate with EE. In measuring parental EE in children with behaviour problems, Bolton et al. (2003) found that criticism mediated the relationship between maternal depressed mood and child behaviour problems, and in children with ID, high EE predicted increased parental stress. In considering this literature it is possible to hypothesise that the stressors families' experience (child behaviour problems and ASC symptoms) impact on parents' levels of criticism, which in turn directly affect their level of adjustment (Beck et al., 2004). If this were the case, then intervening to reduce parents' levels of criticism may have a positive impact on family adjustment. Interventions based on Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) that teach parents to accept unpleasant emotions and defuse from difficult thoughts may

help to alleviate parental criticism and distress (Blackledge & Hayes, 2006).

Therefore, research that can inform intervention practice is a priority given the role of intervention in improving parent and child outcomes (e.g. Bunting, 2004).

Conclusions and Future Research Directions

This literature review considered how the Double ABCX model accounted for the adjustment of families raising children with ASCs. The research highlighted that the stressors families face, along with the resources, coping strategies and types of appraisals parents hold about those stressors, affect subsequent family adjustment. EE provides a process measure of the emotional tone between a parent and child, which is found to correlate with parental adjustment. This research enhances our understanding about the adjustment of families raising children with ASC because it is clear that the quality of the relationship between parent and child shares important relationships with both child and parent outcomes. Of note, in research in families with children with behaviour problems, EE was found to mediate the impact of maternal depression on the level of child behaviour problems (Bolton et al., 2003). If EE is a mediator of the relationship between child stressors and parental adjustment, then intervention studies that directly aim to reduce EE may subsequently reduce stress and facilitate adjustment. Furthermore, it is possible that mothers high in criticism might engage in negative interactions with their child; this may contribute to and maintain child problem behaviours (Psychogiou et al., 2007). Interventions targeted to reduce EE may therefore improve child behaviour problems. However, further research would be required to measure how these changes impact on parental and child adjustment.

The review considered EE alongside the Double ABCX model, which provided a useful way to conceptualise the impact of EE for adjustment, as well as ensuring that the processes between parent and child are included. Based on these conclusions several future research directions are highlighted. Further research is required to better understand how EE relates to parental adjustment in families raising children with ASCs and to explore how this changes over time. To more accurately measure 'family' adjustment, it is clear that the perspectives of all family members, not just mothers, are also required. A key focus for further research is to investigate how EE in families of children with ASCs fits with existing models of family adjustment and, if necessary, to hypothesise an alternative and more appropriate model for this population. These findings may suggest important areas for clinical interventions, which may help to improve outcomes for families in the short- and long-term.

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UNIVERSITY OF SOUTHAMPTON
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Empirical Paper

What role does Expressed Emotion have in the Adjustment Process of Families
raising Children with Autism Spectrum Conditions?

Natalie R. Peace

Applying American Psychological Association (APA) guidelines, prepared for the
submission to Autism.

Abstract

The Double ABCX model of family adjustment (McCubbin & Patterson, 1983) has been widely used to explain how families adjust to various stressors, including parenting a child with an Autism Spectrum Condition (ASC). One criticism of the model is that it fails to account for the quality of the parent-child relationship, which is recognised to be an important factor for both parent and child outcomes (Hooley & Parker, 2006; O'Connor, 2002).

In this study, Expressed Emotion (EE), a measure of the emotional tone between parent and child, is proposed as a useful adjunct to the Double ABCX model; a mediation model that suggests that EE may mediate the relationship between child stressors and parental adjustment is outlined and explored. The data used to test the mediation model was obtained from a sample of 29 primary caregivers of children who had ASC. Primary caregivers completed the Autism-Specific Five Minute Speech Sample (A-FMSS; Daley & Benson, 2008), three measures of child stressors (adaptive behaviour, behaviour problems and ASC severity) and three measures of adjustment (anxiety, depression and family satisfaction).

In support of the adjustment literature child ASC severity significantly predicted primary caregiver anxiety (e.g. Siman-Tov & Kaniel, 2010). However, child behaviour problems and adaptive behaviour were unrelated to the adjustment measures. Regression analyses were conducted to assess the mediating role of EE. These indicated that EE did not have a mediating role in the relationship between ASC severity and primary care-giver anxiety. This result suggests that child ASC severity has a unique association with primary caregiver anxiety independent from the relationship between child ASC severity and parent-child relationship quality.

Introduction

Approximately one in 100 children have a formal diagnosis of Autism Spectrum Condition (ASC; Baird et al., 2006). ASC is a categorical term covering a range of neuro-developmental conditions that feature early onset impairments in social interaction and communication, as well as narrow, repetitive interests and stereotyped behaviours (American Psychiatric Association; APA, 2000). Several conditions fall under the heading of ASC, including Autistic Disorder, Asperger Syndrome, Rett Syndrome and Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS; APA, 2000).

Children with ASC present unique challenges for the family (Altieri & Kluge, 2008) including difficulties in using and interpreting nonverbal social and conversational cues (Ehlers & Gillberg, 1993), problems in social communication and the formation of friendships (Greenspan & Wieder, 1997). Children with ASC may also find changes to routines distressing (Attwood, 2006) and are at risk of significant behaviour problems, such as aggression and self-injury (McClintock, Hall, & Oliver, 2003). Consequently, families may find it difficult to interact and build relationships in conventional ways with their child, and may experience restrictions or disruptions to family activities (Manning, Wainwright, & Bennett, 2010; Norton & Drew, 1994).

Empirical evidence suggests that parenting a child with ASC is associated with high levels of parental stress and mental health problems. Researchers have reported elevated levels of stress (e.g. Davis & Carter, 2008; Dabrowska & Pisula, 2010), depression (Singer, 2006) and anxiety (Hastings, 2003) amongst parents of children with ASC when compared to parents of typically developing (TD) children and those raising children with other developmental or intellectual conditions.

Research investigating why parents of children with ASC experience increased risk of

poorer outcomes has consistently found significant associations between high rates of stress and child behaviour problems, adaptive behaviour and ASC symptom severity (e.g. Davis & Carter, 2008; Ingersol & Hambrick, 2011; Manning et al., 2010; Siman-Tov & Kaniel, 2010). Such high stress is a significant risk factor for increased parental mental health problems and more coercive parent-child interactions (Hastings, Daley, Burns & Beck, 2006; Moes & Frea, 2000). Therefore, understanding the complex relationships between the stressors that parents experience from their child and their subsequent adjustment, is an important area for research to address. This may lead to increased parental and professional awareness of risk factors and facilitate improved outcomes for families.

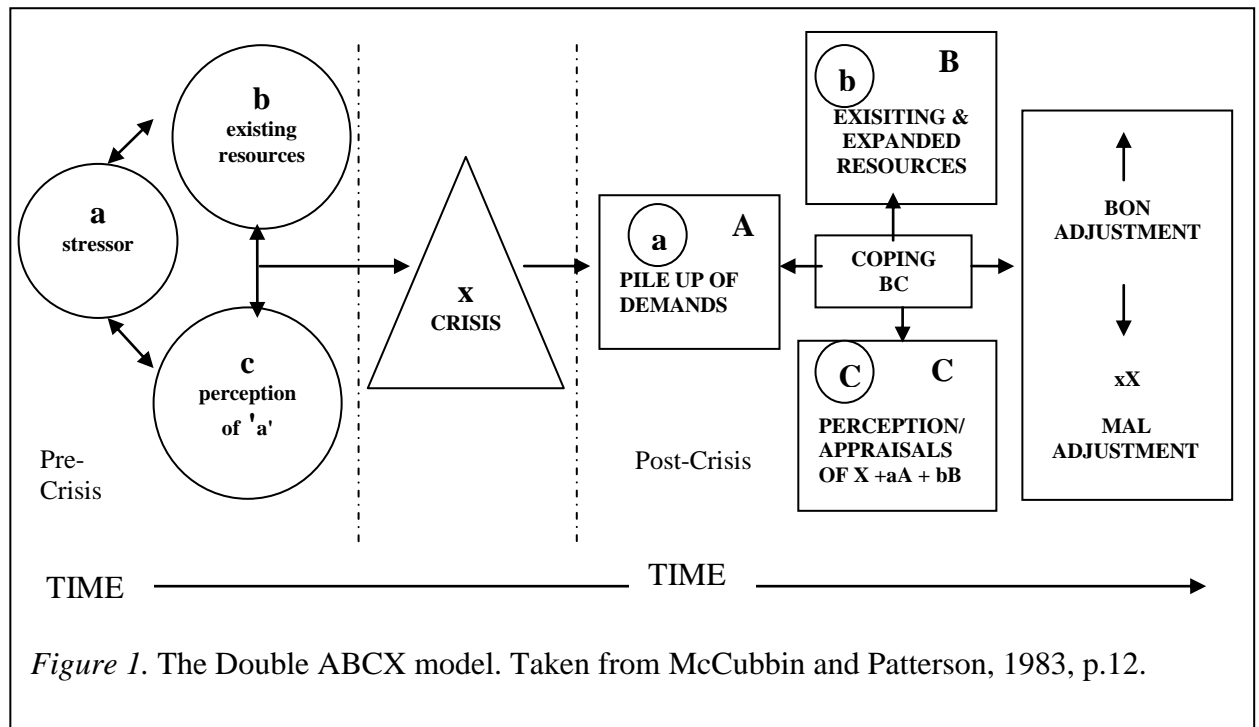
1.1 Family Adjustment

To help explain adjustment outcomes in families, including those who have children with ASC, researchers have drawn upon the Double ABCX model of adjustment (Manning et al., 2010; McCubbin & Patterson, 1983; Saloviita, Itälinne & Leinonen, 2003), which is shown in figure². The model predicts that following the experience of a stressor (aA; such as having a child with ASC), a family's ability to adjust is mediated by the resources that they draw upon (bB; including social support & therapeutic interventions) and the cognitive appraisals that they hold about the stressors they experience (cC; such as seeing life changes and transitions as challenges to be met, or seeing stressors as uncontrollable and damaging; Hill, 1958). The model also incorporates the type of coping style (BC) that the family uses (problem-focused or emotion-focused), as a mediator in the family's ability to adjust.

