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Supporting Treatment Selection in Parents of Children with Autism Spectrum Disorder:  
An Educational Workshop with Acceptance and Commitment Training

Brianne E. Drouillard

A Dissertation  
Submitted to the Faculty of Graduate Studies  
through the Department of Psychology  
in Partial Fulfillment of the Requirements for  
the Degree of Doctor of Philosophy  
at the University of Windsor

Windsor, Ontario, Canada

2019

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Supporting Treatment Selection in Parents of Children with Autism Spectrum Disorder:  
An Educational Workshop with Acceptance and Commitment Training

by

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**DECLARATION OF ORIGINALITY**

I hereby certify that I am the sole author of this dissertation and that no part of this dissertation has been published or submitted for publication.

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**ABSTRACT**

In the present study, the benefits of integrating acceptance and commitment training (ACT) into an educational workshop for parents of children with autism spectrum disorder (ASD) were investigated. A sample of 23 parents (18 mothers and 5 fathers) of children with ASD aged 4 to 26 years were randomly assigned to participate in either the ACT workshop (i.e., treatment-related information supplemented with ACT) or the Support workshop (i.e., treatment-related information with supplemented general parent support). Parents' knowledge of ASD treatment selection, acceptance of ASD-related thoughts and emotions, ASD-related cognitive fusion, and willingness to select evidence-based treatments were measured at preworkshop, postworkshop, and three-month follow-up time points. Parents' feedback regarding their experiences was also gathered via open-ended items embedded within questionnaires completed by participants at postworkshop and follow-up. Repeated measures analyses of variance revealed increases in treatment selection knowledge from preworkshop to postworkshop for both groups and these gains were maintained at follow-up. Trajectories of change in parents' acceptance and cognitive fusion differed significantly by group over time, with ACT workshop participants showing increases in acceptance and decreases in cognitive fusion over time. However, the differences in acceptance and cognitive fusion between groups failed to reach statistical significance at postworkshop and follow-up time points. Unexpectedly, participants' willingness to select evidence-based treatments decreased over time in both groups. Although acceptance and cognitive fusion were not found to moderate the relation between participants' treatment selection knowledge and their willingness to select evidence-based treatments, evidence for a positive relation between increases in parents' acceptance from postworkshop to follow-up and their willingness to select evidence-based treatments at follow-up was found. Participants in both

groups identified treatment information as the most important thing they learned in the workshop. Support workshop participants revealed that they most liked the treatment information, while ACT workshop participants revealed that they most liked the ACT-specific content. Participant satisfaction ratings were high for both workshops and participants reported feeling more knowledgeable and confident in their ability to effectively select treatments for their children at follow-up. Results of the study demonstrate the feasibility of incorporating ACT into educational community workshops for parents of children with ASD. Although neither workshop was associated with increased willingness to select evidence-based treatments, increases in treatment selection knowledge were observed in both groups, with preliminary support for additional benefits of increased acceptance and decreased cognitive fusion in the ACT workshop group. Further implications are discussed, as well as strengths and limitations of the present study and suggestions for future research.

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**LIST OF ABBREVIATIONS**

AAQ-II-A	Acceptance and Action Questionnaire-II- Autism
ACT	Acceptance and Commitment Therapy/Training
ASD	Autism Spectrum Disorder
CFQ-A	Cognitive Fusion Questionnaire- Autism
EBPAS-P	Evidence-Based Practice Attitudes Scale- Parent
FES	Follow-up Experiences Survey
GCS	Group Cohesiveness Scale
MAAS	Mindful Attention Awareness Scale
MCSDS-SF	Marlowe-Crowne Social Desirability Scale- Short Form
TSKQ	Treatment Selection Knowledge Quiz
WSS	Workshop Satisfaction Survey

## INTRODUCTION

### Study Overview

Treatment selection is a complex and, at times, overwhelming process for many parents of children with Autism Spectrum Disorder (ASD). Many treatments are available, with widely varying rationales, methods, goals, and levels of empirical support (National Autism Center, 2015). Few supports are currently available to assist parents in selecting treatments for their children with ASD and the resources most commonly used by parents often contain misinformation (Drouillard, 2012; Green, 2007). Despite widespread availability of high-quality, evidence-based treatments, many parents of children with ASD use non-evidence-based treatments with their children (Wong & Smith, 2006). These parents report believing that every treatment works in some way and that there is no harm in trying a treatment (Drouillard, 2009). However, consequences of using non-evidence-based treatments include potentially harmful side effects, inefficient use of time and financial resources, and possible delayed or prevented access to evidence-based treatments. Research investigating promotion of evidence-based treatment selection among parents of children with ASD is necessary to help ensure that the wealth of research devoted to identifying methods of early identification and developing efficacious treatments translates to tangible benefits for children with ASD.

Previous research investigating the promotion of evidence-based treatment use has demonstrated that information alone often does not lead to lasting changes in attitudes or behaviours (Varra, Hayes, Roget, & Fischer, 2008). Emotional factors are often more influential in parents' treatment selection for their children with ASD than the evidence supporting each treatment (Drouillard, 2009; Green et al., 2006; Hodgson, 2012). Specifically, lower levels of acceptance of children's ASD diagnoses and related thoughts and emotions in parents of children

with ASD has been associated with selection of a greater number of treatments, regardless of empirical support (Drouillard, 2012).

Acceptance of the ASD diagnosis and related thoughts and emotions appears to be a particularly complex process for parents of children with ASD (Zembar & Yildiz, 2010). Acceptance and Commitment Therapy (ACT) is an evidence-based therapy which has been demonstrated to significantly increase this acceptance among parents of children with ASD (Blackledge & Hayes, 2006; Fung, Lake, Steel, Bryce, & Lunskey, 2018), as well as professionals' willingness to use evidence-based interventions with clients (Luoma et al., 2007; Varra, Hayes, Roget, & Fisher, 2008).

ACT has also been demonstrated to significantly decrease cognitive fusion (i.e., the tendency to react to thoughts as literal truths; Luoma, Hayes, & Walser, 2007) in parents of children with ASD (Fung et al., 2018). This is particularly relevant given that, for professionals, decreases in cognitive fusion have been associated with increases in willingness to use evidence-based interventions with clients (Varra et al., 2008).

In the present randomized pilot feasibility trial, the benefits of incorporating elements of Acceptance and Commitment Therapy (ACT) into a parent educational workshop on selecting treatments for children with ASD were examined. The purpose of the study was to investigate ways to increase willingness to select evidence-based treatments in parents of children with ASD. Participants were 23 parents of children with ASD who were randomly assigned to participate in either the ACT workshop (comprised of information about selecting treatments and ACT) or the Support workshop (comprised of information about selecting treatments and general parent support). Participants' knowledge of ASD treatment selection, levels of ACT process variables (i.e., acceptance, cognitive fusion), and willingness to select evidence-based treatments



were measured at preworkshop, postworkshop, and three-month follow-up time points. This study represents a possible practical solution to a significant gap between current research and the lives of children with ASD and their families. Results of the investigation have the potential to improve early access to evidence-based intervention among children with ASD, as well as to promote relevant knowledge and psychological wellbeing among parents of these children.

In the following sections, a review of the literature related to parents' treatment selection for their children with ASD is presented. The benefits of evidence-based treatments are discussed, as well as the popularity of non-evidence-based treatments in ASD. Factors which influence parents' treatment-related decisions for their children with ASD are reviewed, with particular attention given to the impact of psychological processes.

### **Autism Spectrum Disorder**

Autism Spectrum Disorder is a neurodevelopmental disorder characterized by ongoing impairments in social communication and social interaction across several contexts, as well as restricted or repetitive behaviours or interests (American Psychiatric Association, 2013). The term 'spectrum' denotes the widely varying profiles of skills, symptoms, and supports required among individuals sharing this designation (National Institute of Mental Health, 2015). In the latest *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013), a dimensional view of autism has been adopted in which previously distinct disorders such as Autistic Disorder and Asperger's Disorder are now conceptualized as falling along a continuum under the single label of Autism Spectrum Disorder (ASD).

**Prevalence.** Recent studies estimate that ASD now affects approximately 1 in every 59 children (Baio et al., 2018; Christensen et al., 2019). This prevalence rate has increased 15% since the previous estimate in 2014 (Wingate et al., 2014), highlighting the growing number of

individuals being diagnosed with ASD each year. ASD is diagnosed four times more often in males than in females, affecting 1 in every 37 males, although it should be noted that the gender gap in ASD diagnoses has begun to decrease in recent years (Baio et al., 2018). Although increased awareness of the early signs of ASD and the importance of early intervention has contributed to earlier diagnoses for many children with ASD, most children in the U.S. are diagnosed after the age of four (CDC, 2018). The average age of diagnosis in Ontario is 5.5 years (Canadian Autism Spectrum Disorders Alliance, 2014).

**Etiology.** There is no single known cause for ASD. Many researchers agree that the etiology of ASD is complex and likely involves genetic, biological, and environmental factors (CDC, 2014). Genetic factors have been demonstrated to be particularly significant in the etiology of ASD, with an approximate heritability rate of 90% (Sandin, Lichtenstein, Kuja-Halkola, Hultman, Larsson, & Reichenberg, 2017). However, evidence points to many possible genetic pathways to ASD rather than a single ‘autism gene’ (Andrews et al., 2018; Geschwind, 2011). Furthermore, a combination of genetic susceptibility and exposure to environmental risk factors may also increase the risk for ASD (Rubenstein et al., 2018; Schanen, 2006; Windham et al., 2018).

Despite popular opinion, several large-scale scientific studies have demonstrated that vaccines do not cause ASD (e.g., Destefano, Price, & Weintraub, 2013; Institute of Medicine, 2004). The original paper by Wakefield and colleagues (1998) which introduced the purported link between the measles, mumps, and rubella (MMR) vaccine and ASD was subsequently retracted due to serious ethical and methodological concerns in the study (Editors of the Lancet, 2010). Previous beliefs that parental practices are related to the onset of ASD in children have also been widely criticized (e.g., NIMH, 2014).

**Development and course.** Children typically manifest the first signs of ASD during the second year of life (i.e., between 12 and 24 months), although symptoms have also been noted in younger children (APA, 2013). Often, parents first become concerned about delayed language development (Herlihy, Knoch, Vibert, & Fein, 2013). Other early signs of ASD include limited social interest, unusual interaction patterns (e.g., leading individuals by the hand but failing to make eye contact), and odd styles of play (e.g., lying on the floor to look at car wheels). Repetitive behaviours and restricted interests typically begin to develop beyond 24 months of age (APA, 2013). A small subgroup of children with ASD appear to experience significant developmental regression in the first two years (i.e., the loss of previously attained skills and/or language), as opposed to general developmental delays (APA, 2013).

**Prognosis.** ASD is widely regarded as a lifelong condition (CDC, 2018; NIMH, 2014). In a large-scale longitudinal study, over 95% of individuals maintained an ASD diagnosis 13 to 22 years after initial diagnosis (Billstedt, Gillberg, & Gillberg, 2005). Previous research has demonstrated that most individuals with ASD continue to rely on family members or other caregivers for lifetime support (CASDA, 2014; Howlin, Goode, Hutton, & Rutter, 2004). With earlier access to high quality, evidence-based intervention and appropriate supports, however, research has demonstrated that some individuals with ASD do achieve independence in adulthood (Gray et al., 2014; Eaves & Ho, 2008; Howlin, 2000). These individuals tend to have higher intellectual abilities and language skills and can access employment which capitalizes on their special skills and interests (APA, 2013; Gray et al., 2014). It is now well established that early access to evidence-based treatment is consistently associated with the most positive outcomes for individuals with ASD (e.g., Children's Mental Health Ontario, 2003; NAC, 2015; Ornstein et al., 2014).

### **Evidence-Based Treatments**

Evidence-based treatments, also referred to as ‘empirically-supported’ treatments, are defined as specific psychological interventions which have demonstrated efficacy in controlled clinical trials (APA Presidential Task Force on Evidence-Based Practice, 2005). The term ‘evidence-based’ is used throughout this document rather than the term ‘empirically-supported’, as this latter term is thought by some to denote a sense of finality, mischaracterizing the complex and evolving nature of treatment research.

In a seminal article on the topic, Chambless and Hollon (1998) outlined criteria for determining the conditions which must be met for a given treatment or intervention with a specific population to be considered evidence-based. These criteria included: (a) a randomized controlled trial or equivalent in which the treatment is demonstrated to be statistically superior to a no-treatment, alternative treatment, or placebo control group, with adequate power; (b) treatment administered according to a manual or its equivalent, with a sample selected using reliable and valid inclusion criteria, using reliable and valid assessment measures, and appropriate statistical analyses; and (c) studies conducted in at least two independent research sites demonstrating the treatment superiority over control. Chambless and Hollon (1998) also distinguished between the designations of ‘efficacious’ (i.e., treatments meeting the previously described criteria) and ‘possibly efficacious’ (i.e., superiority of the treatment demonstrated in only one study or by only one team of researchers), representing the complex nature of the term ‘evidence-based’, rather than representing a simple dichotomy.

Several arguments against the movement toward evidence-based treatments have been documented in the literature. With the emphasis on highly controlled randomized clinical trials as the ‘gold standard’ for establishing efficacy, some researchers have questioned the

generalizability of these findings to community mental health settings (e.g., Reichow & Volkmar, 2011). Similarly, the appropriateness of the emphasis on randomized controlled trials has been questioned within social science research, where it is often difficult to obtain the necessary sample sizes for testing hypotheses with such strict inclusion criteria (Chorpita, 2003). Indeed, Chambless and Hollon (1998) have asserted that, although efficacy trials are an important first step, research on ‘real world’ effectiveness and cost-effectiveness are equally important next steps. Overall, the benefits of the movement toward the use of evidence-based treatments appear to far outweigh the strength of arguments against the movement, particularly when viewed in terms of the ethical responsibility to provide clients with treatments which have been demonstrated to be associated with positive outcomes and minimal risks.

**Importance of evidence-based treatments for children with ASD.** Given the rapid development of new interventions within the field of ASD, it is important for professionals to understand the current state of empirical support for common interventions, as well as which questions should be asked when evaluating particular treatments (Perry & Weiss, 2007). In ASD, time is of the essence as the benefits of early intervention, beginning before age four (Miriam Foundation, 2008), for maximizing progress in children with ASD are now well established (Children’s Mental Health Ontario, 2003; Koegel, Koegel, Ashbaugh, & Bradshaw, 2014; NAC, 2015; Ornstein et al., 2014; Rogers, 1996). Research suggests that children with ASD are particularly receptive to intervention during these early years, with several studies demonstrating that children with ASD make significantly greater gains through intensive early intervention than do children with other developmental disabilities (Guralnick, 2005; Rogers, 1996). Furthermore, among children with ASD, those who receive intensive intervention at earlier ages make greater gains than those who receive intensive intervention at older ages (e.g., Rogers & Vismara, 2008).

With the established impact of these formative years on children's developmental trajectories, it has been suggested that parents employ evidence-based interventions with their children with ASD as early as possible in order to increase the odds of their children maximizing their progress during this time (e.g., Children's Mental Health Ontario, 2003; NAC, 2015). Utilizing evidence-based interventions affords children with ASD the best chances of benefitting during this 'critical period' and throughout the lifespan (Rogers, 1996), as evidence-based interventions are those which have been demonstrated to be efficacious within the specific population.

There is no 'quick fix' for ASD. Research has demonstrated that the most effective interventions for children with ASD often require great amounts of time and effort for both children with ASD and their parents. More specifically, participation in intensive (i.e., minimum of 25 hours/week [National Research Council, 2011]) evidence-based behavioural intervention has been consistently shown to be associated with the most positive outcomes in children with ASD (e.g., Green, 1996; Ornstein et al., 2014; Weiss, 1999; Wong et al., 2014). Longer duration (i.e., years rather than months) of evidence-based behavioural interventions has also been associated with more positive long-term outcomes in children with ASD (e.g., Luiselli, O'Malley Cannon, Ellis, & Sisson, 2000). Finally, higher levels of parental involvement in evidence-based intervention have been associated with greater gains in children with ASD, with researchers hypothesizing that parental involvement enhances treatment intensity and promotes generalization of skills to new environments (Burrell & Borrego, 2012; Ingersoll & Dvortcsak, 2006).

**Evidence-based treatments for ASD.** One of the greatest triumphs of ASD research thus far is the number of high-quality interventions which have been developed and demonstrated to be efficacious for children with ASD. Overall, there is broad agreement within

the ASD research community on the effectiveness of these evidence-based treatments, as well as on the types of ASD treatments deemed to be evidence-based, many of which are based on behavioural principles (e.g., Applied Behaviour Analysis [ABA]). For instance, the National Research Council (2001) reviewed the body of literature and identified several common features of effective treatments for ASD, including: (a) intensive programming, (b) active engagement, (c) individualized goals, and (d) one-on-one or small group instruction. More recently, Schreibman and colleagues (2015) reviewed available treatment research and noted common features of many evidence-based treatments for ASD, including: (a) use of behavioural strategies to teach developmentally-appropriate skills, (b) natural contingencies, (c) naturalistic settings, and (d) collaboration between children and treatment providers. These researchers introduced the term ‘naturalistic developmental behavioural interventions’ to capture interventions sharing these features, reflecting the intervention aspects consistently supported by scientific investigation for ASD. Similarly, Wong and colleagues (2014) conducted a large-scale review of interventions used with children with ASD and identified 27 practices meeting their criteria for being evidence-based. These researchers noted that the evidence-based interventions they identified tended to consist of similar elements, including: (a) fundamental behavioural techniques (e.g., reinforcement, prompting), (b) behavioural assessment and analytic techniques (e.g., task analysis), and (c) combinations of behavioural techniques to form replicable interventions (e.g., pivotal response training).

One of the most comprehensive reviews of ASD treatments, The National Standards Report, was published by the National Autism Center (2009). In this systematic review, experts rated the empirical support for 37 popular intervention strategies for children with ASD from 0 to 5 on the Scientific Merit Rating Scale (SMRS). This scale, developed specifically for the

purpose of this review, includes five dimensions of methodological rigor: (a) research design, (b) measurement of the dependent variable, (c) measurement of the independent variable/procedural fidelity, (d) participant ascertainment, and (e) generalization. On the basis of expert ratings on the SMRS, 11 intervention strategies for ASD were classified as ‘established’ (e.g., comprehensive behavioural treatment for young children, pivotal response treatment). Most of these ‘established’ intervention strategies were behaviourally-based. Experts also classified 21 intervention strategies as ‘emerging’ (e.g., social skills package, cognitive-behavioural intervention package) and 5 intervention strategies as ‘unestablished’ (e.g., gluten/casein-free diet, auditory integration training).

More recently, the National Autism Center (2015) updated the original National Standards Report to include findings from intervention studies published as recently as February of 2012. On the basis of this updated literature review, 13 intervention strategies were classified as ‘established’ (e.g., behavioural interventions, parent training). Similar to their previous review (NAC, 2009), these ‘established’ intervention strategies were largely behaviourally-based (see Table 1 for a complete list of the empirical classifications of each treatment reviewed). Experts also classified 18 intervention strategies as ‘emerging’ (e.g., augmentative and alternative communication devices, music therapy) and 13 intervention strategies as ‘unestablished’ (e.g., gluten/casein-free diet, animal-assisted therapy).

**Non-evidence-based treatments for ASD.** Selection of non-evidence-based treatments is common among parents of children with ASD, despite availability of high-quality evidence-based treatments. Results of one study indicated that 52% of parents of children with ASD reported using non-evidence-based treatments with their children (Salamone et al., 2015; Wong & Smith, 2006). It is important to note that non-evidence-based treatments for ASD often aim to



‘cure’ ASD by addressing its hypothesized underlying causes (e.g., heavy metals in the bloodstream), rather than aiming to slowly build skills in affected areas (e.g., social-communication; Levy & Hyman, 2008). Parents may believe that if these underlying causes are addressed, their children may be cured or no longer show any symptoms of ASD. Without support to scrutinize the legitimacy of claims made by promoters of non-evidence-based treatments, the widespread selection of these treatments by parents of children with ASD is understandable.

The gluten/casein-free diet is a widely used non-evidence-based treatment for children with ASD (Drouillard, 2012; Green, Pituch, Itchon, Choi, O’Reilly, & Sigafos, 2006; NAC, 2015; Wong & Smith, 2006). Thanks in large part to anecdotal reports from celebrity mother Jenny McCarthy (e.g., McCarthy & Katzinel, 2009), this diet became a treatment of choice for many parents of children with ASD despite lacking empirical support. Unfortunately, the gluten/casein-free diet is associated with significant risks, including reduced levels of essential amino acids and disruptions in bone development (Arnold, Hyman, Mooney, & Kirby, 2003; Hediger, England, Molloy, Yu, Manning-Courtney, & Mills, 2008; Mulloy, Lang, O’Reilly, Sigafos, Lancioni, & Rispoli, 2009).

Facilitated communication is another non-evidence-based treatment which has received a great deal of media attention (Hemsley et al., 2018; Montee, Miltenberger, Wittrock, Watkins, Rheinberger, & Stackhaus, 1995). Scientific investigations have consistently demonstrated that, despite claims that facilitated communication helps individuals with ASD overcome communication barriers to reveal their ‘true’ selves (e.g., Bilken, 1990), it is most often the assistant, not the individual with ASD, controlling the content resulting from facilitated

Table 1

*Empirical Classifications of Intervention Strategies Reviewed by NAC (2015)*

Established	Emerging	Unestablished
Behavioural Interventions	Augmentative and Alternative Communication Devices	Animal-assisted Therapy
Cognitive Behavioural Intervention Package	Developmental Relationship-based Treatment	Auditory Integration Training
Comprehensive Behavioural Treatment for Young Children	Exercise	Concept Mapping
Language Training (Production)	Exposure Package	DIR/Floor Time
Modeling	Functional Communication Training	Facilitated Communication
Natural Teaching Strategies	Imitation-based Intervention	Gluten-free/Casein-free diet
Parent Training	Initiation Training	Movement-based Intervention
Peer Training Package	Language Training (Production & Understanding)	SENSE Theatre Intervention
Pivotal Response Training	Massage Therapy	Sensory Intervention Package
Schedules	Multi-component Package	Shock Therapy
Scripting	Music Therapy	Social Behavioral Learning Strategy
Self-Management	Picture Exchange Communication System	Social Cognition Intervention
Social Skills Package	Reductive Package	Social Thinking Intervention
Story-based Intervention Package	Sign Instruction	
	Social Communication Intervention	
	Structured Teaching	
	Technology-based Intervention	
	Theory of Mind Training	

\**Note.* Classifications based on the Scientific Merit Rating Scale. NAC = National Autism Center

communication (Hemsley et al., 2018; NAC, 2015). For example, research has demonstrated that individuals with ASD tend to become more passive in communication when using facilitated communication and rely more heavily on the aid of assistants (Bebko, Perry, & Bryson, 1996). This finding has been corroborated by other studies which have demonstrated that individuals with ASD using facilitated communication are unable to describe objects hidden from their assistants (Jacobson, Mulick, & Schwartz, 1995). In detracting from the agency of individuals with ASD and making false promises to family members, this treatment is also associated with serious risks to the psychological wellbeing of individuals with ASD and their families (Children's Mental Health Ontario, 2003).

Use of psychotropic medications (e.g., haloperidol, risperidone, clomipramine, aripiprazole, methylphenidate, selective serotonin reuptake inhibitors) to treat ASD is also quite common, despite little empirical support for their efficacy (Children's Mental Health Ontario, 2003; McPheeters et al., 2011; Parr, 2010). For example, results from one study indicated that 64% of children with ASD have used at least one psychotropic medication and 35% have used more than one simultaneously (Spencer et al., 2013). Similar rates of psychotropic polypharmacy in ASD are reported in Canada, with one study finding that approximately 25% of youth with ASD were receiving at least two psychotropic medications concurrently (Lake, Weiss, Dergal, & Lunsky, 2014). Risperidone and aripiprazole are currently the only medication-based treatments which are FDA-approved for use with children with ASD, and they are indicated only for reducing irritability and aggression (Spencer et al., 2013). Due to the significant risk of adverse effects such as social withdrawal, irritability, sedation, weight gain, tremors, and seizures (Children's Mental Health Ontario, 2003; McPheeters et al., 2011; Parr, 2010), however, these medications are generally not recommended for children with ASD except

in children with significant risk of injury or severe functional impairments (Bryson, Rogers, & Fombonne, 2003; desPortes, Hagerman, & Hendren, 2003; Mandell, Morales, Marcus, Stahmer, Dashi, & Polsky, 2008; McPheeters et al., 2011).

Countless other non-evidence-based treatments are used with children with ASD, many of which are associated with significant risks. One of these non-evidence-based treatments is chelation therapy (Brent, 2013; Davis et al., 2013), which was reportedly used by 7% of children with ASD (Green et al., 2006) despite being associated with serious side effects including vomiting, diarrhea, hypotension, and cardiac arrhythmia (Moel & Kumar, 1982), as well as risk of hypocalcemia, cardiac arrest (Brown, Willis, Omalu, & Leiker, 2006), and even death (CDC, 2006). Hyperbaric oxygen therapy has also been proposed to treat ASD, with little empirical evidence of its efficacy (e.g., Granpeesheha, Tarboxa, Dixona, Wilkea, Allena, & Bradstreet, 2010). In addition to the high financial cost, several risks of this treatment have been outlined, including possible paralysis, air embolism (i.e., artery or vein blockage caused by pockets of air), and risk of fire (FDA, 2013). Thousands of children with ASD also received secretin injections (NIH, 1999) following early anecdotal reports of symptom reduction which subsequent studies overwhelmingly failed to support (e.g., Esch & Carr, 2004; Williams, Wray, & Wheeler, 2012). This treatment has been shown to be associated with several side effects, including rash, fever, tachycardia (i.e., rapid heart rate), vomiting, photosensitivity, and increased irritability (Roberts et al., 2001).

Some non-evidence-based treatments such as vitamin supplements (Li, Ou, Li, & Xiang, 2017), dolphin-assisted therapy (Fiksdal, Houlihan, & Barnes, 2012), and therapeutic horseback riding (Rolandelli & Dunst, 2003) may appear to hold no risks for children with ASD. However, use of these treatments may be associated with great investments in time and financial resources

or may lead to delayed receipt of evidence-based treatments. As previously discussed, this poses a significant risk to children with ASD, for whom early, evidence-based intervention is particularly beneficial (Children’s Mental Health Ontario, 2003; Koegel, Koegel, Ashbaugh, & Bradshaw, 2014; NAC, 2015; Ornstein et al., 2014; Rogers, 1996). Overall, the widespread use of non-evidence-based interventions with children with ASD despite the availability of evidence-based interventions speaks to a significant gap between research findings and decisions made by “real world” parents, who are most often responsible for selecting treatments for their children with ASD.

### **Factors Influencing Parents’ Treatment Selection for their Children with ASD**

The question of which factors influence parents’ treatment selection for their children with ASD is of particular interest to researchers due to the significant benefits associated with evidence-based treatments and risks associated with non-evidence-based treatments (e.g., Koegel, Koegel, Ashbaugh, & Bradshaw, 2014; Miriam Foundation, 2008). Empirical support does not appear to be a major influence on parents’ treatment selection for their children with ASD, despite these high stakes. For example, Green, Pituch, Itchon, Choi, O’Reilly, and Sigafos (2006) found use of non-evidence-based treatments among children with ASD to be common, with 52% of parents reporting using at least one medication with their children, 43% reporting use of vitamin supplements, and 27% reporting use of special diets. These researchers also noted varying levels of empirical support for the most popularly used treatments, with visual schedules and applied behaviour analysis considered ‘empirically established’, speech therapy considered ‘empirically emerging’, and sensory integration considered ‘empirically unsupported’ (CMHO, 2003; NAC, 2015).

Similarly, results of a more recent study revealed that, of the five most commonly selected treatments by parents of children with ASD, three treatments (i.e., antecedent package, behavioural package, and visual schedules) were classified as ‘empirically established,’ while two treatments (i.e., academic interventions and the gluten/casein-free diet) were classified as ‘empirically unestablished’ (Drouillard, 2012). Notably, these parents reported selecting an average of 16 treatments each for their children with ASD, with most treatments selected being classified as ‘empirically emerging’. This ‘multi-treatment approach’ is consistent with findings from Goin-Kochel, Myers, and Mackintosh (2007) that parents select an average of seven to nine treatments for their children with ASD and use an average of four to six treatments simultaneously.

More parents of children with ASD than parents of children with other health-related concerns may select non-evidence-based treatments. Wong and Smith (2006) found that 52% of parents of children with ASD have used at least one non-evidence-based treatment (e.g., gluten/casein-free diet, sensory integration training, homeopathic remedies, therapeutic horseback riding) with their children, compared to 28% of parents of children with other mental health diagnoses. Accordingly, as qualitative research has demonstrated that empirical support is not the most important factor in parents’ treatment selection for their children with ASD (e.g., Green et al., 2006), the focus has shifted to identifying which factors are more influential in these decisions.

Many parents of children with ASD learn about ASD treatments through unverifiable sources, rather than from scientific literature. Through interviewing parents of children with ASD, Green (2007) found that parents most commonly reported that their information about ASD treatments came from other parents of children with ASD (22%) and the Internet (20%),

with only 7% of parents citing scientific literature. Similarly, Drouillard (2009) found that parents' most common sources of ASD treatment information, in order of frequency, were reportedly healthcare professionals, the Internet, ASD community organizations, and other parents of children with ASD. Parents' reliance on information from professionals, ASD-related books, and other parents of children with ASD when selecting treatments for their children was demonstrated in another study (Hodgson, 2012). Unfortunately, information from these sources may be confusing for parents, as their recommendations are often not based on the empirical support for each intervention (e.g., Chowdhury, Drummond, Fleming, & Neufeld, 2002; Matson & Williams, 2015).

Parents of children with ASD commonly report relying on professionals for information about available treatment options. Clinicians typically communicate ASD diagnoses in person to parents after an in-depth assessment of their children's developmental history and current functioning through clinical interviews, parent report questionnaires, and structured observation using a standardized assessment tool such as the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2; Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012). During this meeting, many professionals provide parents with their first information about various treatment options available to their children. In Ontario, ASD is typically diagnosed by pediatricians (39%), psychologists (32%), and psychiatrists (19%; CASDA, 2014). Unfortunately, many of these professionals admit being unaware of relevant research findings outside of their own discipline, despite calls for increased interdisciplinary collaboration in client care (Upton & Upton, 2006). Thus, professionals providing parents with treatment information may lack a comprehensive understanding of evidence-based treatments for ASD, many of which are most commonly reported in the psychological literature, rather than the medical literature.

Parents' relationships with professionals and treatment providers have also been demonstrated to influence their treatment selection. For example, parents' trust in the treatment provider and the perceived "fit" between the treatment provider and the family are commonly reported as influential factors in parents' treatment selection for their children with ASD (Drouillard, 2009; Golnick, Maccabee-Ryaboy, Scal, Wey, & Gaillard, 2012; Shyu, Tsai, & Tsai, 2010). Similarly, parents who receive greater levels of professional guidance regarding controversial treatment issues and who engage in collaborative decision-making with professionals during treatment selection report higher levels of satisfaction with their children's treatments (Golnick et al., 2012).

Practical considerations also significantly impact parents' treatment selection for their children with ASD. Cost, availability (e.g., in rural or remote communities), and ease of implementation all influence the types of treatment these parents select for their children (Carlton, Carter, & Stephenson, 2013; Green, 2007; Hodgson, 2012; Mandell & Novak, 2005). For example, although many parents are interested in evidence-based behavioural therapies (e.g., Applied Behaviour Analysis [ABA]) for their children with ASD (Green, 2007), these therapies are often quite costly to administer due to the time intensity (e.g., \$80,000 annually). Furthermore, there is currently a long waitlist for government funding to access ASD treatments in Ontario. As of September 2019 there were 23,312 children awaiting funding or services in Ontario alone, with only 11,300 currently receiving services (Ministry of Children, Community, and Social Services, 2019). Due to decreases in government funding for many children with ASD associated with recent changes to the Ontario Autism Program (Ministry of Children, Community, and Social Services, 2019), several ASD service organizations have had to reduce their staff, limiting availability of evidence-based interventions, particularly in rural areas (e.g.,



Alphonso, 2019). As such, the political and social context in which parents make treatment-related decisions on behalf of their children also has a notable impact on their decision-making.

Parents' beliefs about the causes of their children's ASD have also been found to impact their treatment selection. For example, parental beliefs in external causes for their children's ASD (e.g., vaccine injury, food allergies, toxic metals in the bloodstream) have been found to be associated with selection of detoxification, diet, and vitamin-based treatments (Al Anbar, Dardennes, Prado-Netto, Kaye, & Contejean, 2010; Dardennes, Al Anbar, Prado-Netto, Kaye, Contejean, & Al Anbar, 2011; Drouillard, 2012; Shyu, Tsai, & Tsai, 2010), despite wide scientific discreditation of claims linking these factors to the development of ASD (e.g., Editors of the Lancet, 2010). Parental beliefs in supernatural causes for their children's ASD have been found to be associated with selection of faith-based treatments such as prayer or changing the names of affected children (Shyu et al., 2010).