Adjustment (xX), the conceptual outcome of the model, occurs when a family has

² The symbols of the Double ABCX Model of Adjustment are conventional to the model (McCubbin & Patterson, 1983). A detailed explanation of the terminology can be found in the Literature Review (p.9-10).

reached a balance of demands and capabilities on individual, family and community levels. It is characterised on a continuum from bonadjustment to maladjustment and is measured by family outcomes, such as mental or physical health or family functioning (Lavee, McCubbin, & Patterson, 1985).



The model can be used to assist the understanding of the adjustment process by relating the stressors that families experience to their overall adjustment outcome. This was illustrated by Manning et al. (2010) who used multiple regression to show that more positive family functioning (i.e. increased family cohesion and expressiveness, and reduced conflict in the family system) was predicted by lower severity of child behaviour problems, higher levels of coping through reliance on friends and family, and higher ratings of perceived social status. Moreover, lower levels of parental stress were predicted by the same three variables and by higher levels of cognitive reframing in parents (a form of coping that redefines stressful

events to make them more manageable). Bristol (1987) and Siman-Tov and Kaniel (2010) have also shown that the Double ABCX model can similarly account for parental stress and adjustment in families with children who have ASC. Overall, this literature indicates that parents who hold negative appraisals about caring for their child with ASC, who evaluate the support they have available as unhelpful, and who lack or do not draw effectively on available resources, have poorer adjustment outcomes (e.g. Ingersol & Hambrick, 2011; Manning et al., 2010; Plant & Sanders, 2007).

Despite these findings, the Double ABCX model has not, to date, incorporated the role of the parent-child relationship in accounting for how families adjust to their child with ASC. This omission is significant considering that the relationship between parent and child is a crucial component predictive of a child's adaptive development (Guralnick, 1998; Hooley & Parker, 2006). The parent-child relationship has also been found to be a critical factor for positive parent adjustment (e.g. Khaleque & Rohner, 2002; O'Connor, 2002). Research also indicates that maternal stress directly related to the parent-child relationship is significantly correlated with a child's social-communication deficits; their ability to relate to others, engage in peer relationships and establish social-emotional reciprocity with others (Davis & Carter, 2008). The understanding of the relationship between the stressors that parents experience and their adjustment could be augmented by measuring and characterising the role that the parent-child relationship has in this complex process.

1.2 Expressed Emotion

Expressed Emotion (EE; Brown, Carstairs, & Topping, 1958) is a process variable that allows researchers to explore how the quality of the parent-child

relationship impacts upon both child and parent outcomes. EE is a measure of the emotional tone and relationship within the family; it is characterised by the level of criticism (indicated by feelings of negativity and resentment) and emotional over-involvement (EOI; indicated by self-sacrificing or overprotective behaviour and lack of objectivity) between family members (Magana et al., 1986). Relatives are classified as high in EE if they demonstrate high levels of criticism and/or EOI (Magana et al., 1986). As discussed in the literature review, owing to methodological issues regarding the developmental appropriateness of measuring EE with the Five Minute Speech Sample (FMSS; Magana et al., 1986) in parent-child relationships, a modified version was constructed (Pre-School Five Minute Speech Sample, P-FMSS; Daley, Sonuga-Barke, & Thompson, 2003). Following this, the Autism-Specific Five Minute Speech Sample (A-FMSS; Daley & Benson, 2008) was devised to address developmental concerns regarding the suitability of the previous EE measures in children with ASC. The A-FMSS includes a measure of parental warmth and positive comments and has a lower threshold for scoring critical comments than the FMSS (Daley & Benson, 2008). The A-FMSS aims to measure parent attitudes and the quality of the parent-child relationship in a manner that reflects parenting issues that arise for this particular group (Daley & Benson, 2008).

Thus far, four studies have measured the role of EE in the adjustment of families raising children with ASC. Benson, Daley, Karloff and Robison (2011) administered the A-FMSS to 104 mothers of 6-9 year-old children with ASC. They also employed a range of parent and child measures to assess the associations between EE, maternal adjustment (depression, social support, family cohesion), child behaviour problems and social competence. Most mothers (76.9%) were classified as low EE, 13.5% had moderate scores, and 9.6% were classified as high EE. They

found that EE was significantly and negatively correlated with child social competence, child language use (verbal or non-verbal), maternal educational involvement, maternal network size (informal social support), and family cohesion. No relationships were found between EE and child gender, child age, maternal education, child behaviour problems or maternal depression. Whilst the correlational design of this study did not allow causal implications, it would seem that at least some aspects of family maladjustment are associated with high EE.

Other studies have used the FMSS to measure the relationships between maternal EE, behaviour problems and ASC symptoms in adolescents or adults (aged 11-48.9) with ASC. Greenberg, Seltzer and Hong (2006) found that behaviour problems and ASC severity were significantly positively associated with high levels of maternal criticism. Two years on, Smith, Greenberg, Seltzer and Hong (2008) conducted a follow-up study with the same participants, which included a measure of maternal warmth, praise and relationship quality. They found significant relationships between low levels of behaviour problems and ASC severity, with high maternal warmth, praise, and relationship quality.

A longitudinal study sought to extend knowledge about the causal relationship between parental criticism and child behaviour problems in 118 families with children aged 11.3- 48.2 years with ASC (Baker, Smith, Greenberg, Seltzer & Hong, 2011). At a seven year follow-up, behaviour problems and criticism remained correlated, and changes in criticism predicted levels of child behaviour problems at the end of the study.

The empirical literature discussed emphasizes that both critical and positive family processes are associated with child/adolescent outcomes (e.g. ASC severity and behaviour problems) and family adjustment (e.g. cohesion, social support). The

A-FMSS has the advantage of measuring both these critical and positive dimensions of the parent-child relationship and is therefore considered a useful tool to assess the appraisals that parents hold about their child as a person and the relationship that they have with them. Moreover, further research using the A-FMSS with families of children with ASC is required to advance our understanding of the role that EE has in child and parental adjustment. These findings may also have important implications for clinical intervention. For example, if severity of child behaviour problems or ASC symptoms were found to lead to high EE, intervening to reduce such problems should have a positive impact upon EE, and therefore adjustment.

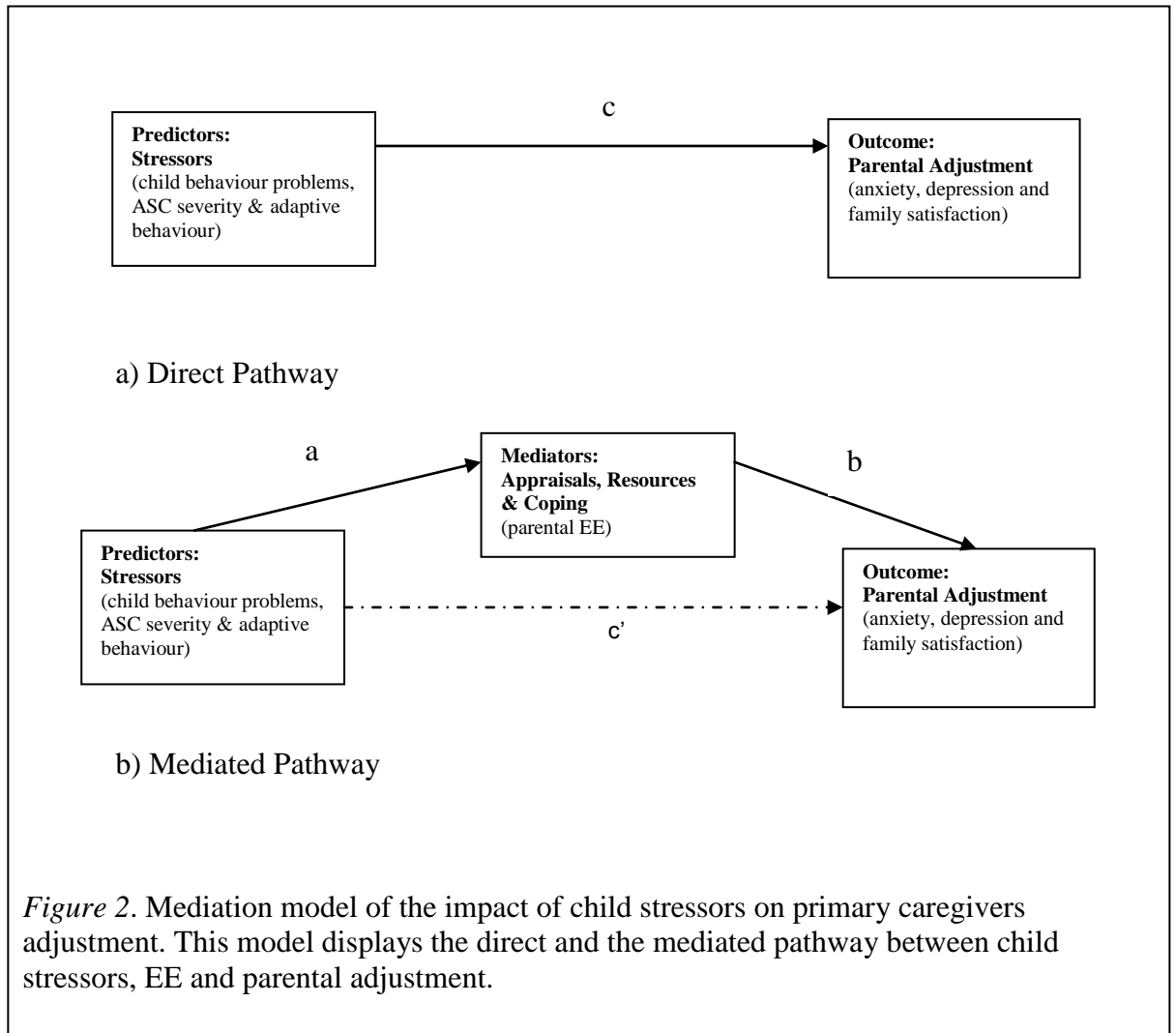
1.3 Understanding EE within the Double ABCX Model

Considering how EE fits within the Double ABCX model may aid our understanding of the role it plays in this adjustment process. In this study the two major dimensions of EE (criticism and EOI) are related to the factors specified in the Double ABCX model (resources, appraisals and coping styles) in the following way. Firstly, in EE terminology, criticism refers to critical attitudes the parent makes about the child (Magana et al., 1986). Parents with these attitudes show unambiguous dislike, disapproval, or resentment of their child's behaviour or personality. Within the Double ABCX model's definition of appraisals, the meaning the family gives to the stressor and the pile up of demands are both included (McCubbin & Patterson, 1983). Thus, criticism may be viewed as a measure of the negative appraisals that the parent makes about the child and their relationship. Secondly, EOI refers to marked overprotection, self-sacrificing behaviours or excessive expressions of feelings for the child (Magana et al., 1986). This dimension may relate to the coping style of parents. In the Double ABCX model, coping refers to how families attempt to avoid stressors,

manage the challenges of the situation, and maintain the family system's integrity and morale (McCubbin & Patterson, 1983). It is possible that emotionally overinvolved parents are trying to manage feelings of anxiety and stress in response to their child's behaviour and symptoms (Carr, 2006; Dossetor, Nicol, Stretch, & Rajkhowa, 1994).

1.4 Current Study

In order to amalgamate the Double ABCX model research with the EE literature, a mediation model is proposed, which conceptualises parental EE as the coping, appraisal and resources components of the Double ABCX model (Figure 2). This model aims to increase understandings about the potential mediating role of the parent-child relationship in families' adjustment. The purpose of this study was to explore the validity of the assumptions inherent in the mediation model and to test the predictions it makes regarding the impact of stressors upon adjustment within families of children with ASC. Although the relationship between child stressors and parental adjustment is known to be bidirectional (Lecavalier, Leone, & Wiltz, 2006), this mediation model focuses exclusively on the impact of child stressors on parent adjustment. This is similar to previous ASC research using the Double ABCX model which has traditionally explored how child factors impact upon parental adjustment (e.g. Manning et al., 2010).



1.4.1. Study Predictions

Hypothesis one. The study hypothesised that there will be a positive relationship between the stressors that families experience and primary caregiver adjustment (cf. Davis & Carter, 2008; Ingersol & Hambrick, 2011; Manning et al., 2010; McCubbin & Patterson, 1983).

Hypothesis two. Increased severity of child stressors (specifically ASC severity, adaptive behaviour and behaviour problems) will be negatively correlated with high parental warmth and relationship quality, and positively correlated with

criticism and EOI (cf. Greenberg et al., 2006; Plant & Sanders, 2007; Smith et al., 2008).

Hypothesis three. Warmth and relationship quality will be negatively correlated with the parental adjustment measures depression and anxiety, and positively correlated with satisfaction. Additionally, criticism and EOI will be positively correlated with anxiety and depression and negatively correlated with satisfaction (cf. Baker, Heller & Henker, 2000; Lam, Giles & Lavender, 2003).

Hypothesis four. The relationship between child stressors and family adjustment will be mediated by EE.

Method

2.1 Participants

The sample consisted of 29 primary caregivers (27 mothers and two fathers) and 28 boys and one girl (M age = 4.7, SD = 0.9) who had received a diagnosis of an ASC by an appropriately qualified professional. A demographic questionnaire was administered to parents to assess participant gender, age, marital status, employment status and child gender, chronological age, diagnostic status and age of diagnosis. Table 1 provides demographic information collected from the primary caregivers.

Table 1.

Demographic Characteristics of Primary Caregivers

Demographic	Primary caregivers (N=29)
Gender (n)	
Female	27
Male	2
Mean age (SD)	38.3 (4.96)
Marital status (%)	
Married	86.3
Cohabiting	3.4
Single	10.3
Employment (%)	
Full time parent	53.2
Paid full time work	24.1
Paid part time work	14.8
Self-employed	6.9
Unemployed	1

2.2 Materials

2.2.1 Child Stressor Measures

Measures of child ASC severity, adaptive behaviour and behaviour problems were chosen in line with previous research (e.g. Davis & Carter, 2008; Ingersol & Hambrick, 2011; Manning et al., 2010; Siman-Tov & Kaniel, 2010), which has highlighted these variables as key parental stressors.

Social Communication Questionnaire (SCQ; Rutter, Bailey, & Lord, 2003). The SCQ is a 40 item, parent-report screening measure that assesses symptoms associated with ASC. The current autoscore version of the SCQ was used; this examines behaviour that occurred during the most recent 3-month period. This form is particularly useful in understanding everyday experiences and evaluating interventions (Rutter et al., 2003). The total score ranges from 0-39 for those with language and 0-33 for those without. A cut off score of 15 is used to indicate the

possible presence of an ASC (Berument, Rutter, Lord, Pickles, & Bailey, 1999). The tool is a valid measure of ASC and discriminates between those with ASC and those without (sensitivity 0.96, specificity 0.80; Chandler et al., 2007). In the present sample, Cronbach's alpha for the scale was high (.85).

Vineland Adaptive Behaviour Scale-II (VABS-II; Sparrow, Cicchetti & Balla, 2005). The 297 semi-structured interview form of the VABS-II was used, which provide an assessment of adaptive behaviour across four domains: socialisation, communication, daily living skills and motor skills. The VABS-II composite score was used in the present analysis as an overall index of the child's adaptive skills. This instrument has high reliability and validity (Sparrow et al., 2005). The internal consistency for all sub-domains for children aged 3 to 5 years old is good (Cronbach's $\alpha = .69-.97$; Sparrow et al., 2005) and test-retest reliability for all scales is high ($r = .73-.94$; Sparrow et al., 2005). The VABS-II also has good reliability ($r = .78$) when conducted over the telephone (Beck, Daley, Hastings & Stevenson, 2004). In the present sample, Cronbach's alpha was satisfactory (.75).

Developmental Behaviour Checklist (DBC; Einfield & Tonge, 2002). The DBC is used to assess a range of behavioural and emotional disturbances in children with a disability. The DBC-P (Primary Carer-Version) was completed, which is a 96-item questionnaire. Each item is given a rating of 0, 1 or 2 depending on the carer's perception of the degree of presence of the particular behaviour over the last 6 months. The Total Behaviour Problems Score (TBPS) indicated an overall measure of behaviour problems. The DBC-P has high inter-rater reliability (ICC=.80) and high test-retest reliability ($r = .83$; Einfield & Tonge, 1995). The DBC-P also has high levels of internal consistency (Cronbach's $\alpha = .94$) and concurrent validity ($Kappa = .70$; Einfield & Tonge, 1995). In the present study, Cronbach's alpha

coefficients were also high (.93). TBPS scores of 46 and above are indicative of clinical levels of emotional and behaviour problems (Einfield & Tonge, 1995).

2.2.2 Expressed Emotion Measure

Measures of EE were used to index the proposed mediators (appraisals, resources and coping) that derived from the Double ABCX model and the adjustment literature.

The Autism-Specific Five Minute Speech Sample (A-FMSS; Daley & Benson, 2008). The A-FMSS aims to identify the attitudes and feelings that a family member has about the child with ASC, as well as the perceptions of the quality of the relationship. The reliability of measuring EE over the telephone was reported by Beck et al. (2004); in a comparison of parental EE assessed over the telephone and face to face, an agreement level of 100% was found. In the present study, a trained rater coded the sample according to the coding manual of Daley and Benson (2008). This focused on the content and the tone of the speech sample. The A-FMSS consists of six dimensions and was rated by the coder for initial statement (IS), warmth (WAR), relationship quality (REL), EOI, critical comments (CC) and positive comments (PC) (see Appendix B for detailed description).

High EE was assigned if the speech sample contained at least one negative global scale (IS, WAR or EOI) and a higher number of CCs than PCs. A rating of moderate or borderline EE was assigned if the speech sample contained at least one negative global scale on IS, WAR or REL or more CCs than PCs. A rating of low EE was assigned in the absence of either high or borderline EE. For data analysis purposes the standard instructions for scoring EE were followed (Magana et al., 1986); negative initial statement, negative relationship quality and criticism were collapsed into one

variable - criticism (CRIT). This produced a continuous variable with greater variability. Additionally, the EE data codes of warmth and relationship quality, which were based on three category codes, were re-coded into dichotomous variables (warmth as high or moderate/low and relationship quality as positive or neutral/negative) for the regression analysis. The CRIT code along with the warmth and relationship quality scales were used for the mediation analysis.

The A-FMSS is a reliable and valid measure of EE in parents of school-age children with ASC (Benson et al., 2011); all six scales had good to excellent inter-rater reliability and code re-code reliability (Cronbach's $\alpha = 0.77-1$). The convergent validity is acceptable when compared to established child, parent and family measures (Benson et al., 2011). However, the authors of the scale acknowledged that further assessment is required to further explore the validity of the scale (Daley & Benson, 2008). An inter-rater reliability check was carried out for 10 speech samples in this study with one of the authors of the scale. Additionally, the 10 samples were rated twice by the primary coder with approximately six weeks between the two ratings. This indicated that all scales had acceptable inter-rater reliability and code-recode reliability (Table 2).

Table 2.

Reliability of EE Components as Measured Using the A-FMSS (n = 10).

Scale	Code re-code	Inter-rater reliability	
	ICC	ICC	R
Overall high/low EE	1	1	1
Initial Statement	1	0.82	0.77
Warmth	1	0.78	0.74
EOI	1	1	1
Relationship quality	1	0.86	0.81
Critical comments	.99	0.71	0.70
Positive comments	.92	0.68	0.65

Note. ICC: Intra-class correlation

2.2.3 Adjustment Measures

Parental depression, anxiety and family satisfaction were used as measures of adjustment, also based upon previous studies of parents with children with ASC (e.g. Hastings & Brown, 2002; McCubbin and Patterson, 1983; Siman-Tov & Kaniel, 2010).

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983).

The HADS is a 14 item self-report measure that assesses anxiety and depression in adults. Total scores for anxiety and depression is achieved by summing the scores of each subscale. The total score for each subscale is 21. For both scales a score of 0-7 is in the normal range, a score of 8-10 is indicative of borderline difficulties and scores of 11 and above indicate probable presence of anxiety or depression (Snaith, 2003). In the present study, Cronbach's alpha coefficients for anxiety and depression were high (.83 and .78 respectively).