Parents have identified their emotional reactions as an additional factor which impacts their treatment selection for their children with ASD. For example, parents often report selecting several treatments for their children to assuage their fears that their children may 'miss out' on a particular treatment which may have been effective (Hodgson, 2012). Many parents report that their 'parental intuition' and 'gut reactions' to various treatments for ASD often significantly impact their treatment selection (Drouillard, 2012; Hodgson, 2012). Finally, parents commonly report that their experiences of grief and denial were significant challenges while selecting treatments for their children with ASD (Drouillard, 2012). In the words of one parent, "When you take on the responsibility for helping your child and they aren't getting better as fast as you want them to, there's really no one to point a finger at but you" (Drouillard, 2012; p. 74).

**Acceptance and parents of children with ASD.** Acceptance of the ASD diagnosis and

related thoughts and emotions appears to be a particularly complex process among parents of children with ASD, who report significantly lower levels of acceptance than parents of children with developmental disabilities such as Down Syndrome (Zembar & Yildiz, 2010). In an early study which sought to define acceptance of children's ASD diagnoses, Pianta, Marvin, Britner, and Borowitz (1996) conducted in-depth interviews with parents of children with ASD and outlined characteristics of parents deemed to have high levels of acceptance as well as characteristics of parents deemed to have low levels of acceptance. The authors concluded that parents with high levels of acceptance tended to: (a) openly discuss both the positive and negative aspects of parenting children with ASD, (b) focus less on the past and what caused their children's ASD, and (c) demonstrate accurate understandings of their children's strengths and limitations. Conversely, parents with low levels of acceptance tended to: (a) attempt to avoid or detach from their emotional responses to the diagnoses and (b) lack energy and motivation to take action in support of their children.

Few studies have specifically examined the impact of parents' acceptance on their treatment selection for their children with ASD. Nonetheless, some researchers have extrapolated from their results to hypothesize about possible relations between acceptance and treatment selection among these parents. Mandell and Novak (2005), for example, interpreted their finding that parents' causal beliefs influence their treatment selection for their children with ASD to suggest that parents who believe false claims that ASD can be easily cured may be more likely to select non-evidence-based treatments promising this result. Similarly, Siegel (1997) hypothesized that parents with lower acceptance of their children's diagnoses and their associated thoughts and emotions may be particularly vulnerable to non-evidence-based proposed "quick fixes" for ASD (e.g., chelation therapy). More specifically, it has been

hypothesized that parents who allow themselves to experience both the negative and positive thoughts and emotions associated with raising children with ASD (i.e., parents with higher levels of acceptance) may be more likely to select evidence-based treatments for their children, which often require greater investments of time and active engagement with their children (MacDonald, Hastings, & Fitzsimons, 2010).

In the only known study to empirically examine the relations between parents' acceptance of their children's ASD and their treatment selection, low levels of acceptance were found to be significantly associated with selection of a greater number of ASD treatments, regardless of empirical support (Drouillard, 2012). This treatment selection strategy was termed the 'shotgun approach' (Drouillard, 2012) and was exemplified by a parent in an earlier study, who explained that, "As a parent, you feel so worried... whatever you can get, you use it right away... you want to try every single thing...every method works in some way" (Drouillard, 2009, pp. 16). Taken together, these findings seem to suggest that interventions aimed at increasing acceptance among parents of children with ASD may also serve to promote the selection of evidence-based treatments within this population.

### **Acceptance and Commitment Therapy**

Acceptance and Commitment Therapy (ACT, said as one word) is a therapeutic approach which posits that it is individuals' relations to their distressing emotions, thoughts, and experiences (e.g., avoidance, preoccupation, surrender) which lead to suffering and dysfunction, not simply the presence of these distressing emotions, thoughts, and experiences (Hayes, 2004). The ACT model asserts that pain is an important and universal aspect of the human experience and that, as such, the goal of treatment should not be to eliminate or reduce pain, but instead to simply recognize and accept distressing thoughts, emotions, and experiences as they arise,

without attempting to avoid or struggle with them, and to act consistently with one's values in the face of pain (Hayes, Strosahl, & Wilson, 2003).

**Theoretical underpinnings of ACT.** ACT is regarded as a 'third wave' behavioural therapy, with the 'first wave' representing Behaviour Therapy and the 'second wave' representing Cognitive-Behaviour Therapy (Hayes, 2004). The theoretical basis for ACT both rests and builds upon each of these models. The originator of ACT, Steven Hayes, was trained as a behaviourist (S. Hayes, personal communication, April 10, 2014) and was heavily influenced by Skinnerian behavioural theory's assertion that learning and behaviour are affected by external contingencies (e.g., rewards). Skinner used the term 'operant' to describe behaviours that 'operate' on the environment (e.g., when a pigeon raises its head above a certain height, it immediately receives food; Skinner, 1953). However, behaviour theory failed to take cognition into consideration, limiting its applicability to directly observable phenomena. According to Hayes (2004), cognitive behaviour theory addressed this gap by asserting that behavioural and emotional reactions are often caused by individuals' interpretations of events, rather than the events themselves. Hayes has asserted that cognitive behaviour theory, despite this important contribution, downplayed some elements of basic behaviour theory and failed to address situations in which distressing thoughts are not based on cognitive distortions (Hayes, 2004).

Based on these theories and their limitations, Hayes proposed Relational Frame Theory. This theory asserts that language and cognition are dependent on the ability to derive relations between events (Hayes, Bames-Holmes, & Roche, 2001). Relational framing involves deriving implicit relations between events which are indirectly associated (e.g., an object and a thought). These derived relations are applied systematically in similar contexts moving forward. Hayes (2004) applied this theory to thoughts and emotions as well (in line with cognitive-behavioural

theory), such that the memory of a painful event can evoke more distress than the event itself, and that even imaginary events which have not been directly experienced can cause distress. As people make these associations automatically, attempting to avoid situations, thoughts, or emotions associated with a stressor (or attempting to dispute the association through examining evidence for/against its validity) typically only serves to further expand these negative relational networks and increase distress (Barnes-Holmes, Barnes-Holmes, McHugh, & Hayes, 2004). This all called for a new therapeutic stance which focused on altering the *context* of these relational frames, rather than their *content*. Based on Relational Frame Theory, in the Acceptance and Commitment Therapy framework, people's *relations to* distressing thoughts, emotions, and experiences (e.g., avoidance) are emphasized and targeted, rather than targeting their form, frequency, or intensity.

As with other third wave behaviour therapies such as Dialectical Behaviour Therapy (Linehan, 1993), Functional Analytic Psychotherapy (Kohlenberg & Tsai, 1991), and Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002), ACT builds upon behavioural and cognitive-behavioural therapies by incorporating elements such as acceptance, mindfulness, experiential exercises, and an emphasis on contextual factors (Hayes, 2004).

**The ACT model.** The six core processes of the ACT model include: (a) acceptance, (b) cognitive defusion, (c) contact with the present moment, (d) self as context, (e) values, and (f) committed action (Hayes, Strosahl, & Wilson, 2003). These processes are said to represent positive psychological skills, rather than tools for minimizing or avoiding distressing internal experiences (Hayes, Luoma, & Walser, 2007), and they are conceptualized as being interconnected and mutually influencing (Hayes et al., 2003). Together, these skills help to improve clients' psychological flexibility, defined as "the ability to contact the present moment

more fully as a conscious human being, and based on what the situation affords, to change or persist in behaviour in order to serve valued ends” (Luoma, Hayes, & Walser, 2007, pp. 17).

Each of these six core components of ACT is described in greater detail below.

***Acceptance.*** Acceptance, within the ACT framework, is conceptualized as the process of fully and actively embracing one’s thoughts, emotions, and bodily sensations (both pleasant and unpleasant), without attempting to escape them or to reduce their frequency or intensity (Luoma et al., 2007). As acceptance is conceptualized as an alternative to experiential avoidance, acceptance work in ACT shares some features with exposure techniques in behavioural and cognitive-behavioural therapies (Hayes, 2004). In ACT, however, acceptance is thought of as a valued process, not merely as a means by which to gradually reduce the frequency or intensity of clients’ unpleasant internal experiences (Hayes, 2004). Experiential exercises are utilized in ACT to encourage clients to confront previously avoided internal experiences, combined with mindfulness techniques to encourage flexibility and willingness in the face of these often distressing experiences (Luoma et al., 2007).

***Cognitive defusion.*** Cognitive defusion is an ACT term which literally means to ‘undo fusion’, referring to the process of separating from one’s thoughts in order to look *at* them, rather than *from* them (Luoma et al., 2007). Within the ACT model, cognitive fusion occurs when clients mistake thoughts as being literal and use thoughts as reasons for behaviours (Luoma et al., 2007). The ACT model differs from the cognitive-behavioural model in that clients are asked to evaluate the workability of their thoughts, rather than their validity (Luoma et al., 2007). In ACT, the emphasis is placed on changing the context of distressing thoughts, rather than their content (Luoma et al., 2007). Clients are encouraged to be mindful of their thoughts and the context in which they occur, without ‘buying into’ them. For example, a client with the thought

“I am bad” is not asked to examine evidence contrary to that conclusion, but is instead encouraged to simply be mindful that, in that moment, he/she is experiencing the thought “I am bad” (Hayes, 2004). Clients may be encouraged to engage in exercises such as verbally repeating a thought over and over until the original meaning of the thought is altered (e.g., Hayes, Strosahl, & Wilson, 2003).

**Contact with the present moment.** The goal of this core ACT component is increased awareness of and connection with internal and external experiences as they occur (Luoma et al., 2007). Clients are encouraged to focus on the present moment as a means of combatting both cognitive fusion and experiential avoidance, as well as enhancing their awareness of opportunities for values-based action (Luoma et al., 2007). Mindfulness exercises such as imagining one’s thoughts as leaves floating by on a stream are used to rehearse this process of noticing present thoughts, emotions, and bodily sensations from a nonjudgmental, defused, and accepting stance (Hayes, 2004).

**Self-as-context.** Self-as-context in ACT refers to a heightened understanding of a stable and transcendent sense of self from which internal and external events are experienced (Hayes, 2004). It is a reconceptualization of the self as an ongoing process of self-awareness (e.g., “Right now, I am seeing this”; Hayes & Smith, 2005). This concept is closely tied to defusion as its goal is to increase awareness of the continuous and enduring self which experiences various events, but which exists independent of those events (Luoma et al., 2007). Through fostering awareness of experiences and decreased attachment to them, the development of a sense of self-as-context also encourages acceptance (Luoma et al., 2007).

**Values.** Values, within the ACT model, represent ‘big picture’ desired qualities of life which answer the question “What do you want your life to stand for?” (Hayes, 2004). Values

(e.g., family closeness) are distinct from goals in that they are more aspirational than concrete and, as such, can never be fully obtained or achieved (Luoma et al., 2007). Instead, values are used to inform the identification of discrete goals, concrete steps toward these goals, and potential barriers to taking these steps (Hayes, 2004). Within this framework, other core components of ACT (e.g., acceptance) are important in their relations to one's capacity for values-consistent action (Luoma et al., 2007).

***Committed action.*** Committed action involves engaging in behaviours consistent with one's identified values and working toward achieving one's self-set goals toward this end (Hayes, 2004). Through values work, clients identify discrete goals, concrete steps toward the goals, and potential barriers to taking those steps, which form the basis of behavioural experiments and other experiential exercises comprising committed action (Luoma et al., 2007). These values-based actions (e.g., choosing a treatment for your child's serious condition) frequently lead to the experience of unpleasant thoughts, emotions, and bodily sensations, which in turn require the use of other core processes such as acceptance and defusion (Luoma et al., 2007). In committed action, clients must be willing to experience distressing internal states in the service of taking action to achieve concrete goals consistent with their larger values systems (Ciarrochi, 2012).

**Empirical support for ACT.** ACT appears to be largely unique within the various 'third wave' therapies which have been proposed in recent decades in terms of both the depth of research demonstrating its efficacy and the breadth of clinical concerns found to be significantly improved through its use.

***Group format.*** Several studies have demonstrated the efficacy of ACT when administered in group format. ACT with groups generally takes the form of workshops focusing



on increasing individuals' psychological flexibility through introducing and rehearsing the six core components of ACT (i.e., acceptance, cognitive defusion, contact with the present moment, self as context, values, and committed action; Luoma et al., 2007). This workshop format of ACT is often referred to as Acceptance and Commitment *Training*, as opposed to Acceptance and Commitment Therapy, highlighting the distinction between this more general, brief form of ACT intervention and the standard more intensive ongoing, individualized ACT intervention (e.g., Blackledge & Hayes, 2006).

Group ACT has been demonstrated to result in significantly lower levels of depressive symptoms and significantly higher levels of general health among parents of children with ASD, which were maintained at three-month follow-up (Blackledge & Hayes, 2006). In this study, 20 parents of children with ASD participated in a 2-day (14-hour) ACT workshop aimed at increasing parents' psychological flexibility through focusing on the six core components of ACT and how they relate to being parents of children with ASD. Parents completed measures of depression, general health, and self-efficacy, as well as measures of ACT processes such as acceptance and cognitive fusion, at four time points. Results revealed significant improvements among the participants from first assessment to one week after the workshop in terms of depressive symptoms and general psychological functioning. These changes remained significant at three-month follow-up, at which time even greater improvements were noted. Parents' scores on ACT process measures also demonstrated evidence of increased acceptance and decreased cognitive fusion at follow-up.

Building upon the work of Blackledge and Hayes (2006), Kowalkowski (2013) demonstrated that an 8-week group ACT intervention resulted in significantly decreased parenting stress and more positive attitudes toward caregiving for 13 parents of children with

ASD. Kowalkowski's (2013) ACT intervention was largely based on that developed by Blackledge and Hayes (2006) and targeted processes including values, mindfulness, acceptance, and committed action through experiential exercises and use of metaphors. Participants completed measures of psychological functioning and ACT processes (i.e., acceptance, cognitive fusion, mindfulness) at three time points. Changes in parenting-related stress and attitudes toward caregiving were largely maintained at three-month follow-up. Unfortunately, changes in participants' acceptance, mindfulness, and cognitive fusion were not statistically significant at post-intervention or follow-up, likely due to insufficient power afforded by the small sample size.

In a recent Canadian study, Lunsky, Fung, Lake, Steel, and Bryce (2018) examined the mental health benefits of a 3-session parent-led ACT group for 29 mothers of children with ASD. Participants completed measures of psychological functioning a week before participating in the group, one month after the final session, and eight weeks after the final session. Results revealed significant reductions in depressive symptoms and social isolation, as well as significant improvement in physical health scores which were maintained at follow-up. In a follow-up study, Fung, Lake, Steel, Bryce, and Lunsky (2018) found significant improvement in ACT process variables such as psychological flexibility, cognitive fusion, and value-consistent activities in mothers of children with ASD who completed the ACT workshop. They concluded that even brief ACT-based groups facilitated by other parents of children with ASD may have a long-lasting positive impact on parents of children with ASD.

Similarly, ACT in group format has been demonstrated to lead to reduced distress and enhanced psychological protective factors in a sample of 5 parents of children with obsessive-compulsive disorder (Donnelly, 2011), as well as in a sample of 34 parents with continued

involvement with Child Protective Services (O'Brien, 2013). Group ACT has also been associated with positive outcomes in the treatment of social phobia in a sample of 12 adults (Ossman, Wilson, Storaasli, & McNeill, 2006), chronic pain in a sample of 56 adults (McCracken & Gutierrez-Martinez, 2011; McCracken, Sato, & Taylor, 2013), borderline personality disorder in a sample of 41 adults (Morton, Snowdon, Gopold, & Guymer, 2012), and chronic headaches in a sample of 26 women (Mo'tamedi, Rezaiemaram, & Tavallaie, 2012), in addition to enhanced coping skills in a sample of 45 'treatment resistant' clients with diverse psychological diagnoses (Clarke, Kingston, Wilson, Bolderston, & Remington, 2012).

ACT has also been used to supplement educational workshops to enhance behavioural change in attendees. Gregg, Callaghan, Hayes, and Glenn-Lawson (2007) evaluated the effectiveness of supplementing an educational workshop on diabetes self-management skills with ACT for increasing individuals' adoption of these techniques. These researchers randomly assigned 81 participants to either a one-day (7 hour) diabetes education workshop with ACT components or a one-day diabetes education-only workshop. In the diabetes education with ACT workshop, participants were taught cognitive defusion techniques in order to accept negative diabetes-related thoughts and emotions and reframe them as simply negative thoughts and emotions, identify their life values, and take committed actions in terms of their diabetes self-management which were consistent with these life values. At three-month follow-up, participants in the diabetes education with ACT workshop had significantly higher reported adherence to the diabetes self-management techniques taught in the workshop, as well as significantly lower glucose levels, than did participants in the education-only workshop. There were no differences in understanding of diabetes self-management strategies between participants in the two workshop conditions, suggesting that the addition of ACT strategies in the

diabetes education with ACT group was responsible for the improvements in adherence and glucose levels in that group. Furthermore, changes in participants' acceptance of diabetes-related thoughts and emotions significantly mediated the impact of the workshop condition on participants' glucose levels at follow-up.