FACES-IV (Olson, 2009). The FACES-IV family satisfaction scale was used to measure caregiver family satisfaction levels, a variable that is indicative of family

adjustment (McCubbin & Patterson, 1983). This is a 10 item scale that was scored on a five point Likert scale with responses ranging from “very dissatisfied” to “extremely satisfied”. Scores of 40-50 indicate that family members are satisfied with most aspects of their family, scores between 36-39 indicate that family members are somewhat satisfied and enjoy some aspects of their family, and scores below 35 indicate that the family member is somewhat dissatisfied and has some concerns about their family (Olson, 2009). The scale is found to have excellent reliability ($\alpha = .93$; Olson, Gorall & Tiesel, 2007). In the present study, Cronbach's alpha coefficients were also high (.89).

2.3 Procedure

Ethical and research governance approval to conduct the study was received from the School of Psychology Research Ethics Committee at the University of Southampton (Appendix D & E). A study advertisement (Appendix F) was distributed amongst parent support groups, charity organisations, early year provisions, nurseries and Applied Behaviour Analysis (ABA) providers across the country. For example, the study was advertised on the National Autistic Society research pages and in the Hampshire, Kent, Surrey, Portsmouth Autistic Society newsletters and on several online ASC forums, for example ABA-UK and on the Facebook pages of several support groups. Five local ASC support groups were also visited to disseminate the details of the study. Interested families could then make contact directly with the researcher if they wished to take part or to gain additional information. When this occurred, verbal consent was obtained to send the information sheet and formal consent form (Appendix G & H) to the family, with a request to return the form and to provide proof of their child's diagnosis. This method allowed the recruitment of 21

families but, because it is not possible to tell how many people saw the advert, the take up rate cannot be established.

Families who had completed a similar study utilising the A-FMSS and who had indicated on their consent form that they were happy to be approached by other researchers were also contacted³. The purpose of the present study was explained and if verbal consent and consent for their speech sample to be used was given, then the information sheet and consent form were sent. Eight families participated via this method.

Once the consent forms and proof of diagnosis letter were returned, the primary caregiver was contacted by telephone to complete the measures, which were presented in the following order: the demographic questionnaire, the A-FMSS, the SCQ and the VABS-II. The A-FMSS was administered by reading the following instructions: "I'd like to hear your thoughts about (child's name) in your own words and without my interrupting you with any questions or comments. When I ask you to begin, I would like you to speak for 5 minutes, telling me what kind of person (child's name) is and how the two of you have got along together over the last 12 months. After you have begun to speak, I prefer not to answer any questions. Are there any questions you would like to ask before we begin?" (Daley & Benson, 2008, p. 2). Both the instructions and interview were audio-recorded. The participant was told when the 5 minutes were over. The SCQ was then administered in a yes/no response format in less than 10 minutes. Finally, the VABS-II was administered (the length of time depended on when the discontinuation criteria was met; between 20-40 minutes). Questionnaire packs including the individual adult measures and the child behaviour

³ A study was concurrently being conducted by another student researcher that used the A-FMSS with parents of children with ASC. These parents had indicated that they were interested in participating in a parent directed, local authority run, intervention called Early Bird, but had not yet begun the intervention.

problems measure were then sent, along with a pre-paid envelope for their return. If the questionnaires were not returned after 1 month, reminder letters were sent (Appendix I). Once the questionnaires were returned participants were sent a debrief letter (Appendix J).

2.4 Statistical Analysis

All analyses were conducted using the Statistical Package for the Social Sciences (SPSS version 19.0). For the whole sample, missing data for measures that were completed was minimal and mean substitutions were employed for the four missing data points from the DBC questionnaires. An alpha level of .05 was used for all statistical tests⁴. Relationships between variables that were normally distributed were assessed using Pearson correlation analyses and data that violated normality assumptions were assessed using Spearman's correlations. The hypothesised mediation model was tested using a series of simple and multiple regression analyses (Baron & Kenny, 1986; Kenny, 2011). As the model included three predictors (ASC severity, adaptive behaviour and behaviour problems), the study followed recommendations for 10 cases of data per predictor and as such required 30 participants to best test a reliable regression model (Field, 2009).

Results

The means, standard deviations, ranges and normative data for the predictor (independent) and outcome (dependent) variables, including total scores and subscales

⁴ The p value was not adjusted in the current study because to test the mediation model in a small sample it was necessary to retain the $p < .05$ significance value.

scores for the measures of child stressors and parental adjustment, are displayed in

Table 3.

Table 3.

Descriptive Statistics for Research Variables (N=29)

Research Variable	Subscale	<i>M</i>	<i>SD</i>	Range	Normative data or clinical cut off score (number of participants above clinical cut-off/below norms)
ASC Severity	-	19.79	7.02	6-31	15 ^a (22)
Behaviour Problems	Disruptive	16.00	8.00	3-34	13.51 ^b (19)
	Self-absorbed	23.67	10.50	8-54	16.03 (21)
	Communication	8.96	4.55	1-20	5.26 (22)
	Anxiety	7.78	3.45	1-14	4.80 (23)
	Social Relating	5.81	2.32	2-10	3.93 (22)
	Total Score	62.00	22.45	27-117	43.83 (21)
Adaptive Behaviour	Communication	74.56	19.46	40-110	68.4 ^c (11)
	Daily Living	72.34	18.09	43-115	67.8 (14)
	Socialisation	70.93	15.37	48-112	64.4 (11)
	Motor	78.65	18.86	54-127	81.2 (15)
	VABS Composite	71.82	15.49	47-111	65.7 (12)
Anxiety and	Anxiety	8.82	4.67	2-19	11-21 ^d (9)
Depression	Depression	5.07	3.81	0-13	11-21 (3)
Parental Satisfaction	-	35.25	7.71	17-50	37.9 ^e (16)

Notes. ^a A score of 15 or more indicates possible presence of an ASC (Rutter et al., 2003). ^bDBC standardised norms based on a community sample of children with ID under 9 years of age (Einfield & Tonge, 1995). ^cVABS-II standard mean scores for individuals aged 3-16 with a diagnosis of ASC (Sparrow et al., 2005). ^dFor the HADS scores of 11-21 are in clinical range (Snaith, 2003). ^eFor the Family Satisfaction measure the mean score in the normative sample was 37.9 (Olson, 2009).

3.1. Preliminary Statistics

The initial stage of the data analysis was to determine whether the data from the final sample ($N=29$) conformed to the assumptions of normality. A number of preliminary analyses were conducted using mean scores for both subscales and total scores on all measures. Measures of skewness and kurtosis, and a one-sample Kolomogorov-Smirnov test demonstrated normal distributions for all measures and subscales, with the exception of the CRIT dimension of EE, $D(29) = .38, p = .00$. The EE dimensions of relationship quality and warmth were coded as dichotomous variables and were therefore not tested for normality. EOI was not included in the analysis because there was no variation in the EOI code since all relatives displayed low EOI.

3.2. Descriptive Statistics

Exploration of the descriptive statistics for the SCQ showed that overall primary caregivers reported that their children had symptoms that were beyond the cut-off score for an ASC diagnosis ($M = 19.79, SD = 7.02$). The VABS-II Composite score for this sample of children was 71.82 ($SD = 15.49$); this is slightly higher than the mean score reported for children with ASC ($M = 65.7, SD = 13.3$; Sparrow et al. 2005). The mean TBPS on the DBC ($M = 62, SD = 22.45$), and all subdomain scores were indicative of clinical levels of emotional and behaviour problems when compared to the standardised norms (Einfield & Tonge, 1995).

Primary caregivers reported low levels of depression ($M = 5.07, SD = 3.81$) indicating that overall the sample was not experiencing clinical levels of depression. The mean scores for anxiety ($M = 8.82, SD = 4.67$) were indicative of borderline levels of anxiety according to the clinical cut off scores stipulated by Snaith (2003).

Closer analysis indicated that nine primary caregivers' anxiety scores and three primary caregivers' depression scores were in the clinical range.

Descriptive statistics for the FACES-IV family satisfaction scale indicated that nine primary caregivers were 'mostly satisfied' with their family. However, mean scores for primary caregiver satisfaction levels ($M = 35.25$, $SD = 7.71$) indicated that overall primary caregivers were dissatisfied with their family and had some concerns about their family's functioning (Olson, 2009).

The distribution of the EE dimensions for primary caregivers is shown in Table 4. Exploration of the EE data indicated that one primary caregiver was borderline for EE; all other primary caregivers were low in EE.

Table 4.

Distribution of the EE scores for Primary Caregivers

EE Scale	Primary carers (N=29)
	N (%)
Initial Statement	
Positive	14 (48.3%)
Neutral	14 (48.3%)
Negative	1 (3.4%)
Warmth	
High	20 (69%)
Moderate	8 (27.6%)
Low	1 (3.4%)
Relationship	
Positive	18 (62.1%)
Neutral	11 (37.9%)
Negative	0
Number of Critical Comments	
M (SD)	.96 (1.8)
Range	0-7
Number of Positive Comments	
M (SD)	4.31 (2.7)
Range	0-9
AFMSS-EE	
High	0
Borderline	1 (3.4%)
Low	28 (96.6%)

3.3 Correlational Analyses

Bivariate correlations among the study's variables were explored and are presented in Table 5. Hypothesis one predicted that child stressor variables (ASC severity, behaviour problems and adaptive behaviour) would be positively associated with primary caregiver adjustment variables (anxiety, depression and satisfaction). The findings demonstrate that ASC severity was significantly positively correlated with anxiety ($r = .39, p = .02$), but not with depression ($r = .16, p = .20$) or satisfaction ($r = .11, p = .28$). Contrary to predictions, child behaviour problems and adaptive

behaviour were unrelated to any of the adjustment measures. Therefore, *hypothesis one was only partially supported* as child ASC Severity was positively correlated with primary caregiver anxiety.

Hypothesis two predicted that child stressor variables (ASC severity, behaviour problems and adaptive behaviour) would be significantly negatively correlated with the EE dimensions of warmth and relationship quality, and positively correlated with CRIT. Contrary to predictions, child ASC severity was significantly *positively* correlated with parent-child relationship quality ($r = .38, p = .02$). Child ASC severity was unrelated to the other EE dimensions. Child behaviour problems were unrelated to all EE dimensions, although child adaptive behaviour was marginally but not significantly, negatively correlated with parent-child relationship quality ($r = -.27, p = .07$). Consequently, *hypothesis two was not supported*, as the child stressor variables were not significantly correlated with the EE variables in the direction predicted.

Hypothesis three predicted that the EE dimensions (warmth, relationship quality and CRIT) would be significantly correlated with the primary caregiver adjustment variables. The results indicated that the EE dimension warmth was significantly negatively associated with primary caregiver anxiety ($r = -.53, p = .00$) and depression ($r = -.51, p = .00$), and significantly positively correlated with satisfaction ($r = -.39, p = .02$). Parent-child relationship quality was marginally positively associated with primary caregiver anxiety ($r = .28, p = .07$) and depression ($r = .29, p = .06$), although neither relationship was statistically significant. CRIT score was unrelated to all measures of primary caregiver adjustment. Therefore, *hypothesis three was partially supported*, in that warmth, but not CRIT or relationship quality, was significantly associated with adjustment.

Table 5.
Correlations and Significance Values Among Study Variables

	Variable	1	2	3	4	5	6	7	8	9
Independent Variables	1. ASC Severity	-								
	2. Adaptive Behaviour	-.58**	-							
	3. Behaviour Problems	.36*	-.17	-						
Dependent Variables	4. Primary carer Anxiety	.41**	.01	.13	-					
	5. Primary carer Depression	.14	.04	.21	.75***	-				
	6. Family Satisfaction	.09	-.07	.11	-.17	-.35*	-			
Mediator	7. CRIT	.02	-.18	.21	.05	.16	-.16	-		
	8. Warmth	.00	-.18	-.02	-.53***	-.51***	.39*	-.19	-	
	9. Relationship Quality	.38*	-.27	-.13	.28	.29	.13	-.21	.24	-

Note. All correlations were calculated with Pearson's r with the exception of CRIT, warmth and relationship quality, which were calculated with Spearmans rho because they were not normally distributed.

* $p < .05$. ** $p < .01$. *** $p < .001$.

3.4 Mediation Analyses

Hypothesis four predicted that EE would mediate the relationship between child stressor variables and primary caregiver adjustment variables. For this analysis, the variables ASC severity, relationship quality and primary caregiver anxiety were entered into the regression model because they were found to be significantly (or marginally) correlated. Therefore, a simple mediation model was tested to determine whether the EE dimension relationship quality mediated the relationship between child ASC severity and primary caregiver anxiety. A series of regression analyses were performed in accordance with the causal steps method proposed by Baron and Kenny (1986). According to this method, four steps, which are typically tested using a series of regressions, must be satisfied in order to establish mediation:

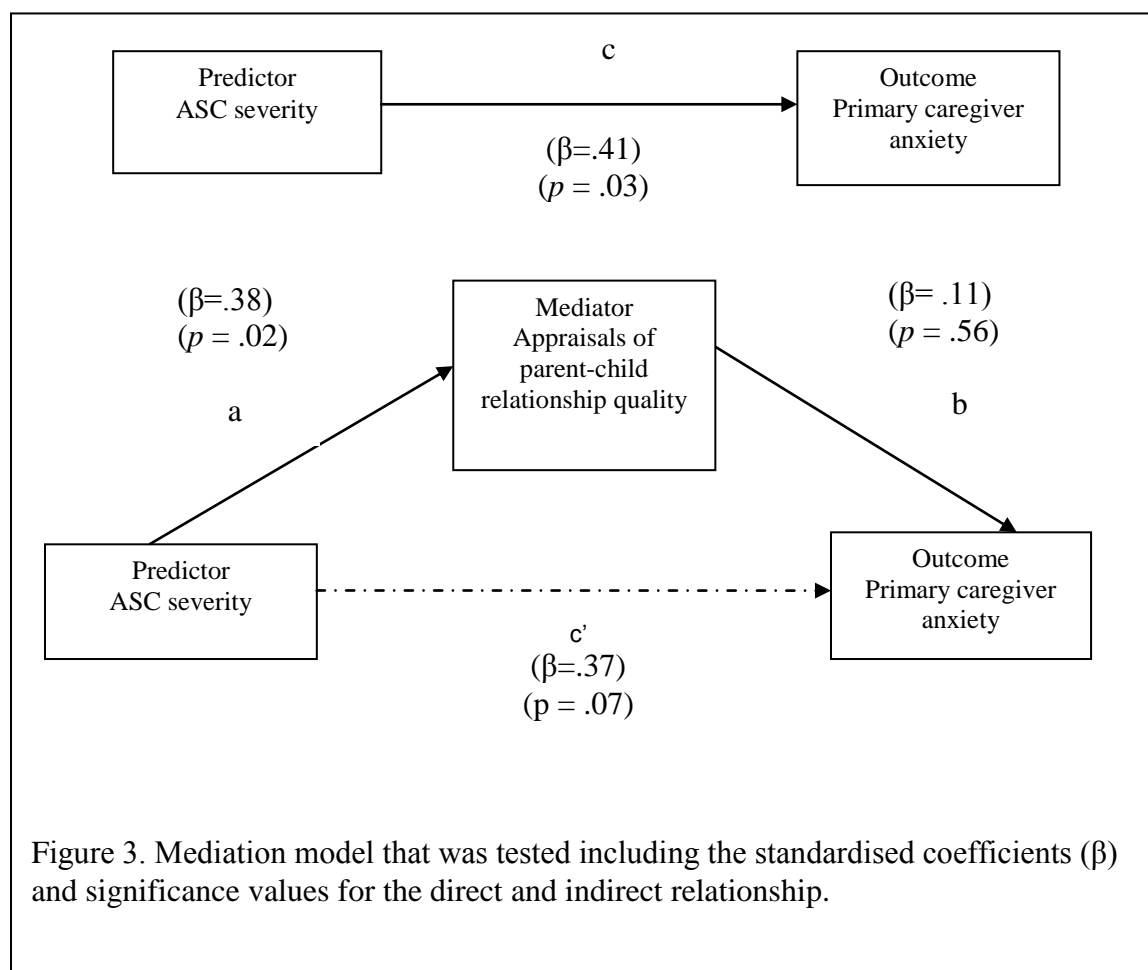
Step 1: The predictor variable must significantly affect the outcome variable in the absence of the mediator (path c, total effect). Therefore, the presence of child ASC severity must significantly predict anxiety in the absence of a mediator (path c, total effect).

Step 2: The predictor variable must significantly affect the mediator. Therefore, the child ASC severity must significantly predict parent-child relationship quality (path a, total effect).

Step 3: The mediator must significantly affect the outcome variable whilst controlling for the predictor variable. Therefore, parent-child relationship quality must significantly predict anxiety (path b, total effect).

Step 4: The effect of the predictor variable on the outcome variable (path c) must be reduced upon the addition of the mediator to the model. To establish complete mediation, the predictor should no longer have an effect on the outcome (i.e., path c' should not be significantly different from zero). Therefore, child ASC severity must not

remain a significant predictor of anxiety when parent-child relationship quality is entered into the equation as an independent variable (path c', direct effect). The mediation model is displayed in Figure 3.



A simple regression analysis showed that child ASC severity significantly predicted primary caregiver anxiety ($\beta = .41, p = .03$) suggesting that Step 1 was met (path c was significant). Step 2 was marginally met because child ASC severity predicted parent-child relationship quality ($\beta = .38, p = .02$; path a was marginally significant). To test step 3, a multiple regression was performed using the enter method. The relationship between relationship quality and anxiety was not significant whilst

controlling for ASC severity ($\beta = .11, p = .56$). Therefore, path b was not significant.

This third regression also provided an estimate of path c', which analysed the relationship between child ASC severity and anxiety whilst controlling for relationship quality. This coefficient was marginally significant ($\beta = .37, p = .07$) although there was a reduction of the standardised beta coefficient of .41 ($B = .27, SE = .12, p = .03$) to .37 ($B = .24, SE = .13, p = .07$) when the mediator was added to the model. Therefore, relationship quality did not mediate the relationship between child ASC severity and anxiety (despite being positively associated with both), which suggests that child ASC severity has a unique association with primary caregiver anxiety independent from the relationship between child ASC severity and parent-child relationship quality.

Consequently, *hypothesis four is rejected*. Table 6 displays the results of the regression analysis and Figure 3 displays the mediation model.

Table 6.

Regression Analyses to Test Mediation (N=29)

Regressions to test mediation model	B	SE B	t	95% CI		β	R ₂	P
Regression 1 (Path c)								
Outcome: Primary caregiver Anxiety								
Predictor: ASC Severity	.27	.12	2.3	.03	.51	.41	.17	.03
Regression 2 (Path a)								
Outcome: Relationship Quality								
Predictor: ASC Severity	.03	.01	1.9	-.00	.05	.38	.13	.02
Regression 3 (Paths b and c')								
Outcome: Primary caregiver Anxiety								
Mediator: Relationship Quality (Path b)	1.0	1.8	.57	-2.7	4.8	.11		.56
Predictor: ASC Severity (Path c')	.24	.13	1.9	-.02	.50	.37	.18	.07
Note: CI = Confidence Interval, B = unstandardised beta weights, β = standardised beta weights.								

Discussion

The Double ABCX model of adjustment predicts that the stressors families experience, the appraisals they make and the resources that they have available to cope with these stressors, all impact on their subsequent adjustment (McCubbin & Patterson, 1983). However, to date, this model has not included a measure of the parent-child relationship, something that is important for family adjustment (Khaleque & Rohner, 2002; O'Connor, 2002). This study aimed to address this gap in the literature by including a measure of EE in the Double ABCX model, to understand the potential mediating role of the parent-child relationship in families' adjustment. The discussion summarises the empirical findings of this study in relation to the four research hypotheses in turn and considers any clinical implications in relation to the Double ABCX model. These findings will also be compared and contrasted with the existing empirical literature on family adjustment. Limitations of the current study and how they may have impacted upon the findings will also be discussed.