Professionals' willingness to adhere to guidelines regarding the use of evidence-based treatments with their clients has also been a target of group intervention in ACT. Luoma and colleagues (2007), for example, randomly assigned 30 professional addictions counselors who had participated in a one-day continuing education workshop on a specific evidence-based intervention for individuals with substance abuse issues (i.e., group drug counseling) to either an 8-week group-format ACT intervention (12 hours in total) or to a no contact control group. The focus of the ACT intervention was on acceptance of negative thoughts and emotions associated with trying a new treatment in their practice and willingness to take committed action by implementing the new, evidence-based treatment in service of the value of optimal care for their clients. Results indicated that the professionals who had participated in the ACT intervention following the educational workshop reported significantly higher use of the evidence-based treatment in their professional practice than did professionals in the no contact control condition. These group differences were maintained at 2-month and 4-month follow-up assessments, with professionals in the ACT condition also reporting significantly higher levels of personal accomplishment at the 4-month follow-up. Remarkably, participation in the ACT intervention accounted for approximately 35% of the variance in self-reported use of the evidence-based treatment at 4-month follow-up. This study provides preliminary support for the usefulness of ACT with education in increasing individuals' willingness to use evidence-based treatments.

In a related study by Varra, Hayes, Roget, and Fischer (2008), 59 professional addictions counselors were randomly assigned to attend either a 1-day (6 hour) ACT workshop or a 1-day educational control workshop before attending a 2-day workshop on evidence-based treatments for substance abuse in order to examine the usefulness of ACT for increasing professionals' willingness to use evidence-based treatments with clients. This 2-day workshop focused heavily on evidence-based agonist and antagonist pharmacological interventions for substance abuse. In the ACT workshop, participants were taught cognitive defusion techniques in order to assist in separating themselves from thoughts acting as barriers to using these evidence-based treatments with their clients. They were also taught techniques for accepting negative thoughts and emotions associated with trying new treatments with their clients and were helped through various values-based exercises designed to assist them in clarifying their commitment to their clients and values as therapists. The educational control workshop consisted of presentations describing the current empirical literature on substance abuse prevention and practical strategies for substance abuse prevention and was equivalent to the ACT workshop in terms of time, attention, and support given.

Varra and colleagues (2008) found that education on evidence-based treatments and their importance as a standalone intervention did not have a positive impact on professionals' adoption of evidence-based treatments in their clinical work. When combined with ACT, however, this educational workshop resulted in professionals being significantly more likely to use evidence-based agonist/antagonist pharmacological treatments with their clients and significantly less likely to report experiencing barriers to using these treatments. These group differences were maintained at three-month follow-up and the magnitude of the effect size for the workshop was larger at follow-up than at post-workshop in terms of increasing professionals'

willingness to use evidence-based treatments. Through mediational analyses, the authors also demonstrated that increases in acceptance and decreases in the believability of barriers to implementation (i.e., decreased cognitive fusion) largely accounted for the differences in use of evidence-based treatments between the groups.

***Individual format.*** ACT has been most commonly used and researched in individual format and has been shown to be associated with positive outcomes in individuals from both clinical populations and nonclinical populations, as well as in both laboratory and community settings. As ACT has been studied in ‘real world’ community settings in addition to highly controlled laboratory settings, there is growing evidence for its effectiveness (i.e., association with positive outcomes in community settings), as well as its efficacy (i.e., association with positive outcomes in highly controlled settings). In individual format, ACT has been demonstrated to be effective in improving outcomes among nonclinical individuals in the general population, through reducing work-related stress (Bond & Bunce, 2000; Hayes et al., 2004), marital distress (Peterson, Eifert, Feingold, & Davidson, 2009), and stigma toward individuals with mental health concerns (Masuda et al., 2007).

ACT has also been demonstrated through numerous randomized controlled trials to be efficacious in the treatment of several psychological disorders, including: major depressive disorder (Zettle & Hayes, 1986; Zettle & Rains, 1989), panic disorder (Meuret, Twohig, Rosenfield, Hayes, & Craske, 2012), substance abuse (Batten & Hayes, 2005), obsessive-compulsive disorder (Twohig, 2009; Twohig, Hayes, & Masuda, 2006), social phobia (Block, 2002), and generalized anxiety disorder (Roemer & Orsillo, 2007; Roemer, Orsillo, & Salters-Pedneault, 2008). ACT has also been associated with significantly improved functioning among individuals with various medical conditions such as chronic pain (Dahl, Wilson, & Nilsson,

2004; McCracken, MacKichan, & Eccleston, 2007; Vowles & McCracken, 2008), cancer (Feros, Lane, Ciarrocchi, & Blackledge, 2013), epilepsy (Lundgren, Dahl, Melin, & Kees, 2006; Lundren, Dahl, Yardi, & Melin, 2008), and tinnitus (i.e., chronic ringing in the ears; Hesser, Westin, Hayes, & Anderson, 2009).

Recently, Gould, Tarbox, and Coyne (2018) examined the effectiveness of individual ACT for increasing values-consistent behaviours in parents of children with ASD. Within this study, ACT content was delivered to three mothers of children with ASD over the course of six 90-minute individual sessions held in the participants' homes. Although each of the six sessions covered a different component of ACT (i.e., valuing, mindfulness, defusion, the ACT matrix, committed action, acceptance and self-compassion), session content was individualized according to the values identified by the participant at the onset of the intervention (e.g., child autonomy, self-care, quality family time). Frequency of values-consistent behaviours (e.g., asking child to collect an item from a different aisle in the supermarket, taking an exercise class, eating dinner together as a family) was tracked by parents via journals and data sheets which were verified by a third party (e.g., significant other, friend, therapeutic instructor). Results indicated that all three mothers increased their values-consistent behaviours throughout the intervention, with further increases noted at six-month follow-up. Increases in parents' acceptance and self-compassion were also noted.

**ACT with parents of children with ASD.** Theoretically, the overall goal and core components of ACT seem particularly appropriate for use with parents of children with ASD. As previously discussed, Pianta et al.'s (1996) conceptualization of parent acceptance of ASD diagnoses in their children (i.e., open discussion of both the positive and negative aspects of parenting a child with ASD, not preoccupied with focusing on the past, motivation to take action

in support of their child) corresponds closely to the ACT principles of acceptance, defusion, contact with the present moment, and committed action. Parenting children with ASD involves both accepting the negative thoughts and emotions which sometimes occur, as well as committing to taking action and working toward values-consistent goals to help the children reach their fullest potential.

Busch (2007) proposed that the ACT core process of defusion may be particularly useful to parents of children with ASD, who, largely due to their children's symptoms, commonly report experiencing thoughts such as "my child does not love me". If parents are 'fused' with these types of thoughts, they believe in their literal meaning and are likely to experience overwhelming sadness and to doubt their parenting abilities. Parents of children with ASD may also internalize negative societal messages and begin to believe thoughts such as "No matter what I do, it will never make a difference for my child" (Busch, 2007). If parents become fused with these unhelpful thoughts instead of recognizing them as merely passing thoughts, they may begin to doubt their abilities to support their children, as well as the likelihood that their children's treatments will be effective (Busch, 2007).

Many parents of children with ASD demonstrate experiential avoidance when confronted with distressing internal or external experiences related to their children (Busch, 2007). This avoidance may represent a maladaptive attempt to cope with the effects of the cognitive fusion they experience (Busch, 2007). For example, many parents of children with ASD have reported purposely avoiding bringing their children on public outings such as to the grocery store, restaurants, or on play dates due to their own doubts in their parenting abilities and fears that their children will be negatively judged by members of the public (Busch, 2007). In this way, parents may allow their own internal experiences (i.e., distressing thoughts, anxiety) to



overwhelm them and prevent them from acting in a manner consistent with their values (e.g., social inclusion). The ACT model recommends that instead, parents ‘step back’ and examine their thoughts and feelings instead of looking ‘through’ them. Doing so would allow parents to accept their distressing thoughts and feelings and to move forward with values-consistent action (e.g., taking their children with ASD for playdates) in the presence of these distressing internal experiences.

In an empirical examination of the role of acceptance in parents of children with ASD, Weiss, Cappadocia, MacMullin, Vieceli, and Lunsky (2012) found that parents’ acceptance of their thoughts and emotions related to their children’s ASD was a significant mediator of the path between children’s ‘problem behaviours’ (i.e., conduct problems, hyperactivity, self-injury, anxiety, ritualistic, and oversensitivity) and parent mental health problems. Specifically, these researchers found that as child problem behaviours increased, parents’ acceptance decreased, leading to increased psychological distress in parents. It seems that when parents are faced with challenging behaviours which cause them to experience distressing thoughts and emotions, some may turn to experiential avoidance (i.e., the opposite of acceptance) in an attempt to minimize their own distress. However, this avoidance may reduce parents’ openness to experiencing *positive* thoughts and emotions related to their children’s ASD in addition to reducing their openness to experiencing negative thoughts and emotions. According to the ACT model, decreased acceptance in these parents will also be associated with decreased capacity for engaging in values-consistent behaviours (Luoma et al., 2007) to support themselves and their children.

The tendency of some parents to use multiple treatments for their children regardless of empirical support (i.e., the ‘shotgun’ approach; Drouillard, 2012) may represent an alternative

form of experiential avoidance. In this case, these parents may use many treatments with their children in order to avoid the difficult emotions associated with making decisions about their children's treatment, and in recognizing ASD as an enduring aspect of their children's lives (Busch, 2007). Furthermore, the ACT concept of values may also have implications for treatment selection among parents of children with ASD in that values are 'big picture' life directions which can never be fully attained (e.g., improving potential). In this regard, parents of children with ASD may hold the value of improving their children's potential, which could lead to more discrete goals for values-consistent committed action (e.g., selecting evidence-based treatments, actively participating in their children's treatments).

### **Limitations of Previous Studies**

The studies reviewed above represent significant contributions to the body of literature examining feasible methods of promoting positive outcomes in individuals and groups through ACT. Furthermore, results from these studies provide preliminary support for supplementing psychoeducation with ACT as an effective means of increasing willingness to use evidence-based treatments among parents of children with ASD.

These studies have limitations which should be addressed in future research, despite their important contributions. In Blackledge and Hayes' (2006) study of ACT with parents of children with ASD, it may have been more difficult to determine whether ACT-specific processes were responsible for the noted improvements due to the small sample size (i.e., 20 participants) and lack of a control group for comparison. Similarly, the overall small sample size in Kowalkowski's (2013) study (i.e., 13 parents in the ACT condition), high number of measures, and high attrition rate in the support group resulted in significantly decreased statistical power and prevented between-groups comparisons. Direct comparison between groups may also have

been difficult in this study as the ACT groups and control support groups were led by different facilitators. Participants in this study missed an average of one out of eight sessions over the course of treatment, leading to heterogeneity of experiences even within treatment conditions, as well as difficulty obtaining data at post-treatment and follow-up (Kowalkowski, 2013). Further, in Gould et al.'s (2018) study, the sample size of only three mothers and failure to monitor treatment integrity make it difficult to determine the extent to which results may generalize to the broader population of parents of children with ASD and the extent to which observed changes were due to the treatment protocol developed.

With respect to demonstrating the applicability of ACT to increasing willingness to use evidence-based practices, studies by Luoma and colleagues (2007) and Varra and colleagues (2008) also have important limitations. These include the lack of comparable control group (Luoma et al., 2007), control for facilitator skills (Varra et al., 2008), and measure of knowledge retained (Varra et al., 2008). Preliminary evidence from these studies that ACT has the potential to increase individuals' willingness to select evidence-based treatments through increasing acceptance and decreasing cognitive fusion would be greatly strengthened by addressing these limitations in future research.

### **The Present Study**

The purpose of the present randomized pilot feasibility trial was to investigate the potential benefits of incorporating ACT components into a standard one-day educational workshop on selecting treatments for children with ASD for increasing parents' willingness to use evidence-based treatments with their children with ASD. Participants were randomized to either the ACT workshop group or the Support workshop group. Measures of treatment selection knowledge, willingness to select evidence-based treatments, and ACT processes (i.e.,

acceptance, cognitive fusion) were completed at preworkshop, postworkshop, and three-month follow-up. Parent feedback was also collected at postworkshop and follow-up via open-ended items embedded in study measures (Creswell, Plano Clark, Gutmann, & Hanson, 2003) in order to allow for a richer understanding of the study results by generating additional insights from parents' responses (Creswell et al., 2003; Hammarberg, Kirkman, & de Lacey, 2016).

Two parents of children with ASD acted as Parent Advisors in planning the study, recruiting participants, interpreting quantitative and qualitative results, identifying study implications and limitations, and making recommendations for future research. ASD research has a proud history of parent involvement (e.g., Wiener, 2016) and Parent Advisors continue to have an important voice in ASD research currently being conducted at highly regarded organizations such as the Autism Research Centre (Holland Bloorview Kids Rehabilitation Hospital, 2017). Involvement of Parent Advisors in research is consistent with calls for increased patient and public stakeholder involvement in health and social services research (e.g., Borup, Friis Bach, Schmiegelow, Wallach-Hildemoes, Jannik Bjerrum, & Westergaard, 2015).

Parent Advisors for the present study contributed unique and critical perspectives. In addition to having children with ASD, they were also employed in the ASD field, actively involved in the local ASD community, and known as 'champions for ASD' in their respective communities. Furthermore, the Parent Advisor for the Toronto workshops had previous training and experience in facilitating ACT groups with parents of children with ASD. Including Parent Advisors represents an approach to research in which stakeholders actively collaborate in research to maximize the validity and utility of the results obtained for the population of interest (Whyte, Greenwood, & Lazes, 1989). These methods also lead to improved knowledge translation and implementation of recommendations (Fletcher-Watson et al., 2018).

## Research Questions and Hypotheses

**Research question 1: How will acceptance, cognitive fusion, and willingness to select evidence-based treatments change over time within and between the workshop groups?** The primary purpose of the present study was to examine the potential benefits of the ACT workshop in terms of increasing acceptance (i.e., parents' willingness to experience both positive and negative thoughts and emotions related to their children's diagnoses of ASD), decreasing cognitive fusion (i.e., parents' tendency to buy into and get stuck on particular thoughts about their children's diagnoses of ASD), and increasing willingness to select evidence-based treatments in a community sample of parents of children with ASD, compared to the Support workshop. In previous studies with parents of children with ASD, group ACT interventions have been associated with increased acceptance and decreased cognitive fusion in participants (Blackledge & Hayes, 2006; Fung et al., 2018). Therefore, it was of interest to study whether embedding ACT exercises within an educational workshop would be associated with similar increases in acceptance and decreases in cognitive fusion over time, compared to a workshop embedding general parent support and discussion within the same treatment-related information. Limitations of previous studies were addressed by evaluating the ACT workshop against a similar workshop without ACT content, having the same facilitators lead both types of workshop, randomizing participants to workshop groups, and measuring fidelity within each workshop.

***Hypothesis 1a.*** Acceptance was expected to differ significantly over time by workshop group, with ACT group participants showing greater increases in acceptance over time than Support group participants.

*Hypothesis 1b.* Cognitive fusion was expected to differ significantly over time by workshop group, with ACT group participants showing greater decreases in cognitive fusion over time than Support group participants.

Previous studies have further demonstrated that workshops comprised of both education and ACT training for addictions counsellors have been associated with increased willingness to use evidence-based treatments with their clients (Luoma et al., 2007; Varra et al., 2008). Combining ACT training with information about evidence-based diabetes self-management techniques has also been shown to be associated with greater adoption of these practices by adults with type II diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007). In each of these studies, participants' reported willingness to use evidence-based treatments and their adoption of evidence-based treatments did not increase in the information-only control groups (Gregg et al., 2007; Luoma et al., 2007; Varra et al., 2008). Therefore, the present study sought to investigate whether a workshop specifically targeting acceptance and cognitive fusion while simultaneously presenting parents with information about ASD treatment selection would be associated with increased willingness to select evidence-based treatments over time, compared to an intervention presenting the same treatment-related information with general parent support and discussion.