4.1 The Impact of the Severity of Stressors on Caregiver Adjustment

The relationships between variables typically considered in the literature as child stressors (ASC severity, adaptive behaviour and behaviour problems) and those variables that typically index family adjustment (caregiver anxiety, caregiver depression, and a measure of family satisfaction) were explored. It was predicted that the severity of child stressors would be associated with the variation in the adjustment measures (McCubbin & Patterson, 1983). The results provided mixed support for this prediction because ASC severity was not correlated with caregiver depression or satisfaction, although it was found to be positively related to primary caregiver anxiety. This latter finding was consistent with the previous research of Davis and Carter (2008) and Siman-

Tov and Kaniel (2010) who found relationships between the severity of childhood ASC and parental stress. Whilst stress was not measured in the current study, previous research found that it was correlated with anxiety (e.g. Hastings et al. 2006). It was not possible to ascertain which ASC symptoms may have contributed to this association because the measure that was used does not produce subscale scores relating to the various dimensions of ASC symptoms (e.g. social-communication, restricted and repetitive interests). Previous research indicated that deficits in social relatedness and social interaction skills, rather than restricted and repetitive interests, contributed to increased parental stress (Davis & Carter, 2008).

In the present study, child adaptive behaviour was not significantly associated with the adjustment measures, suggesting that adaptive skills did not negatively affect caregivers' adjustment to parenting. Similarly, Hastings, Kovshoff, Ward, et al. (2005) and Lecavalier et al. (2006) also found that childhood adaptive behaviour was unrelated to caregiver stress. This result contrasts with those of Plant and Sanders (2007), who found a significant relationship between adaptive behaviour and caregiver stress. The latter study, however, used a considerably larger sample of children with a range of developmental conditions, including some who did not have an ASC. This variation amongst the samples creates difficulties in terms of making meaningful comparisons with the current study because they reflect different clinical populations.

Finally, the stressor variable of childhood behaviour problems was not correlated with the caregiver adjustment measures in the current study, indicating that difficult behaviours exhibited by children, did not negatively impact on caregiver mental health or level of satisfaction. This was inconsistent with both the study predictions and with a number of previous research findings including those of Lecavalier et al. (2006) who investigated whether child behaviour problems predicted parental maladjustment over

time; they found that child behaviour problems predicted parental stress. It is noteworthy that several differences existed between the studies, which may help to explain the differing results. Lecavalier et al. (2006) monitored a sample of 293 children between 3-18 years, although all were receiving education services for difficulties associated with ASC, they were unable to fully ascertain that all met diagnostic criteria for the condition. In contrast, the present study used a much smaller sample, children were younger (3.10 to 5.9 years) and, although they had a confirmed ASC diagnosis, their educational input varied.

In summary, most of the expected relationships between childhood stressors and family adjustment were not found; only ASC severity was significantly associated with caregiver anxiety.

4.2 The Relationships between Stressors and EE

Relationships between child stressor variables (behaviour problems, adaptive behaviour and ASC severity) and a potential mediator of parent outcome, EE (CRIT, warmth and relationship quality) were also tested in this model. ASC severity was unrelated to the EE dimensions of warmth and CRIT, suggesting that caregiver warmth and amount of criticism expressed was not affected by the severity of their child's ASC symptoms. Likewise, Orsmond, Seltzer, Greenberg and Krauss (2006) were unable to identify relationships between child ASC symptoms and criticism or warmth.

Significant relationships were found between ASC severity and relationship quality; caregivers who had positive relationships with their children were more likely to have children with more severe ASC symptoms than caregivers who had relationships that were negative or neutral. This may reflect how caregivers redefine the types of

relationships that they expect to have with their child who has an ASC (Tunali & Power, 2002). Moreover, caregivers may then develop alternative means of achieving such satisfactory relationships with their child (Tunali & Power, 2002). It is possible that when faced with more severe ASC symptoms in their child, caregivers reappraise what type of relationship they would like with their child and then make behavioural changes to achieve it

Contrary to predictions of the mediation model, adaptive behaviour and behaviour problems were unrelated to all EE dimensions. This finding was surprising given that the empirical literature with children with ASC typically indicates that child stressors are related to caregiver warmth, relationship quality and in some instances, criticism (e.g. Greenberg et al. 2006). Benson et al. (2011) found that behaviour problems were unrelated to criticism but in contrast were related to warmth. Benson and colleagues (2011) reported that the mothers in their study did not consider their child to be responsible for his or her symptoms and behaviour. According to Attribution Theory (Weiner, 1985), if one person judges another's behaviour to be controlled by external factors, they will have more positive emotions towards that person, and hence display less criticism. Although such attributions were not measured in the current study this finding may partly explain the absence of the relationship between child behaviour problems and CRIT. Assessing the relationship between behaviour problems, CRIT and parental attributions may be a useful adjunct to our understanding of the role of EE in the adjustment process.

In summary, ASC severity was the only child stressor variable associated with an EE dimension, relationship quality. For this sample, the types of behaviours

associated with an ASC diagnosis, and not general adaptive level or level of aggression, were related to caregivers EE.

4.3 The Relationship between EE and Adjustment

Caregivers whose relationship with their child was high in warmth had lower levels of anxiety and depression, and were more satisfied with their family's functioning. Bolton et al., (2003) similarly found that maternal depression was negatively correlated with warmth in mothers of children with behaviour problems and Lam et al., (2003) found a significant relationship between warmth and stress in mothers of children with an ID. Likewise, Benson et al. (2011) found that warmth was significantly correlated with other maternal measures such as maternal support and family cohesion in mothers of children with ASC. The current study supports the findings in the literature that the intensity of sentiment expressed by caregivers towards their children is related to the formers' mental health.

As predicted parent-child relationship quality was associated with primary caregiver anxiety and depression. In contrast, CRIT was unrelated to any measures of primary caregiver adjustment. Similarly, in previous research with parents of children with ASC, relationship quality and criticism were unrelated to caregiver anxiety and depression (Benson et al., 2011; Hastings et al., 2006). The results for CRIT do not, however, support the prediction of the Double ABCX model (McCubbin & Patterson, 1983) that parental appraisals (positive and negative) about the stressors families are experiencing correlate with adjustment outcomes. To summarise, neither the level of parental criticism expressed about the child's behaviour and personality, nor the quality of the relationship between the parent and child was significantly associated with caregivers' anxiety, depression or level of family satisfaction.

This relationship between EE and parent adjustment observed in the current study contrasts with that reported in the empirical literature relating to families of children with other conditions. Research with parents of children with emotional and behavioural problems, (e.g. Bolton et al. (2003), found that depression was correlated with maternal criticism. Furthermore, in children with ID criticism correlated with levels of parental stress (Lam et al. 2003; Hastings et al. 2006). These comparisons are, however, compromised by the varying challenges that the different diagnostic groups present. The current study suggests that for parents of children with ASC, the level of parental criticism and the quality of the parent-child relationship is unrelated to the mental health status of the parent and to their level of family satisfaction. This finding does require replication.

In summary, caregiver warmth was significantly related to adjustment. Relationship quality was marginally related to the adjustment measures anxiety and depression, and CRIT was unrelated to all adjustment measures. Therefore, the predictions of the mediation model were partly supported.

4.4 The Mediating Role of Appraisals

Further to the Double ABCX model's prediction that family stressors affect family adjustment, the empirical literature has shown that this relationship is mediated by the appraisals and resources that families use (McCubbin & Patterson, 1983; Plant & Sanders, 2007). Therefore, appraisals and resources, as measured by the dimensions of EE (CRIT, warmth, relationship quality), could be used to test the hypothesis that they would mediate the relationship between child stressors and family adjustment. Unfortunately, the full hypothesised mediation model could not be tested because, as discussed above, most of the significant relationships between variables required as

preconditions did not emerge in this sample. However, the statistically significant correlation between ASC severity and caregiver anxiety allowed for one element of the mediation model to be tested. In line with the mediation model, ASC severity predicted caregiver anxiety for this sample; however, contrary to the study predictions, caregiver appraisals of relationship quality did not mediate the relationship between these two variables. This finding does not support the Double ABCX model's predictions (McCubbin & Patterson, 1983) or the empirical literature (e.g. Plant & Sanders, 2007) and indicates that for this sample ASC severity, and not EE (relationship quality) predicted caregiver anxiety status, suggesting that EE does not have an impact on caregiver adjustment.

Although the current study did not support the proposed mediation model it did have a number of limitations that restrict the conclusions that can be drawn. These limitations are discussed next.

4.5 Limitations of the Current Study

In considering the present findings, there are a number of methodological issues worthy of discussion.

Sample. This study was based on a small sample that may not have accurately represented the wider population of families with children who have ASC. Consequently, it is difficult to draw inferences based on these findings about how child stressors impact on adjustment, and the role that EE has in this process for families with children with ASC. The sample predominantly consisted of mothers; only two fathers participated.

Sample bias. The study advertisement indicated that its focus was on adjustment and family relationships. This way of stating the purpose of the study may have resulted

in differential recruitment. For example, families who were experiencing problems or who were more critical may not have opted to take part in the research. Thus the findings may not accurately represent the adjustment process of all families with children with ASC.

Measures. The questionnaires used in this study required primary caregivers to report on their own adjustment and their child's difficulties, which may have led to social desirability biases. By including multiple informants, this limitation may be avoided in future studies. However, in the assessment of EE, caregivers were unaware of the coding procedure for the A-FMSS and therefore the responses for this measure are likely to have been representative of their level of EE (Beck et al., 2004). Although the A-FMSS can assess EE reliably, it has not been compared with behavioural observations of parent-child interactions and its construct validity is yet to be established (Benson et al., 2011). Furthermore, there was little variation in the EE data that was gathered by the A-FMSS; this may have limited the relationships that could be found in the analysis.

Study design. As is typical within this field of research, this study was cross-sectional, thus, variables cannot be measured over time as is afforded by longitudinal research. In addition, the correlational analyses required by this design do not allow for inferences to be made regarding causation or direction of effects. However, cross-sectional studies may be a useful first step in generating preliminary data that can be used more comprehensively within longitudinal studies.