*Hypothesis 1c.* Willingness to select evidence-based treatments was expected to differ significantly over time by workshop group, with ACT group participants showing greater increases in willingness to select evidence-based treatments over time than Support group participants.

**Research question 2: How will acceptance and cognitive fusion change between postworkshop and follow-up?** In a previous study by Varra and colleagues (2008), changes in ACT process variables such as acceptance and cognitive fusion were found to continue in

expected directions even months after completion of an ACT workshop by addictions counsellors. In participants who completed an educational workshop, however, acceptance and cognitive fusion were not found to significantly change over time (Varra et al., 2008). The present study sought to examine whether ACT workshop participants would demonstrate continued increases in acceptance and decreases in cognitive fusion three months following completion of the workshop.

*Hypothesis 2a.* Acceptance was expected to continue to increase between postworkshop and follow-up within the ACT workshop group.

*Hypothesis 2b.* Acceptance was not expected to change significantly between postworkshop and follow-up within the Support workshop group.

*Hypothesis 2c.* Cognitive fusion was expected to continue to decrease between postworkshop and follow-up within the ACT workshop group.

*Hypothesis 2d.* Cognitive fusion was not expected to change significantly between postworkshop and follow-up within the Support workshop group.

**Research question 3: Will the workshops result in greater knowledge of ASD treatment selection?** Educational workshops supplemented with ACT exercises have been associated with significant increases in knowledge (Gregg et al., 2007). Furthermore, Gregg and colleagues (2007) found that the gains observed in participants who completed an educational workshop with ACT were comparable to gains observed in participants who completed an education-only workshop. Therefore, the present study investigated whether parents' treatment selection knowledge increased significantly from preworkshop to postworkshop, as well as whether these gains were maintained at three-month follow-up.

*Hypothesis 3a.* Treatment selection knowledge was expected to increase significantly from preworkshop to postworkshop in both the ACT group and the Support group.

*Hypothesis 3b.* Increases in treatment selection knowledge were expected to be maintained from postworkshop to follow-up in both the ACT group and the Support group.

**Research question 4: Will acceptance and cognitive fusion moderate the relation between participants' treatment selection knowledge and their willingness to select evidence-based treatments?** Acceptance and cognitive fusion are thought to be two primary mechanisms of change in the ACT model (e.g., Hayes, Strosahl, & Wilson, 2003). Previous research investigating ACT groups with parents of children with ASD has suggested that changes in acceptance and cognitive fusion appear to predict improvement in parents' mental health (Blackledge & Hayes, 2006; Fung et al., 2018). Studies have also found that changes in acceptance and cognitive fusion predict the impact of combined ACT with education workshops on changes in both reported willingness to use evidence-based treatments and actual use of evidence-based treatments (Gregg et al., 2007; Varra et al., 2008). The present study examined the potential role of acceptance and cognitive fusion in moderating the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments for their children with ASD at postworkshop and follow-up time points.

*Hypothesis 4a.* Acceptance was expected to significantly moderate the relation between treatment selection knowledge and willingness to select evidence-based treatments at postworkshop, such that the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments would vary depending on their levels of acceptance.



*Hypothesis 4b.* Acceptance was expected to significantly moderate the relation between treatment selection knowledge and willingness to select evidence-based treatments at follow-up, such that the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments would vary depending on their levels of acceptance.

*Hypothesis 4c.* Cognitive fusion was expected to significantly moderate the relation between treatment selection knowledge and willingness to select evidence-based treatments at postworkshop, such that the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments would vary depending on their levels of cognitive fusion.

*Hypothesis 4d.* Cognitive fusion was expected to significantly moderate the relation between treatment selection knowledge and willingness to select evidence-based treatments at follow-up, such that the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments would vary depending on their levels of cognitive fusion.

**Research question 5: What feedback do parents have regarding their experiences during the workshop?** A qualitative research question was also developed to further explore parents' experiences during the workshop in terms of their most liked aspects, least liked aspects, suggestions for future changes, and any additional feedback they wanted to share. As both the ACT and Support workshops were designed for the purposes of the present study and have not previously been studied, participants' qualitative feedback was elicited through the Workshop Satisfaction Survey. The intention of these research questions was to inform future research on these types of workshops. Thus, although no specific hypotheses existed due to the novel nature of the workshops, parents' qualitative responses to these questions were of interest, as well as

whether parent feedback were similar or distinct between the ACT workshop and the Support workshop.

**Research question 6: What feedback do parents have regarding their experiences between postworkshop and follow-up?** A qualitative research question was also developed to further explore parents' experiences over the three months following the workshop in terms of the impact of the workshop on their lives, the most important thing they learned in the workshop, changes in their attitudes and behaviours after completing the workshop, how the workshop benefitted their children, and any additional feedback they wanted to share. As these workshops were original to the present study and, thus, have not been researched before, parents' qualitative responses were elicited through the Follow-up Experiences Survey. Again, no specific research hypotheses were formulated as these workshops had yet to be studied. Parents' qualitative responses to these questions, as well as whether differences emerged between workshop conditions, were believed to be valuable for informing future workshops.

## METHOD

### Participants

Participants in the present study were parents of children with ASD from the Windsor and Toronto areas. After receiving clearance from the University of Windsor Research Ethics Board and relevant community organizations, participants in Windsor were recruited in person, over the telephone, and over the Internet through various ASD, disability, and parenting-related groups, organizations, and events in the community. The researcher attended several community workshops and events held by three local organizations (i.e., Autism Ontario, Autism Services Incorporated, and The Summit Centre for Preschool Children with Autism) to distribute study flyers and present parents with a brief description of the study and what would be asked of participants. As the researcher and supervisor for the present study are employed in ASD-related organizations in the Windsor and Toronto areas, participants were assured during recruitment that participation in the study would not affect the services their children received at these organizations. As well, the supervisor for the study, Clinical Director of the Summit Centre for Preschool Children with Autism, was not directly involved in study recruitment.

If participants were recruited in-person, they were asked to provide their telephone number or email address to be contacted by the researcher at a later date with more details about the study. If participants were recruited through emailed flyers, they were asked to contact the researcher by telephone or email for more details about the study. The researcher made three attempts to reach participants who provided their contact information. Despite these recruitment efforts, only 23 participants were recruited from the Windsor area. Therefore, a decision was made to expand recruitment to the Toronto area in an effort to achieve the desired sample size for the present study.

Recruitment in the Toronto area consisted of two large community organizations (i.e., Autism Ontario – Toronto Chapter and Extend-A-Family) emailing study flyers to their membership, along with word of mouth recruiting and snowball sampling (Atkinson & Flint, 2001). Interested participants were asked to contact the researcher by telephone or email, at which time they were provided with additional information about the study and what would be required of participants. Following these expanded recruitment efforts, an additional 34 parents were recruited from the Toronto area. Refer to Figure 1 to see the participant flow through each phase of the study.

To be included in the study, interested individuals had to meet several criteria: they had to be (a) the biological, step, adoptive, foster parent or legal guardian of a child with ASD; (b) able to speak, read, and write in English; (c) able to attend a one-day (6.5-hour) workshop and complete pre, post, and follow-up questionnaires; and (d) they had to agree to be randomly assigned to either of the two workshops. In an effort to maximize the potential pool of participants, there were no exclusion criteria for child age or time since diagnosis. Research has demonstrated that child age and time since diagnosis are not correlated with parents' ASD-related acceptance, as parents' levels of acceptance fluctuate at various stages of their children's development (Milshtein, Yirmiya, Oppenheim, Koren-Karie, & Levi, 2010). Furthermore, treatment selection is an ongoing and evolving process throughout the lifespan. Thus, including parents with children of various ages and time since diagnosis was of interest in the present study. These inclusion and exclusion criteria were deemed appropriate given that the current

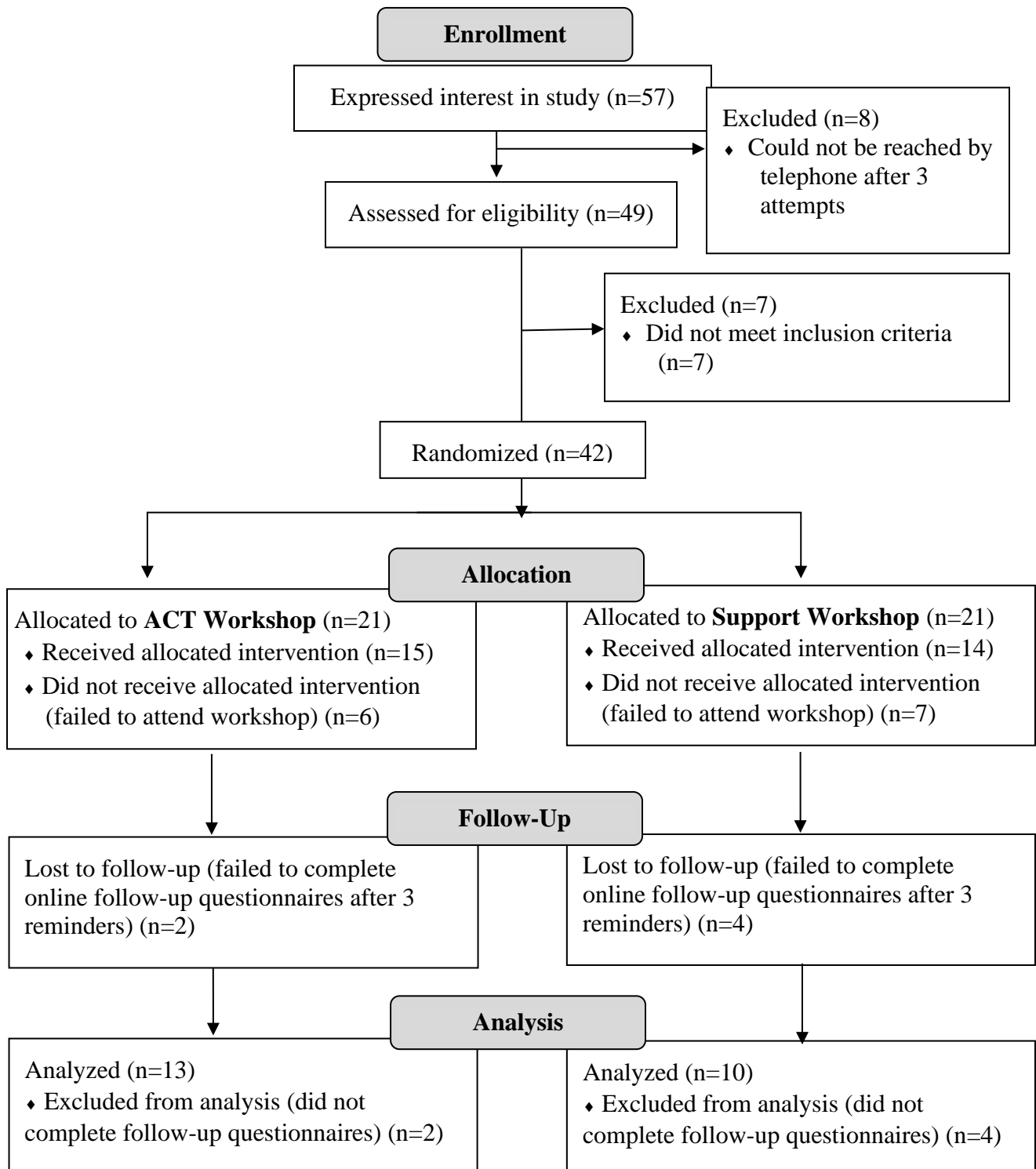


Figure 1. CONSORT diagram of participant flow through each phase of the study

study aimed to prioritize external validity in this community-based pilot feasibility trial.

Participants were offered a \$5.00 Tim Horton's gift card at postworkshop as a token of thanks for participating in the present study. Participants were also offered a \$10.00 Tim Horton's gift card upon completion of the online questionnaires at three-month follow-up (i.e., each participant who completed the study was offered \$15 Tim Horton's credit in total). This value was thought to demonstrate recognition and gratitude for parents' participation in the study, while not coercing participation.

The final sample for the present study consisted of 23 parents of children with ASD. Windsor data collection consisted of 8 participants (5 in the ACT workshop and 3 in the Support workshop), while Toronto data collection consisted of 15 participants (8 in the ACT workshop and 7 in the Support workshop). Participants were predominantly married mothers, representing a diverse sample of ethnic backgrounds. Most participants had college, university, or post-graduate degrees, and most were either unemployed or working part-time. Refer to Table 2 for additional information regarding participants' gender, ethnic background, marital status, and educational status. Participants ranged in age from 27 to 65 years ( $M = 43.74$ ,  $SD = 11.64$ ). Their reported annual household incomes ranged from \$12,000 to \$400,000 CDN ( $M = \$60,931.82$ ,  $SD = 80\ 153.76$ ).

The children of the participants ranged in age from 4 to 26 years ( $M = 10.65$ ,  $SD = 6.73$ ) and their time since diagnosis ranged from 1 year to 18 years ( $M = 5.78$  years,  $SD = 5.34$ ). They were predominantly males, and diverse ethnic backgrounds were represented. Participants were also asked to bring a copy of their children's diagnostic reports to the workshop in order to allow

Table 2

*Participant Demographics*

Characteristic	<i>N</i>	%
Gender		
Female	18	78.30
Male	5	21.70
Ethnic Background		
White	9	39.10
Filipino	3	13.00
South Asian	3	13.00
Arab	2	8.70
Black	2	8.70
Chinese	3	10.34
Aboriginal	1	4.30
Other	1	4.30
Marital Status		
Married	16	69.60
Single	5	21.70
Separated/Divorced	2	8.70
Level of Education		
College/University/Post-Graduate	16	69.60
Some College/University	6	26.10
High School or Less	1	4.30
Employment Status		
Unemployed	9	39.10
Part Time	8	34.80
Full Time	4	17.40
Retired	2	8.70

for verification of diagnoses and recording of children's diagnostic information. Of the 29 parents who participated in the workshops, 3 did not bring a diagnostic letter or report for their children. In these cases, parents were asked to report the name of the diagnosing clinician and the diagnosis received by the child. Children had predominantly received diagnoses of Autism Spectrum Disorder (ASD). See Table 3 for additional information regarding the children's gender, ethnic background, and official diagnoses.

### **Measures**

The study involved the use of ten measures designed to assess demographic variables, process-level variables, and outcome variables. See Appendix A for permissions to use and modify measures for the purposes of the present study.

**Demographic Questionnaire.** This 14-item questionnaire was designed specifically for the present study and contained items regarding demographic variables of the parent and relevant child (i.e., age, annual income, gender, education, employment status, marital status, race/ethnicity, year of child diagnosis; see Appendix B for a copy of the Demographic Questionnaire.

**Evidence-based Practice Attitudes Scale (Parent; Aarons, 2004).** The Evidence-Based Practice Attitude Scale (Parent) (EBPAS-P) was used in the present study as a measure of parents' willingness to use evidence-based interventions with their children with ASD. For the purposes of the present study, the 15 original items were modified to relate specifically to parents' willingness to use evidence-based treatments with their children (e.g., "I am willing to try new types of therapy/interventions even if they require me to follow a manual" was changed to "I am willing to try new types of therapy/interventions with my child even if they require me



Table 3

*Children Demographic Information*

Characteristic	<i>N</i>	%
Gender		
Male	17	73.90
Female	6	26.10
Ethnic Background		
White	9	39.10
Filipino	3	13.00
South Asian	3	13.00
Arab	2	8.70
Black	2	8.70
Chinese	2	8.70
Other	2	8.70
Diagnosis		
Autism Spectrum Disorder	21	91.30
Autistic Disorder	1	4.35
PDD-NOS	1	4.35

\**Note.* PDD-NOS = Pervasive Developmental Disorder Not Otherwise Specified.

or the treatment provider to follow a manual”). Similar modifications have been used in order to assess willingness to adopt evidence-based practices among teachers (Monahan, McDaniel, George, & Weist, 2014).

The EBPAS-P is a 15-item self-report measure on which participants are asked to rate the extent to which they agree with statements regarding the use of evidence-based practices. Each item (e.g., “I am willing to use new and different types of therapy/interventions developed by researchers”) is rated on a Likert-type scale ranging from 0 (i.e., “not at all”) to 4 (i.e., “to a very great extent”). The EBPAS-P yields an overall score representing parents’ overall willingness to use evidence-based practices with their children, as well as scores on each of the four subscales (i.e., Appeal, Requirements, Openness, and Divergence). For the purposes of this study, participants’ total scores on this measure were used to measure their willingness to select evidence-based treatments. Within the present study, the EBPAS-P demonstrated adequate internal reliability at preworkshop ( $\alpha = .82$ ), postworkshop ( $\alpha = .73$ ), and follow-up time points ( $\alpha = .73$ ).

The original EBPAS was developed by Aarons (2004) to explore community mental health service providers’ attitudes toward the use of evidence-based practices. The EBPAS is comprised of four subscales which are said to represent four distinct aspects of professionals’ attitudes toward the use of evidence-based practices: (a) the Appeal subscale, measuring “the extent to which the service provider would adopt a new practice if it is intuitively appealing, makes sense, could be used correctly, or is being used by colleagues who are happy with it” (pp. 67); (b) the Requirements subscale, measuring “the extent to which the provider would adopt a new practice if it is required by an agency, supervisor, or state” (pp. 67); (c) the Openness subscale, measuring “the extent to which the provider is generally open to trying new

interventions and would be willing to try or use new types of therapy” (pp. 67); and (d) the Divergence subscale, measuring “the extent to which the provider perceives research-based interventions as not clinically-useful and less important than clinical experience” (pp. 67).

The EBPAS was developed on the basis of a thorough review of the literature on evidence-based practice adoption, as well as consultation with mental health service providers with experience implementing evidence-based practice protocols. Participants in the initial validation study were 322 mental health professionals (i.e., marriage and family therapists, social workers, psychologists, psychiatrists) working in publicly funded community mental health settings for children, adolescents, and their families in San Diego.

The initial validation study provided evidence for good internal consistency of the overall EBPAS (Cronbach’s  $\alpha = .77$ ), as well as for the Appeal subscale ( $\alpha = .80$ ), Requirements subscale ( $\alpha = .90$ ), Openness subscale ( $\alpha = .78$ ), and Divergence subscale ( $\alpha = .59$ ).

Additionally, preliminary support for the ecological validity of the EBPAS was provided by this initial validation study, as participants were ‘real world’ mental health service providers from diverse educational backgrounds and fields of specialization working in publicly funded organizations. In an additional validation study (Aarons, Glisson, Hoagwood, Kelleher, Landsverk, & Cafri, 2010), content validity of the EBPAS was assessed by asking an expert panel of six mental health service providers to rate the relevance, importance, and representativeness of the specific construct (i.e., appeal, requirements, openness, divergence) each item seeks to assess on a scale from 1 (i.e., “not at all relevant”) to 5 (“relevant to a very great extent”). Across all items, mean expert ratings of relevance ranged from 3.33 to 4.67, mean expert ratings of importance ranged from 3.17 to 4.67, and mean expert ratings of

representativeness ranged from 3.17 to 4.67, demonstrating content validity of the EBPAS as rated by experts.

**Acceptance and Action Questionnaire-II (Autism; Bond et al., 2011).** The Acceptance and Action Questionnaire-II (Autism) was also used as a measure in the study. For the purposes of the present study, the seven original AAQ-II items were modified to relate specifically to parents' acceptance with respect to their children having ASD (e.g., "I'm afraid of my feelings" was rephrased as "I'm afraid of my feelings toward my child having Autism"). Similar modifications have been utilized in order to study psychological flexibility with regard to children with ASD (Weiss, Cappadocia, MacMullin, Vieceli, & Lunskey, 2012), children with intellectual disabilities (MacDonald, Hastings & Fitzsimons, 2010), diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007), substance abuse (Luoma, Drake, Hayes, & Kohlenberg, 2011), body image (Timko, Juarascioc, Martina, Faherty, & Kalodner, 2014), chronic pain (McCracken, Vowles, & Eccleston, 2004), and social anxiety (MacKenzie & Kocovski, 2010).

The AAQ-II-A consists of 7 items designed to measure parents' acceptance with respect to their children's ASD (e.g., "My emotions about my child having Autism cause problems in my life"), which are rated on a 7-point Likert scale ranging from 1 (i.e., "never true") to 7 (i.e., "always true"). Scores on the AAQ-II-A are established by summing individuals' responses across the seven items in order to generate a total score ranging from 7 to 49, with higher scores representing lower levels of acceptance. Due to the confusion which can occur as a result of this reverse scoring of acceptance, the directionality of each result will be explicitly stated in the present study. As this questionnaire is not intended for use as a psychodiagnostic measure, 'cutoff' scores indicating pathological patterns of response have not been identified (Bond et al., 2011). For practical purposes, however, the authors noted the range of AAQ-II scores associated

with ‘clinically significant’ scores on the Beck Depression Inventory-II, the General Health Questionnaire (12 item version), and the Global Severity Index of the Symptom Checklist – Revised (90 item version), and found that AAQ-II scores above 24-28 are associated with clinically significant scores on these three measures (Bond et al., 2011). Within the present study, the AAQ-II-A demonstrated high internal reliability at preworkshop ( $\alpha = .93$ ), postworkshop ( $\alpha = .96$ ), and follow-up time points ( $\alpha = .89$ ).

The AAQ-II is a commonly used measure of acceptance in ACT research which was developed by Bond and colleagues (2011) in response to psychometric limitations within the original AAQ, previously the most widely used measure of experiential avoidance (Hayes et al., 2004). The AAQ-II is said to measure psychological flexibility (i.e., “the ability to fully contact the present moment and the thoughts and feelings it contains without needless defense, and, depending upon what the situation affords, persisting in or changing behaviour in the pursuit of goals and values” [Bond et al., 2011, pp. 678]). Although the AAQ-II was originally a 10-item measure, the authors have since concluded that the 7-item version of the measure, representing a single factor solution, is optimal (Bond et al., 2011).

This revised AAQ-II was developed on the basis of three studies performed using six distinct sample groups with a total of 2816 participants (Bond et al., 2011). Importantly, the AAQ-II was found to correlate highly with the original AAQ ( $r = .97$ ), but with improved psychometric properties. Across the six samples tested, the AAQ-II had good internal reliability, with Cronbach’s alpha coefficients ranging between .78 and .88 (Bond et al., 2011). Test-retest reliability was also evaluated at three-month and twelve-month intervals and was found to be good, with correlations of .81 and .79, respectively (Bond et al., 2011), supporting the sensitivity of this measure to changes in parents’ acceptance at three-month follow-up. Scores on the

AAQ-II were significantly correlated in expected directions with scores on the White Bear Suppression Inventory ( $r = .63$ ), the Beck Depression Inventory-II ( $r = .71$ ), and the Beck Anxiety Inventory ( $r = .61$ ), demonstrating good convergent validity (Bond et al., 2011). Conversely, scores on the AAQ-II were not associated with scores on the Marlowe-Crowne Social Desirability Scale ( $r = -.09$ , ns), demonstrating good divergent validity between these two constructs (Bond et al., 2011).

**Cognitive Fusion Questionnaire (Autism; Gillanders et al., 2014).** The Cognitive Fusion Questionnaire (Autism) (CFQ-A) was used as an additional process measure in the present study. For the purposes of the present study, the seven original CFQ items were modified to relate specifically to parents' fusion with their thoughts about their children having ASD (e.g., "I struggle with my thoughts" was rephrased as "I struggle with my thoughts about my child having Autism"). Similar modifications have been utilized in order to study cognitive fusion in adolescent populations (Solé, Racine, Castarlenas, Vega, Tomé-Pires, Jensen, & Miro, 2015). The CFQ-A consists of 7 items designed to measure parents' fusion with their thoughts about their children with ASD (e.g., "I get upset with myself for having certain thoughts about my child having Autism"), which are rated on a 7-point Likert scale ranging from 1 (i.e., "never true") to 7 (i.e., "always true"). Scores on the CFQ are established by summing individuals' responses across the seven items in order to generate a total score ranging from 7 to 49, with higher scores representing greater cognitive fusion. Within the present study, the CFQ-A demonstrated high internal reliability at preworkshop ( $\alpha = .95$ ), postworkshop ( $\alpha = .97$ ), and follow-up time points ( $\alpha = .93$ ).

The original CFQ (Gillanders et al., 2014) was developed to address limitations of the widely used Automatic Thoughts Questionnaire (ATQ; Hollon & Kendall, 1980), which has

been said to capture only one aspect of cognitive fusion: believability of automatic thoughts (Gillanders et al., 2014). In contrast, the CFQ captures additional aspects of cognitive fusion, such as attempted thought control, rumination, emotional arousal in response to thoughts, perspective taking difficulties, and thought-dictated behaviour (Gillanders et al., 2014).

Additionally, the ATQ was originally developed to measure cognitive fusion in individuals with depression (Hollon & Kendall, 1980), whereas the CFQ is intended for use with many populations in a variety of settings (Gillanders et al., 2014). CFQ items were clinically derived by a group of expert ACT practitioners based on their knowledge and experience.

Construct validity of the CFQ has been demonstrated through a large, multisite validation study in which individuals' scores on the CFQ were highly correlated in expected directions with their scores on measures of mindfulness, distress, burnout, psychological flexibility, rumination, and automatic thought frequency (Gillanders et al., 2014). In this same study, individuals' scores on the CFQ were also found to be moderately correlated with measures of life satisfaction and quality of life (Gillanders et al., 2014). The CFQ has demonstrated good internal reliability, with a Cronbach's alpha coefficient of .87 (McCracken, DaSilva, Skillicorn, & Doherty, 2014). Test-retest reliability was also evaluated at a one-month interval and was found to be good, with a significant correlation of .81 (Gillanders et al., 2014).

The CFQ has also been demonstrated to be sensitive to treatment effects in a community sample, with scores on the CFQ at pre-intervention and 3-month follow-up significantly impacted by participation in an ACT training group (partial  $\eta^2 = .150$ ), representing a large effect (Gillanders et al., 2014). Furthermore, changes in scores on the CFQ were demonstrated to statistically mediate the impact of the ACT training program on individuals' mental health

ratings (Gillanders et al., 2014), demonstrating that the CFQ is appropriate for use as a process measure within a community intervention study.

**Mindful Attention Awareness Scale (Brown & Ryan, 2003).** The Mindful Attention Awareness Scale (MAAS) served as a measure of parents' trait mindfulness before completing workshops in the present study. This measure was included in the present study in order to control for possible effects of trait mindfulness, if found to be significantly correlated with any variables of interest. The MAAS (Brown & Ryan, 2003) is comprised of 15 statements (e.g., "I tend to walk quickly to get where I'm going without paying attention to what I experience along the way") which individuals are asked to rate on a Likert-type scale ranging from 1 (i.e., "almost always") to 6 (i.e., "almost never") with respect to how often each statement is true for them. Higher MAAS scores denote greater awareness of internal experiences and external behaviours (i.e., greater levels of mindfulness). The MAAS demonstrated good internal reliability (i.e.,  $\alpha = .89$ ; MacKillop & Anderson, 2007). Construct validity is supported by significant positive correlations between MAAS scores and measures of positive affect and life satisfaction (Brown & Ryan, 2003), as well as direct participant rating of their levels of mindfulness (Brown & Ryan, 2003). MAAS scores have also been demonstrated to correlate negatively with stress, anxiety, and depression and to correlate positively with quality of life in a sample of parents of children with ASD (Rayan & Ahmad, 2018). Within the present study, the MAAS demonstrated good internal reliability ( $\alpha = .87$ ).

**Marlowe-Crowne Social Desirability Scale- Short Form (Strahan & Gerbasi, 1972).** The Marlowe-Crowne Social Desirability Scale- Short Form (MCSDS-SF) was included in the present study in order to control for possible social desirability effects, if found to be significantly correlated with any variables of interest. The MCSDS-SF (Strahan & Gerbasi,



1972) is comprised of 10 statements which individuals are asked to rate as “true” or “false” with respect to themselves (e.g., “I’m always willing to admit when I make a mistake”). This measure has demonstrated good convergent validity with the full 33-item MCSDS (Crowne & Marlowe, 1960),  $r = .80$  (Strahan & Gerbasi, 1972). The MCSDS-SF also has adequate internal reliability, with reliability coefficients ranging from .59 to .70 when used with differing populations (Strahan & Gerbasi, 1972). Within the present study, the MCSDS-SF had adequate internal reliability ( $\alpha = .65$ ).

**Treatment Selection Knowledge Quiz.** The Treatment Selection Knowledge Quiz (TSKQ) was developed by the researcher, Parent Advisor, and study supervisor specifically for the purposes of the current study to serve as a pre/post assessment of parents’ retention of the information outlined in the workshops (see Appendix C for a copy of this measure). The TSKQ consists of ten multiple choice items assessing parents’ achievement of learning objectives set for the treatment selection education portion of the workshops, including: (a) recognition of widespread misinformation about ASD and ASD treatments, (b) understanding the term ‘evidence-based treatment’ as it relates to ASD, (c) understanding the benefits and drawbacks of evidence-based treatments, (d) understanding the current evidence behind popular ASD treatment approaches, (e) knowledge of how to find quality information about evidence-based ASD treatments, (f) knowledge of how to critique/identify quality of ASD information in popular media, (g) knowledge of what to ask ASD treatment providers when selecting treatments, and (h) knowledge of parents’ rights in relation to their children’s treatment. This quiz was scored in terms of the total number of correct responses out of a possible 10 correct responses. Within the present study, the TSKQ demonstrated acceptable internal reliability at preworkshop ( $\alpha = .75$ ), postworkshop ( $\alpha = .76$ ), and follow-up ( $\alpha = .71$ ) time points.

**Workshop Satisfaction Survey (Kowalkowski, 2013).** This brief questionnaire is comprised of eight items designed to assess participants' overall satisfaction with the workshop they attended. The original Workshop Satisfaction Survey (WSS; Kowalkowski, 2013) was modified for use in the present study to assess the satisfaction of parents of children with ASD who had participated in either the ACT workshop or the Support workshop. Specifically, the WSS asks participants to rate five aspects of their experiences: (a) the usefulness of the workshop, (b) the helpfulness of the facilitators, (c) the helpfulness of the topics discussed, (d) the likelihood that they would recommend the workshop to others, and (e) their overall satisfaction with the workshop, on a Likert-type scale ranging from 1 (i.e., "not at all") to 5 (i.e., "very much"). Participants' responses to these items are summed to yield a total score for workshop satisfaction. Within the present study, the WSS demonstrated high internal reliability ( $\alpha = .93$ ).

For the purposes of the present study, three additional open-ended items were embedded within the WSS in order to ascertain feedback about participants' experiences during the workshop. Specifically, participants are asked to describe what they liked most about the workshop, what they liked least about the workshop, and their recommendations for improving the workshop in the future. At the end of the survey, participants are also provided with space to add any additional comments about the workshop.

**Group Cohesiveness Scale (Wongpakaran et al., 2013).** The Group Cohesiveness Scale (GCS) served as a measure of parents' perceived connection and rapport with other parents in their workshop group. This measure was included in the present study in order to control for possible effects of group cohesion, if found to be significantly correlated with any variables of interest. The GCS (Wongpakaran et al., 2013) is comprised of 7 statements (e.g., "In my group,

we trust each other”) which individuals are asked to rate on a Likert-type scale ranging from 1 (i.e., “strongly disagree”) to 5 (i.e., “strongly agree”). Participants’ ratings of each item are summed to yield a total score, with higher GCS total scores indicating higher levels of group cohesiveness. The GCS demonstrated good internal reliability in the initial validation study ( $\alpha = .87$ ; Wongpakaran et al., 2013). Evidence of concurrent validity was provided by significant positive correlations between GCS total scores and participants’ ratings of group benefit ( $r = .71$ ) and cohesion to therapist ( $r = .71$ ; Wongpakaran et al., 2013). Within the present study, the Group Cohesiveness Scale demonstrated good internal reliability ( $\alpha = .89$ ).

**Follow-up Experiences Survey.** The Follow-up Experiences Survey (FES) was developed by the researcher, Parent Advisor, and study supervisor specifically for the purposes of the present study. The FES is comprised of five open-ended qualitative items to which participants were invited to respond at three-month follow-up. Specifically, participants were asked how the workshop impacted their lives in the three months since the workshop, what they viewed as the most important thing they learned in the workshop, how their attitudes and behaviours changed as a result of participating in the workshop, how their children benefitted from their participation in the workshop, and what they would most like researchers to know about their experiences following the workshop. See Appendix D for a copy of the FES.

**ACT Workshop Fidelity Measure.** The ACT Workshop Fidelity Measure was developed specifically for the purposes of the present study by the researcher, Parent Advisor, and supervisor. This measure is comprised of 14 items denoting ACT workshop learning objectives (e.g., “development of concrete goals and commitment to engaging in values-consistent behaviours”) which the assessor was asked to rate on a 7-point Likert scale ranging from 1 (i.e., “not at all covered”) to 7 (i.e., “extremely thoroughly covered”) in terms of how

well each topic was covered in the workshop. Fidelity scores are calculated as the ratio of total fidelity score to the total possible score (Moncher & Prinz, 1991). See Appendix E for a copy of this measure.