Mediation model. Only a small number of significant correlations were found between variables, and the preconditions for a complete test of the hypothesised model were not met. This indicates that the mediation model was unsuccessful in explaining adjustment in this sample. If the study had been based on a larger sample, the

Bonferroni Correction technique (Abdi, 2007) would have been used to adjust alpha levels to meet any concerns about multiple testing; however, given the small sample size, it was necessary to retain the $p < .05$ significance.

Confounding variables. It is possible that other variables impacted on the relationships that were found between child stressors, EE and caregiver adjustment, such as social support and self-efficacy for adjustment outcomes as is described in the Double ABCX model (McCubbin & Patterson, 1983). Parents themselves may also have traits of the ASC phenotype, which may have impacted on their adjustment (Ingersol & Hambrick, 2011). Parents with a broader autism phenotype are found to have difficulties in their interpersonal relationships and to be rigid, which may place them at increased risk for mental health problems (Ingersol & Hambrick, 2011). It was beyond the scope of this study to focus on the impact of all these variables; however these remain important areas for further research, as they may allow for a more precise examination of the variables that contribute to adjustment, which could have implications for interventions.

4.6 Future Research Directions

Future research is required to address the limitations outlined above. Studies are required with larger more representative samples, the impact of additional variables on adjustment and EE, such as self-efficacy and social support, requires testing, and longitudinal research is needed to explore how stressors impact on EE and parental adjustment over time. By following families' EE and adjustment outcomes over time, it would be possible to draw more reliable causal inferences.

As a priority, the construct validity of the A-FMSS needs to be investigated, because if the measure is found to have good construct validity, this would strengthen

the conclusions that could be drawn from future studies that measure EE in families with children with ASC.

This study specifically focused on the impact of child stressors on parental adjustment. However, it is recognised that it is equally possible that the reverse relationship may be observed. Indeed, previous research has indicated that a bi-directional relationship exists between child behaviour problems and caregiver adjustment (e.g. Lacavalier, et al., 2006). Importantly, in better understanding cause and effect in adjustment outcomes researchers could potentially tailor interventions to best address risk factors that contribute to poor adjustment.

Once a more robust model of EE and adjustment in primary caregivers of children with ASC exists, research might usefully widen to explore EE and adjustment in fathers and other family members. This may improve understandings about any differences that may exist in the relationships between family members' EE and adjustment (Benson et al., 2011; Hastings & Lloyd, 2007).

4.7 Clinical Implications of the Study

Given the findings of this study and its limitations there are restricted clinical implications that can be drawn. Based on these preliminary findings it is possible that reducing ASC symptoms may lead to reduced anxiety levels in parents although this requires testing in future empirical studies. Theoretical research similar to the present study, which attempts to integrate bodies of potentially complementary research are useful as this may lead to improved understandings of how EE impacts on family adjustment and may inform work that could be empirically tested. This may contribute to improved parent-child relationships and both child, and parent outcomes.

Conclusions

The present research represents the first known study investigating the mediating effects of EE on adjustment in parents of children with ASC. The study has provided some evidence to indicate that ASC severity is associated with increased primary caregiver anxiety. This supports empirical findings that suggest that ASC severity is a risk factor for poorer adjustment outcomes (e.g. Davis & Carter, 2008; Ingersol & Hambrick, 2011; Siman-Tov & Kaniel, 2010). However, this finding must be interpreted with caution, as the regression analysis found no evidence that this relationship was mediated by the caregiver appraisals elicited by the A-FMSS. Further research is required with larger samples to allow for more clear conclusions to be drawn regarding the role of EE in explaining the adjustment process for this group. Importantly, creative thinking around models that may explain how relationship quality between parents and children with ASC impact adjustment should continue to be prioritised.

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Appendix A: A Guide for Authors: Literature Review

Appendix A: GUIDE FOR AUTHORS – Literature Review

Clinical Psychology Review

Submission declaration

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere including electronically in the same form, in English or in any other language, without the written consent of the copyright-holder.

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Language and language services

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who require information about language editing and copyediting services pre- and post-submission please visit <http://webshop.elsevier.com/languageservices> or our customer support site at <http://support.elsevier.com> for more information.

Submission

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail removing the need for a paper trail.

Use of wordprocessing software

It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words.

However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier:

<http://www.elsevier.com/guidepublication>). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.

To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your wordprocessor.

Article structure

Manuscripts should be prepared according to the guidelines set forth in the Publication Manual of the American Psychological Association (6th ed., 2009).

Manuscripts should ordinarily not exceed 50 pages. Exceptions may be made with prior approval of the Editor in Chief for manuscripts including extensive tabular or graphic material, or appendices.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

AUTHOR INFORMATION PACK 23 Mar 2012 www.elsevier.com/locate/clinpsychrev
5

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid

abbreviations and formulae where possible. **Note: The title page should be the first page of the manuscript document indicating the author's names and affiliations and the corresponding author's complete contact information.**

Author names and affiliations. Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name, and, if available, the e-mail address of each author within the cover letter.

Corresponding author. Clearly indicate who is willing to handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that telephone and fax numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address.**

Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a "Present address" (or "Permanent address") may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address.

Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required (not exceeding 200 words). This should be typed on a separate page following the title page. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article, using superscript Arabic numbers. Many wordprocessors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Reference style

References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters "a", "b", "c", etc., placed after the year of publication. **References should be formatted with a hanging indent (i.e., the first line of each reference is flush left while the subsequent lines are indented).**

Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton R. A. (2000). The art of writing a scientific article. *Journal of Scientific Communications*, 163, 51-59.

Appendix B: Description of the A-FMSS Dimensions

Appendix B: Descriptions of the dimensions of the A-FMSS (Daley & Benson, 2008)

1. Initial statement (IS) - the first thought expressed by the parent that is specifically about the child with ASC or about the parent-child relationship (coded positive, negative or neutral).
2. Warmth (WAR) - the intensity of sentiment or feeling which parents expresses about their child. This is based upon tone of voice, spontaneity and concern or empathy (rated as high, moderate or low).
3. Relationship (REL) - evidence that the parent enjoys spending time with their child and statements about how the parent and child get along together (rated as positive, neutral or negative).
4. EOI- the levels of emotional relationship between parent and child. This is based upon self-sacrificing or overprotective behaviour and lack of objectivity regarding the child (where the parent believes their child is always right, and always defends their child's behaviour; rated as high, moderate or low).
5. Critical comments (CC) - negative comments about the child, the child's behaviour and/or personality. This is based upon tone of voice and critical phrases (coded as a frequency count).
6. Positive comments (PC) - any statement of love, praise, approval or appreciation of the child, the child's behaviour or personality (coded as a frequency count).

Appendix C: Guide for Authors – Empirical Paper

Appendix C: Guide for Authors – Empirical Paper

Autism: The International Journal of Research and Practice

Author Guidelines

Manuscript requirement

Headings

Headings should have an initial capital with everything else lowercase, unless proper names. Italics can be included in A heads (H1) if needed, e.g. mathematical symbol or genus name.

Article title

Please format with an initial capital only and remaining words lower case, unless proper names. Italics can be included where necessary (e.g. genus name). Run on subtitle after colon, with initial capital after colon.

Author names, affiliations, and corresponding address

List authors in the order that they appear on the manuscript. Authors' first name should be in full, middle names should be initials without full stops (e.g. Simon PS Sharma) and no spaces between multiple initials. No series comma before the 'and' before the final author name.

Affiliations

Affiliations should contain only the following: department or faculty, institution, country. Some HSS journals may have institution and country only. Do not include titles, positions, qualifications, street names, or postcodes/zip codes. Affiliations should not end in a full stop.

STM: author names should be annotated with superscripted numbers (CE: do not use automated endnotes against names and affiliations). If all authors are at the same affiliation no superscript numerals are required.

Corresponding author

The affiliations and corresponding author information is positioned as follows: Bottom of the right column on the first page of each paper, separated from the text with a horizontal rule (some exceptions apply for specific journals).

Abstract and keywords

Abstract should appear in bold without a colon, text should start on the next line, with no indent.

Keywords (all one word) should appear in bold without a colon. The keywords should start on the next line, separated by commas only, not semi-colons. The first keyword should have an initial cap. In some journals, Abstracts have sub-headings, e.g. Methods, Conclusion etc. These should be formatted in bold with a colon in bold and each sub-heading should start a new paragraph. The text should run on after each heading with an initial capital.

Running heads

Recto: should be author surname(s), e.g. Smith, or Smith and Jones, or Smith et al. (for three or more authors, and et al. is also in italic).

Verso: full journal title in italic, followed by 0(0).

For IMechE journals: e.g. J. Automobile Engineering 0(0), without the Proc. IMechE or journal letter).

General style and layout

Figures

All figures should have a key line (i.e. be enclosed in a box). HSS: figures have no key line. Figures should be appropriately sized (done by the TS). They do not need to be a full column width or page width.

Figure permissions: any figures reproduced from another publication need permission. In cases where those publishers listed on the STM permission Guidelines page (<http://www.stm-assoc.org/permissions-guidelines/>), permission is not required and only the reference number need be present in the caption. Some publishers ask for certain text, e.g. Elsevier.

Any abbreviations needing to be spelled out should be listed after the caption, starting on the next line, in the following format: IC: internal combustion; PID: proportional–integral–derivative).

Captions are positioned below the figures and left aligned.

Captions should start, for example, **Figure 1.** (with a full point also in bold) and have a full point at the end. Where the text runs onto multiple lines, the captions need not be justified but should be aligned left. Where figures have multiple parts, these should be labelled as (a), (b), (c), etc. (not A, B, C). Captions should contain subheadings for all parts if not present in the figure itself. All figures should be numbered consecutively and cited in the text as Figure 1, Figure 2 etc. (Figure should be spelled out in full, not abbreviated).

Text citations: figures should be referenced in the text as follows: Figure 1, or Figures 1 and 2, or Figures 2 to 4, or Figure 1(a) and (b), or Figure 2(a) to (c). Where the figure citation is not part of the sentence it should be placed in parentheses.