**Support Workshop Fidelity Measure.** The Support Workshop Fidelity Measure was developed specifically for the purposes of the present study by the researcher, Parent Advisor, and supervisor. This measure is comprised of 11 items denoting Support workshop learning objectives (e.g., “sharing of experiences with other workshop participants”) which the assessor was asked to rate on a 7-point Likert scale ranging from 1 (i.e., “not at all covered”) to 7 (i.e., “extremely thoroughly covered”) in terms of how well each topic was covered in the workshop. Fidelity scores are calculated as the ratio of total fidelity score to the total possible score (Moncher & Prinz, 1991). See Appendix F for a copy of this measure.

### **Procedure**

The aim of this randomized pilot feasibility trial was to evaluate the potential benefits of the ACT workshop (comprised of treatment-related information and ACT content) for increasing acceptance, decreasing cognitive fusion, and increasing willingness to use evidence-based practices in a community sample of parents of children with ASD. The ACT workshop was evaluated against the Support workshop (comprised of treatment-related information and general parent support) which acted as the control group. Participants were randomly assigned to one of these two groups and completed study measures at three time points (i.e., preworkshop, postworkshop, and 3-month follow-up).

**Overview of procedure.** Parents who provided their email or telephone number during recruitment were contacted through their preferred means (i.e., email or telephone), screened for inclusion criteria, and presented with information about the study. This information included an

overview of what participation in the study entailed, with special attention to the participant randomization process, as well as facilitator qualifications and incentives for participation. After receiving this information, interested parents were randomly assigned a workshop to attend. A computerized random number generator was used to complete a modified simple randomization procedure which resulted in participants being randomly assigned to two groups of equal size (Altman & Bland, 1999; Suresh, 2011). Specifically, each participant was assigned a number using a computerized random number generator. The participant list was then re-ordered in ascending numerical order by these assigned numbers. Afterwards, the half of the participants who were randomly assigned the lowest numbers were allocated to the ACT workshop and the half of the participants who were randomly assigned the highest numbers were allocated to the Support workshop. As the ACT workshop and the Support workshop were each run once in Windsor and in Toronto, the randomization procedure was carried out separately in each location.

***Informed consent process.*** On the day of the assigned workshop, parents were presented with the letter of information and consent form for the study (see Appendix G) in the group setting. They were given time to individually review the document as the researcher walked around the room to answer any individual questions. The letter of information and consent form contained information on procedures which the researcher was aware could influence participants' willingness to participate in the study, including details on what participation in the study entailed, the purpose and process of randomization to groups and blinding, and possible risks and benefits associated with participation. The empirical support behind both types of workshop was also communicated, although participants were not explicitly told the names or identifying details of each workshop in order to reduce potential expectancy effects. Participants

were reminded that they could choose to participate in the other type of workshop at a later time if they wished, although no participants elected to participate in the alternative workshop type in the present study. After receiving this information and having their questions answered, consenting participants signed the form and returned it to the researcher. At this time, participants were also asked to show their children's diagnostic reports or letters to the researcher, who recorded the children's official diagnoses, dates of the reports/letters, diagnosing clinicians, and assessment measures. The researcher did not keep a copy of any diagnostic reports and only used the reports to verify children's specific diagnoses. This procedure helped to ensure the security of participants' personal health information.

**Common workshop components.** With the exception of 'active' workshop components (i.e., ACT elements, parent support elements), the two types of parent workshops were consistent in all aspects. These common details are described below.

***Common educational components of workshops.*** The educational aspects of the workshop were developed based on a thorough review of the literature on the topics targeted for intervention. Specifically, the information included in the workshops was developed by synthesizing information from several large-scale reviews, published studies, and best practice guidelines related to ASD treatments (i.e., National Autism Center [NAC], 2011; NAC 2015; National Alliance on Mental Illness [NAMI], 2007; National Institute of Mental Health [NIMH], 2011; Organization for Autism Research [OAR], 2003; Reichow & Volkmar, 2011). As the workshop information was based on published sources, the complete workshop outlines cannot be included here. However, copies of the workshop manual and slides can be obtained from the author upon request. The following specific topics were covered in educational portion of the workshops: (a) introduction to ASD, (b) is there a cure for ASD?, (c) what are evidence-based

treatments?, (d) importance of evidence-based treatments, (c) cautions about evidence-based treatments, (d) research support for popular ASD treatments, (e) findings of the National Standards Report (NAC, 2015), (f) how to find evidence-based treatments, (g) evaluating the quality of treatment information from different sources, (h) tips for talking to treatment providers, and (i) knowing your rights in relation to your child's treatment.

Learning objectives for the educational portion of the workshop included: (a) recognition of widespread misinformation about ASD and ASD treatments, (b) understanding the term 'evidence-based treatment' as it relates to ASD, (c) understanding the benefits and drawbacks of evidence-based treatments, (d) understanding the current evidence behind popular ASD treatment approaches, (e) knowledge of how to find quality information about evidence-based ASD treatments, (f) knowledge of how to critique and identify the quality of ASD information in popular media, (g) knowledge of what to ask ASD treatment providers when selecting treatments, and (h) knowledge of parents' rights in relation to their children's treatment. The general format of the workshop included direct instruction and group exercises designed to increase knowledge of best practices in selecting treatments for children with ASD. From the information gathered through this literature review, an initial outline of the workshop was created by the researcher and reviewed by the Parent Advisor for the study, who gave input on which topics would be of most interest to parents, how to best communicate the information to parents, and how to encourage retention of the information by parents.

***Setting characteristics.*** Workshops were held at local community organizations for children with ASD and their families, in locations that were readily accessible by public transit and likely familiar to many parents who participated in the study. Specifically, Windsor workshops took place at the main office of the Windsor branch of Autism Ontario, while Toronto

workshops took place at the main office of Extend-A-Family. Use of these locations for the purposes of the study was given clearance by the University of Windsor Research Ethics Board, as well as by Autism Ontario and Extend-A-Family. All workshops took place in large multipurpose rooms which are often used to host community workshops. Rooms were equipped with tables and chairs as well as audiovisual equipment. Refreshments such as coffee, snacks, and lunch were provided to participants at the workshop locations.

***Facilitator characteristics.*** The author of this study was a facilitator for all four workshops (i.e., both the ACT workshop and the Support workshop in Windsor and Toronto). This researcher was a Ph.D.-level Clinical Psychology student from the University of Windsor who had experience facilitating groups, had completed an intensive 2-day ACT training workshop, and had completed ACT-specific readings (e.g., Hayes & Smith, 2005; Hayes & Strosahl, 2004; Hayes, Strosahl, & Wilson, 2003; Torneke, Barnes-Holmes, & Hayes, 2010). The 2-day ACT training workshop was led by Dr. Steven Hayes, one of the originators of ACT, and involved both didactic components and partnered role plays to rehearse techniques and receive feedback. Learning objectives included: (a) gaining exposure to the ACT model, (b) practicing clinical techniques based on the ACT model, and (c) gaining comfort in using ACT techniques in clinical practice (S. Hayes, personal communication, April 9, 2014).

The co-facilitator for both types of workshop in Windsor was also a Ph.D.-level Clinical Psychology student from the University of Windsor who had experience facilitating ACT groups and had also completed ACT-specific didactic training and readings (e.g., Hayes, Strosahl, & Wilson, 2003; Twohig, 2008). The co-facilitator for both types of workshop in Toronto was a mother of an adult with ASD who works as a resource consultant for parents of children with disabilities in the Toronto area. She had also completed a 12-week ACT training course at



McMaster University and had experience facilitating ACT groups with parents of children with ASD. ACT workshops in Windsor and Toronto were supervised by a registered Psychologist with experience providing individual ACT and supervising ACT groups in a community setting, while the Support groups were supervised by a registered Psychologist with experience facilitating educational and support-based groups for children with ASD in a community setting. These facilitators and supervisors were deemed appropriate for this study by a Psychologist with experience and training in ACT (A. Dufresne, personal communication, March 25, 2015) and a Psychologist with experience and training in ACT and working with parents of children with ASD (L. Warner, personal communication, February 27, 2015).

***Workshop timeline.*** Each workshop took place over the course of 6.5 hours, including a thirty-minute lunch break and two fifteen-minute breaks (one in the morning and one in the afternoon). That is, each workshop involved 5.5 hours of direct instructional and interactive contact with participants, including approximately 20 minutes dedicated to data collection. This length of workshop was deemed appropriate for use in the present study as it was comparable to that used in similar studies of psychoeducation with ACT (Gregg et al., 2007; Varra et al., 2007) and was consistent with the length of other parent workshops commonly held in the community.

***Data collection.*** Data collection for the present study took place at three time points: (a) pre-intervention, (b) post-intervention, and (c) follow-up.

***Preworkshop.*** The letter of information/consent form was emailed to participants before the day of the workshop in order to allow participants to review study procedures in advance of attending the workshop. On the day of the workshop, participants were presented with an additional hard copy of the letter of information/consent form, as well as the other preworkshop measures, in order to provide detailed instructions and allow participants to ask questions to

ensure their understanding of the materials. It was believed that completing the pre and post workshop batteries onsite on the day of the workshop would also be most convenient for study participants and help to reduce attrition rates in the present study (Kazdin, 2013). Initial data collection began immediately after participants gave their consent to participate in the study. That is, upon handing their signed consent form to the researcher on the day of the workshop, participants were given the preworkshop questionnaire battery, consisting of: the demographic questionnaire, EBPAS-P, AAQ-II-A, CFQ-A, TSKQ, MAAS, and MCSDS-SF (78 items in total). Questionnaire packages were completed in the workshop room, although participants were instructed to complete their packages individually without speaking to each other. Questionnaires were also counterbalanced such that each participant was presented with questionnaires in varying orders to reduce group members' potential influence on one another. Participants were instructed to raise their hands if they had any questions, at which time the researcher approached them and quietly answered the question. Preliminary pilot testing by the Parent Advisor for the study, from which data was not included in this study, indicated that the approximate time to complete this questionnaire package was 13 minutes. Each workshop began after all participants had completed and submitted this initial battery.

*Postworkshop.* Upon completion of the workshop, participants were given the postworkshop questionnaire battery at the workshop site, consisting of: the EBPAS-P, AAQ-II-A, CFQ-A, TSKQ, GCS, and WSS (54 items in total), presented in counterbalanced order for each participant. These questionnaires were also completed individually within the large workshop room; however, participants were reminded to not speak to each other while completing the questionnaires and to raise their hand if they had any questions. Pilot testing by the Parent Advisor indicated that the approximate time required to complete this questionnaire

package was 14 minutes. Participants were then asked whether they preferred to participate in a 'booster session' group and complete follow-up questionnaires in paper-and-pencil format onsite, or whether they would prefer to complete follow-up questionnaires online from their own homes for the three-month follow-up data collection.

*Follow-up.* In reviewing participant preferences for follow-up data collection, it was noted that only two participants from Windsor and three participants from Toronto were interested in attending a booster session. Due to this limited interest, it was decided that follow-up data collection would be offered through an online survey which participants could complete from home at their convenience. However, parents were also provided with information regarding where to seek appropriate supports (e.g., Canadian Mental Health Association, Distress Centre of Windsor and Essex County) if required within the post-study letter of information and debriefing page (Appendix H).

Three months after participating in the workshop, participants were contacted by email with the link to complete the online follow-up questionnaire package. For all participants, the follow-up measures included: the EBPAS-P, AAQ-II-A, CFQ-A, TSKQ, and FES (44 items in total). Pilot testing indicated that the approximate time required to complete this questionnaire package was 14 minutes. Participant submissions for the online follow-up questionnaire package were screened for the time taken to complete each measure in order to ensure validity of online responses. Using this method, the completion time for each participant ( $M = 19.03$  minutes, range = 8.21 – 37.07 minutes) was deemed to be acceptable. Furthermore, internal reliability statistics for data collected online at follow-up were largely consistent with internal reliability statistics for data collected on the same measures at preworkshop and postworkshop.

***Debriefing.*** Participants were automatically redirected to the debriefing page (Appendix H) after completing the follow-up measures online. The debriefing form contained the contact information of the researcher, research supervisor, and Research Ethics Board Chairperson, in order for participants to direct any questions or concerns. In the debriefing page, participants were informed of which type of workshop they participated in. The debriefing page also contained more detailed information about the purpose of the study and study hypotheses, the rationale for randomization to groups and blinding participants to which workshop condition they were assigned to, as well as a list of resources for further information and support.

***Measures taken to minimize attrition.*** Although the one-day workshop design of the study was expected to minimize participant attrition between preworkshop and postworkshop data collection (Kazdin, 2013), several measures were also taken to reduce the likelihood of participant attrition between postworkshop and follow-up data collection. Specifically, participant incentives were delivered both at postworkshop and follow-up time points, with a larger incentive at follow-up. Participants also received thank you cards in person after completing postworkshop questionnaires and by mail after completing online follow-up questionnaires. Finally, convenience for study participants was considered in designing the study, allowing participants to complete follow-up questionnaires online from the comfort of their homes.

***Measures taken to minimize experimenter bias.*** Several measures were taken to reduce experimenter bias in the present study. As previously mentioned, participants were blind to their particular group assignment and all outcome measures were based on participant self-report. These measures helped to ensure that outcome data were not directly influenced by facilitators, who could not be blind to the type of workshop they were facilitating. Additionally, workshop

co-facilitators were not made aware of study hypotheses at any point during data collection. Workshop outlines were also intentionally designed to contain a high level of detail in an effort to uphold experimenter consistency both between and within workshops. This method has also been used to minimize experimenter bias in similar studies in which community-based psychoeducational workshops were compared to psychoeducational workshops supplemented with ACT (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007; Varra, Hayes, Roget, & Fisher, 2008).

*Measures taken to ensure workshop adherence.* Adherence was assured in each type of workshop with the use of detailed workshop manuals both in the training of facilitators and while conducting each type of workshop, as has been done in similar studies of psychoeducational workshops supplemented with ACT (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007; Luoma et al., 2007; Varra, Hayes, Roget, & Fisher, 2008). Furthermore, detailed PowerPoint slides for each type of workshop were created based on the workshop manuals. These slides included the necessary information for all major and minor content areas of the workshops in sequence with breaks and lunch indicated, and facilitators were instructed to strictly adhere to the slides throughout the workshops. This workshop adherence strategy was also used by Varra, Hayes, Roget, and Fisher (2008) in a similar study, and was deemed appropriate for use in the present investigation. Additionally, observers or co-facilitators who were blind to study hypotheses were asked to complete either the ACT Workshop Fidelity Measure (see Appendix E) or the Support Workshop Fidelity Measure (see Appendix F) following completion of each workshop, which measured facilitator adherence to the workshop objectives.

**ACT workshop components.** For the purposes of the current study, the ACT workshop consisted of elements of ACT integrated throughout the common treatment-related information

described earlier. The ACT exercises selected for inclusion in the ACT were largely based on those used by Blackledge (2004) in his ACT workshop for parents of children with ASD, as well as those used by Gregg, Callaghan, Hayes, and Glenn-Lawson (2007) in their psychoeducation with ACT workshop for individuals learning to self-manage type-II diabetes. For the purposes of the present study, all ACT metaphors and activities were modified to refer directly to the experience of parenting a child with ASD, with particular attention to the process of treatment selection. Additionally, the core concepts of ACT (i.e., acceptance, present moment awareness, cognitive defusion, self-as-context, values, and committed action) were discussed in detail, with examples tailored to the educational components of the workshop and integrated throughout. For example, after discussing how there are many different proposed interventions for ASD with widely varying goals, parents in the ACT group were presented with an ACT-based values and goals worksheet. On this worksheet, parents were asked to identify the overarching values which they would like to guide their treatment goals for their children with ASD (e.g., friendship, knowledge). Based on their identified values, parents were asked to set goals for themselves with respect to their children's treatment (e.g., to be actively involved in my child's treatment) and committed actions they would perform which were in keeping with these goals (e.g., I will schedule an appointment to observe my child's treatment).

Overall, ACT components of the ACT workshop targeted the following areas: (a) parents' acceptance of distressing thoughts and emotions related to their children having ASD and parenting children with ASD; (b) contact and engagement with themselves and their children in the present moment, rather than focusing on past difficulties or future worries; (c) separation from the influence of distressing thoughts about their children or aspects of their parenting through acknowledging distressing thoughts as simply thoughts rather than real or true barriers to

their values; (d) awareness of their stable, continuous, and holistic senses of self which exist outside of and separate from their parenting-related distress and encompass other aspects of their personal identities; (e) identification of life values and current barriers to value-consistent living; and (f) development of concrete goals and commitment to engaging in values-consistent behaviour, particularly within the context of their roles as parents of children with ASD.