Tables

Tables should only have minimal horizontal rules for clarity, and no vertical rules.

All tables should be numbered consecutively and cited in the text as Table 1, Table 2 etc. (Table should be spelled out in full, not abbreviated). General notes to the Table should be positioned below the Table, typeset in a smaller font and should start ‘Note:’, and end in a full stop. Do not add the word ‘Note:’ unless needed for clarity.

Footnotes

Footnotes should be represented in the table by superscript letters a, b, c, etc., and appear below the Table (smaller font, TS will format). Each footnote should start a new line and end with a full stop. These notes should precede the source for the table, if included.

Lists

For lists where items are not full sentences, use (a), (b), (c) etc. or bullet points (whichever is more appropriate) and separate items with semi-colons. Start list with a preceding colon and end list with a full stop.

For lists where items are full sentences or multiple sentences, use 1. 2. 3. Start list with a preceding full stop or semi-colon (whichever is more appropriate), and end list with a full stop.

List numbering/bullets should be full out and left aligned, with text indented and aligned.

References

Vancouver style reference citations are represented as textual notes, as a numeral enclosed in a square bracket. Harvard style references are as follows (Smith, 1999).

Any other textual notes: are indicated by a superscript Arabic numeral placed after the punctuation. All textual notes should be collected and placed after the text and before the reference section with the heading

Spelling, punctuation and formatting

Author style/voice

We will endeavour to keep the author's voice as much as possible:

Some authors write in the first person. CEs please note that we will not be taking articles out of the first person into the third person.

General spelling rules

The general rules are as follows:

UK spellings should be followed for European articles (-ise is acceptable)

Appendix D: Copy of University of Southampton Ethical Approval Letter

Appendix E: Copy of University of Southampton Research Governance Letter

Appendix F: Copy of the Study Advert

An invitation for families across the country to take part in a study conducted by researchers at the University of Southampton

This is a unique opportunity to participate in a study investigating the relationships between family members and their child with autism, with a view to identifying ways in which families can be better supported by services. We are interested in how relationships between parents (and grandparents where possible) and their child with autism may vary. The study will help explain how family relationships between members change over time, and through detailing what their needs and experiences are, help improve the services and support that are offered to families of children with autism.

Am I eligible to take part?

If you have a child who has been formally diagnosed with autism and is between the ages of 3 and 5 years, we would welcome your participation. If you agree to participate, you will be asked to complete a short twenty-thirty minute telephone interview at a time convenient to you and a questionnaire pack which will take approximately 30 minutes. As a thank you for taking part in the study, all participants will be entered into a £50 prize draw.

What should I do if I'd like to take part?

If you and/or your family would like to take part in this study or you would like to speak to someone about the study, please contact Natalie Peace on **07773167941**. Alternately you can email Natalie at **np1g08@soton.ac.uk**.

If you decide to participate, we will send you a consent form and information sheet which you will be asked to read, sign and return to us (a stamped addressed envelop will be provided). We will then contact you by phone to arrange the telephone interview.

This study has received ethical approval from the University of Southampton (ID: 1095). The confidentiality of all individuals who participate will be preserved in line with the data protection act.

Researcher details:

Natalie Peace (Clinical Psychologist in Doctoral Training)

Dr Hanna Kovshoff (Supervisor; University of Southampton)

Professor Bob Remington (Supervisor; University of Southampton)

Appendix G: Participant Information Sheet

Participant Information Sheet- Version 3 (27/08/2010)
An Exploration of Expressed Emotion in Families of Children with Autism

Researcher: Natalie Peace (Doctoral student in clinical psychology)

Supervised by: Dr Bob Remington and Dr Hanna Kovshoff

Study ID: 1095

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.

Who am I and what is the research about?

I am a doctoral student in clinical psychology at the University of Southampton. A part of my course requires that I undertake a research project in order to further our understandings of an aspect of research within the clinical psychology field. The area of research which I have chosen to focus on aims to increase our understanding of the relationships which individual family members have with their child who has autism. Specifically we are interested in involving mothers, fathers and regular care-giving grandparents where possible. This information will provide us with some useful insights into the different types of relationships which people have and how these vary within families. Furthermore the findings will tell us how these relationships vary with the caregiver's and child's individual characteristics.

Why have I been chosen?

We have approached all families of children between the ages of 3-5 who have links to local autism support groups and charities. If within your family you have a child aged 3-5 with autism then we welcome you to participate. Additionally, we are very interested in hearing from mothers, fathers and grandparents if possible. The only important factor for participation is that the family member must see the child with autism at least once a week. However, if for any reason only one or two members can participate then we would still welcome your participation.

What will happen to me if I take part?

If you choose to take part then you will be required to do the following in the order specified below:

- a. Firstly, to read this letter and then to complete and return the consent form. As we are interested in several family members taking part we would require all of those members who are interested to complete a separate consent form.
- b. Secondly, to provide evidence that your child has autism, either via a letter from the GP or a copy of a letter which states the diagnosis (these letters would remain confidential and be destroyed once we have checked them).
- c. To take part in an interview lasting about 20-30 minutes over the telephone at a time which is convenient for you. We will contact you to agree this time if you are happy to participate in the study.
- d. For all participants to complete 2 questionnaires about their wellbeing and family situation. This should take about 15-20 minutes.
- e. For one member (primary caregiver) of the family to complete a questionnaire about your child with autism.
- f. The researchers of the study may contact you in the future to repeat the interview and questionnaires above to allow us to follow up the results. If this is the case then we will contact you by letter at that time.

Are there any benefits in my taking part?

Taking part on this study will provide benefits to families of children with autism in the long term. This is because increasing our research knowledge will increase the evidence base within the field of autism which will enable services and support agencies to offer up to date, effective interventions. It is hoped that this will improve the support which families receive in the future.

Are there any risks involved?

There is a possibility that you may experience an emotional reaction whilst carrying out the interview or whilst completing the questionnaires. If you have concerns about this following completion of the tasks then we would encourage you to make contact with either a member of the research team who will suggest where you can get further support or to contact your GP. If you have concerns about your child then we would advise you to contact the autism helpline (details below), your local autism charity (details

below) or your GP. We would also advise that you can take a break during the completion of the questionnaires if you feel upset and need a break.

Will my participation be confidential?

By agreeing to participate in the study, we may need to record basic information about you such as your age and gender. The data will be treated strictly confidentially (i.e. no one but the designated researcher will have access to the data) and you will remain anonymous and will receive a non-identifiable code for the research purposes. Data will be entered onto a computer which is password protected, which only the researcher will have access to. The only time confidentiality will be broken would be if there were serious concerns about risk of harm to yourself or others.

What happens if I change my mind?

If you choose to take part but then at a later stage do not feel comfortable continuing then you may withdraw your response at anytime without giving a reason. This will not affect your legal rights in any way.

What happens if something goes wrong?

In the unlikely case that something should go wrong you can contact the Chair of the Ethics Committee at the Department of Psychology, University of Southampton, Southampton, SO17 1BJ. The Phone contact is: (023) 8059 5578.

Where can I get more information?

If you have any further questions about the study then please contact Natalie Peace on 07773167941 or email np1g08@soton.ac.uk.

If you wish to discuss your child's needs or have any concerns about them then please contact the Autism helpline number on **0845 0704004**. If you have any concerns about your own well being then please either contact the research team (details above) who will be able to suggest where you could get further support or contact your GP directly.

Local autism charity details:

Parents for the early intervention in autism (Peach) Tel: **01344 882248**. Hampshire Autistic Society: Tel: **023 8076 6162** ext. 25

Appendix H: Participant Consent Form

CONSENT FORM- Version 3
(27/08/2010)

Study title: An Exploration of Expressed Emotion in Families of Children with Autism

Researcher name: Natalie Peace, Dr Hanna Kovshoff and Dr Bob Remington

Study reference: 1095

Please initial the boxes if you agree with the statement(s):

I have read and understood the information sheet (27/08/2010, version 3)
and have had the opportunity to ask questions about the study

☐

I give my consent to participate in (1) a telephone interview and (2) for
this to be tape recorded.

☐

I agree to take part in this research project and agree for my data to
be used for the purpose of this study.

☐

I understand my participation is voluntary and I may withdraw
at any time without my legal rights being affected .

☐

I am happy to be contacted at a future date, should any new
opportunities to participate in research studies present themselves.
I understand that I am free to decline participation at that time.

☐

Name of participant (print name).....

Signature of participant.....

Date.....

Appendix I: Participant Reminder Letter

Date

Dear Participant

Ref: An Exploration of Expressed Emotion in Families of Children with Autism (study ID: 3095)

Thank you for agreeing to take part in the above study and completing the telephone interview. I hope that you received the questionnaire pack through the post. If there were any problems or you did not receive the pack then please contact me and I will send you another one.

For the purposes of the study please could you complete the questionnaires and return them in the stamped addressed envelope which was provided.

Many thanks and best wishes,

Natalie Peace

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Appendix J: Participant Debrief Letter

**An Exploration of Expressed Emotion in Families of Children with Autism
Debriefing Statement- Version 2 (23/04/2010)**

The aim of this research was to explore the relationship which family members have with their child with autism, and how this relationship varied according to individual wellbeing and child characteristics. In addition we were interested in how or if these relationships varied according to the types of treatment which families were involved in. Therefore we also approached families who were involved in early intervention based programmes.

It is expected that family members will experience the relationship with their child with autism differently, and that members of the same family will vary in their descriptions of these relationships. Furthermore we expect that following the initial interview there will be few differences between families who take part in early intervention based programmes and those who do not although in the long term this may change.

Your data will help further our understanding of the relationships which parents and grandparents have with a child with autism and how this changes over time. Once again results of this study will not include your name or any other identifying characteristics. The research did not use any deception. You may have a copy of a summary of the research findings once the project is completed if you wish. Lastly, the research team may contact you in the future to repeat the interview. In this instance they would contact you by letter and ask for your consent.

If you have any further questions please contact Natalie Peace, Dr Hanna Kovshoff or Bob Remington.

Thank you for your participation in this research.

Natalie Peace

Signature _____ Date _____

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ.

Phone: (023) 8059 5578.