**Support workshop components.** The Support workshop consisted of the same treatment-related information covered in the ACT workshop; however, parent support group-style group discussions related to information-based topics covered in common workshop elements were included in place of ACT content throughout the workshop. For example, after learning about how there are many different proposed interventions for ASD with widely varying goals, parents in the Support workshop were asked to discuss what had made the treatments they were currently using with their children appealing to them. These open-ended questions were designed to stimulate discussion and facilitate the sharing of experiences among workshop participants.

This type of workshop was deemed appropriate to serve as a relevant comparison group in the present study as parent support groups are a commonly accessed service by parents of children with ASD, with research demonstrating that approximately 65% of parents of children with ASD have accessed ASD-specific parent support groups at some point and more than 50% continue to attend on a regular basis (Mandell & Salzer, 2007). Studies have demonstrated multiple benefits of attending parent support groups, including decreased stress and increased empowerment (e.g., Banach, Iudice, Conway, & Couse, 2010; McConnell, Savage, & Breitkreuz, 2014). Furthermore, this type of educational workshop with parent-to-parent support and discussion is commonly used in the local Windsor community by organizations such as The

Summit Centre for Preschool Children with Autism (2019), Connections Early Years Family Centre (2019), and Autism Services Incorporated (2019).

The Support workshop was also designed to control for empirically-derived common factors affecting efficacy of therapeutic interventions, including: (a) time, (b) client expectancy, (c) therapeutic alliance, and (d) therapist factors (e.g., Areal et al., 2010; Cuijpers, Driessen, Hollon, vanOppen, Barth, & Andersson, 2012; Lenhart, Wells, & Lochman, 2008). Time and therapist factors were controlled for by employing parent support group-style discussion of workshop topics for the same amount of time as the ACT elements in the ACT workshop, and by having the same facilitators administer both types of workshop in each location. Client expectancy was controlled for by explaining the empirical support for parent support groups in the same manner in which the empirical support for ACT was explained. Finally, therapeutic alliance was controlled by prioritizing the development and maintenance of mutual positive feelings and shared goals between the facilitators and workshop participants, as well as among workshop participants.

### **Qualitative Data Analyses**

**Qualitative data preparation.** Parents' qualitative responses to open-ended items on the Workshop Satisfaction Survey and Follow-Up Experiences Survey were transferred to a Microsoft Excel spreadsheet. With the exception of removing any identifying information, each participant's response to each qualitative item was transferred verbatim to the Excel spreadsheet.

As parents gave short written responses to open-ended survey items rather than more in-depth interviews, content analysis was judged to be the most appropriate qualitative method for analyzing the responses (Hsieh & Shannon, 2005). According to Hsieh and Shannon (2005), content analysis is defined as "a research method for the subjective interpretation of the content



of text data through the systemic classification process of coding and identifying themes or patterns” (p. 1278). Thus, qualitative responses were analyzed using content analysis in order to summarize parents’ ideas into content categories for each question, rather than reporting each individual response (Hsieh & Shannon, 2005; Neuendorf, 2017; Stemler, 2001). It should be noted that participants sometimes offered multiple responses to the same question and, so the total number of responses varied slightly from question-to-question.

Content analysis in the present study was conducted collaboratively by the researcher and the Parent Advisor. In qualitative data analysis, researcher subjectivity is understood to be an asset in interpretation (Braun & Clarke, 2013). As such, potential sources of bias are acknowledged and embraced in the process of making meaning of participant responses. In this study, the researcher acknowledges biases associated with her experience working with children with ASD and their families; providing ASD treatment-related services; and studying and reviewing the literature on ACT, parents’ acceptance of their children’s ASD, and their treatment selection for their children. Similarly, the Parent Advisor acknowledges biases associated with her background as a parent of an adult with ASD, her experiences as a community service coordinator for parents of children with ASD, and her training and experience with ACT.

In preparation for analyzing participant responses, both investigators familiarized themselves with the process of content analysis outlined by Elo and Kyngas (2008). As the workshop itself was newly designed for this study and there were no previous studies on which to base a priori hypotheses with respect to qualitative data, the inductive content analysis method was judged to be best suited for analyzing these results (Elo & Kyngas, 2008). In inductive content analysis, categories are derived directly from the dataset, as opposed to the deductive content analysis method in which data are categorized on the basis of previous knowledge and

theory (Elo & Kyngas, 2008). Inductive content analysis is recommended when knowledge about the phenomenon of interest is limited (Elo & Kyngas, 2008). The content analysis process was carried out using the steps outlined by Elo and Kyngas (2008): open coding, creating categories, and abstraction.

**Open coding.** After responses from the paper-and-pencil Workshop Satisfaction Survey and the online Follow-up Experiences Survey were transcribed and collated into a Microsoft Excel spreadsheet, the researcher and Parent Advisor read through all responses to each question and noted keywords or headings which reflected the content. Efforts were made to preserve the intended meaning of parents' responses by giving consideration to the context of parents' comments in addition to their words (Elo & Kyngas, 2008). This approach was also thought to assist with accurately interpreting data from participants for whom English was not their primary language.

**Creating categories.** After keywords and headings were identified for each participant's responses to each open-ended question, the researcher and Parent Advisor reviewed these units and generated labels under which each heading was then categorized (Elo & Kyngas, 2008). As this stage involved perhaps the greatest level of subjective interpretation of parents' responses, the Parent Advisor was particularly important to help ensure that responses were interpreted as more reflective of the participants' ideas than those of the researcher.

**Abstraction.** Finally, the researcher and Parent Advisor reviewed the content of the responses categorized under each label (i.e., theme) and generated broadly descriptive labels for each (Elo & Kyngas, 2008). Throughout this process, efforts were made to label each content category using concise language which accurately reflected the participants' voices. Illustrative excerpts from participants' responses were selected at this stage to reflect and convey themes.

For the purposes of reporting qualitative results, “most” parents was defined as >50% of participants, “some” parents was defined as 25-50% of participants, and “a few” parents was defined as <25% of participants.

## RESULTS

### Overview of Results

In the sections that follow, results from the present study are described. Preliminary quantitative analyses are outlined, including data screening and preparation, tests of assumptions, descriptive statistics, and correlations among study variables, as well as assessment of baseline group equivalence, workshop fidelity, group cohesiveness, and group satisfaction. Next, results of the main quantitative and qualitative analyses are reviewed, with a focus on addressing the guiding research questions.

### Preliminary Quantitative Analyses

**Data screening and preparation.** Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) Version 25.0 for Windows (IBM, 2017).

**Accuracy of data file.** Prior to conducting any tests of assumptions or examining study hypotheses, univariate descriptive statistics for each study variable were examined (Tabachnick & Fidell, 2013). Item-level and total scores for each continuous variable were confirmed to be within range and means and standard deviations were judged to be plausible.

**Missing data.** The dataset was then examined for the presence and pattern of missing data. Little's Missing Completely at Random (MCAR) test was used to determine whether data were missing completely at random (Tabachnick & Fidell, 2013). Little's MCAR chi-square statistic was found to be significant,  $\chi^2(665) = 7338157201382.453, p < .001$ , indicating that data were not missing completely at random. This conclusion was further substantiated by examination of the dataset which revealed that missing data were due to 6 participants who were lost to follow-up. That is, 6 participants did not complete any follow-up measures.

Although multiple imputation is often considered the optimal approach for estimating missing data points within a given dataset (e.g., Enders, 2017; van Ginkel & Kroonenberg, 2014), this method is known to provide unreliable estimates of missing data in small sample datasets (Von Hippel, 2016). Listwise deletion of cases with missing data is also problematic as results may be favourably biased when incomplete cases are excluded (van Ginkel & Kroonenberg, 2014). The limitations of both methods of addressing missing data were considered and a decision was made to exclude incomplete cases listwise when conducting analyses. Nonetheless, the multiple imputation procedure was carried out and analyses were also conducted on the dataset with missing values estimated using multiple imputation. In order to be transparent, these results are reported in footnotes where applicable.

Meaningful statistical analyses of differences between follow-up completers and non-completers in each type of workshop was not possible given the small number of participants lost to follow-up in each group (i.e.,  $n = 2$  for the ACT workshop,  $n = 4$  for the Support workshop). However, the question of how follow-up completers and non-completers differed within each workshop group was examined by dummy coding follow-up completion to produce two nominal variables (i.e., 0 = non-complete, 1 = complete), and comparing means for demographic and study variables for follow-up completers and non-completers within each group.

Using this procedure, follow-up completers and non-completers within the ACT group and the Support group were similar in terms of their age, child age, time since diagnosis, social desirability, trait mindfulness, willingness to select evidence-based treatments, treatment selection knowledge, workshop satisfaction, and ratings of group cohesiveness.

Despite these similarities, however, there were some observed differences between follow-up completers and non-completers within each group which should be acknowledged.

Follow-up completers in the ACT group were found to have higher levels of acceptance (represented by lower AAQ-II-A scores;  $M = 16.83$ ,  $SD = 10.30$ ) and lower levels of cognitive fusion ( $M = 20.25$ ,  $SD = 11.92$ ) at preworkshop than non-completers ( $M_{\text{acceptance}} = 23.00$ ,  $SD = 14.14$ ;  $M_{\text{cognitive fusion}} = 33.50$ ,  $SD = 4.95$ ); as well as higher levels of acceptance ( $M = 15.67$ ,  $SD = 11.59$ ) and lower levels of cognitive fusion ( $M = 17.67$ ,  $SD = 11.63$ ) at postworkshop than non-completers ( $M_{\text{acceptance}} = 29.00$ ,  $SD = 2.83$ ;  $M_{\text{cognitive fusion}} = 24.50$ ,  $SD = 10.61$ ).

Similarly, follow-up completers in the Support group were found to have higher levels of acceptance (i.e., lower AAQ-II-A scores,  $M = 15.45$ ,  $SD = 8.44$ ) and lower levels of cognitive fusion ( $M = 16.27$ ,  $SD = 10.49$ ) at preworkshop than non-completers ( $M_{\text{acceptance}} = 26.25$ ,  $SD = 7.81$ ;  $M_{\text{cognitive fusion}} = 22.00$ ,  $SD = 8.12$ ). At postworkshop, follow-up completers also had higher levels of acceptance (i.e., lower AAQ-II-A scores,  $M = 15.91$ ,  $SD = 8.48$ ) and lower levels of cognitive fusion ( $M = 16.18$ ,  $SD = 9.04$ ) than non-completers ( $M_{\text{acceptance}} = 28.25$ ,  $SD = 9.54$ ;  $M_{\text{cognitive fusion}} = 26.50$ ,  $SD = 8.89$ ). These differences are important to keep in mind when considering results of main analyses conducted without including participants who were lost to follow-up from each group.

**Outliers.** In order to assess for the presence of outliers, z -scores were computed for each continuous variable to determine the deviation of each score from the mean (Tabachnick & Fidell, 2013). Using a cut-off value of  $\pm 3.29$  (Tabachnick & Fidell, 2013), no outliers were identified in the present dataset.

**Tests of assumptions.** The extent to which the assumptions of split-plot repeated measures analysis of variance (ANOVA) were met within the current dataset was examined prior to conducting tests of hypotheses. Assumptions of split-plot repeated measures ANOVA include: (a) continuous and normally distributed dependent variables, (b) correlations of measurements at each time point, and (c) sphericity (i.e., equal variances between groups and equal covariances between pairs of conditions; Field, 2013).

In order to evaluate whether dependent variables were normally distributed within each group, Shapiro-Wilk's test of normality was conducted for each dependent variable within each group. Within the ACT group, Shapiro-Wilk's test of normality was significant for: acceptance at preworkshop,  $W(14) = .831, p = .012$ ; acceptance at postworkshop,  $W(14) = .825, p = .010$ ; cognitive fusion at postworkshop,  $W(14) = .858, p = .029$ ; workshop satisfaction,  $W(14) = .711, p = .000$ ; and group cohesiveness,  $W(14) = .854, p = .025$ , indicating potential deviations from normality. Within the Support group, Shapiro-Wilk's test of normality was significant for: acceptance at preworkshop,  $W(15) = .876, p = .041$ ; workshop satisfaction,  $W(15) = .879, p = .045$ ; and group cohesiveness,  $W(15) = .850, p = .017$ , indicating potential deviations from normality. To further investigate the assumption of normality, skewness and kurtosis values for each dependent variable within each group were examined, with skewness values lower than  $\pm 2$  and kurtosis values lower than  $\pm 3$  considered acceptable deviations from normality (Tabachnick & Fidell, 2013). Using this procedure, distributions of scores for each dependent variable within each group were considered normal. As a final normality check, histograms for each dependent variable within each group were visually inspected to determine how closely they approximated the normal curve. These histograms provided further evidence of acceptable normality of dependent variables in the present dataset. Additionally, all dependent variables were measured

on Likert or Likert-type rating scales, yielding continuous, interval-level data. Overall, the assumption of continuous and normally distributed dependent variables was said to have been satisfied within the present dataset.

The assumption that measurements of the dependent variable would be correlated at each time point was considered to have been satisfied in the present dataset due to the nature of the repeated measures design. That is, scores on each dependent variable between preworkshop, postworkshop, and follow-up time points were assumed to be correlated as the same participants completed each measure at each time point (Field, 2013).

The assumption of sphericity (i.e., that the variances of differences between groups are equal; Field, 2013) was evaluated by examining Mauchly's test of sphericity for the split-plot repeated measures ANOVA for each dependent variable. Mauchly's test indicated that the assumption of sphericity was satisfied in the present dataset for cognitive fusion,  $\chi^2(2) = .066, p = .066$ ; willingness to select evidence-based treatments,  $\chi^2(2) = .942, p = .552$ ; and treatment selection knowledge,  $\chi^2(2) = .934, p = .506$ ; however, this assumption was violated in the present dataset for acceptance,  $\chi^2(2) = .668, p = .022$ . As such, the  $F$  statistic for the ANOVA examining group differences in acceptance over time was interpreted with the Greenhouse-Geisser correction (Tabachnick & Fidell, 2013).

**Descriptive statistics.** Descriptive statistics for each study variable by group were calculated prior to conducting any tests of hypotheses. Results of this analysis are reported in Table 4, including mean scores, standard deviations, and observed score ranges at each time point.



Table 4

*Means, Standard Deviations, and Ranges for Study Variables by Group*

Variable	<i>M</i>	<i>SD</i>	Observed Range
<b>ACT Workshop Group</b>			
Acceptance			
Preworkshop	17.71	10.50	7 - 36
Postworkshop	17.57	11.73	7 - 41
Follow-up	13.58	4.44	7 - 22
Cognitive Fusion			
Preworkshop	22.14	12.05	7 - 41
Postworkshop	18.64	11.36	7 - 44
Follow-up	15.42	8.33	7 - 34
Treatment Selection Knowledge			
Preworkshop	6.07	2.23	3 - 10
Postworkshop	7.29	2.20	3 - 10
Follow-up	7.08	2.43	2 - 10
Willingness to Select EBTs			
Preworkshop	40.14	6.80	28 - 56
Postworkshop	38.14	8.44	58 - 57
Follow-up	33.83	7.03	21 - 42
Trait Mindfulness	66.57	7.83	49 - 78
Social Desirability	7.07	2.16	3 - 10
<b>Support Workshop Group</b>			
Acceptance			
Preworkshop	18.33	9.40	7 - 33
Postworkshop	19.20	10.14	7 - 41
Follow-up	18.45	7.95	7 - 30
Cognitive Fusion			
Preworkshop	19.27	9.78	7 - 37
Postworkshop	18.93	9.88	7 - 38
Follow-up	19.64	8.70	7 - 34
Treatment Selection Knowledge			
Preworkshop	4.87	2.64	0 - 9
Postworkshop	6.67	2.26	3 - 10
Follow-up	6.82	2.23	3 - 9
Willingness to Select EBTs			
Preworkshop	39.87	9.21	22 - 55
Postworkshop	39.53	7.85	27 - 55
Follow-up	31.91	7.15	17 - 43
Trait Mindfulness	63.80	14.55	30 - 81
Social Desirability	5.13	1.85	1 - 8

*Note.* EBTs = evidence-based treatments; Acceptance measured using the AAQ-II-A, lower scores represent greater levels of acceptance; Cognitive fusion measured using the CFQ-A; Treatment selection knowledge measured using the TSKQ; Willingness to select evidence-based treatments measured using the EBPAS-P; Trait mindfulness measured using the MAAS, higher scores represent higher levels of trait mindfulness; Social desirability measured using the MCSDS-SF.

**Correlations among variables.** Zero-order correlations between study variables are reported in Table 5. As expected, participants' levels of acceptance at each time point were significantly positively correlated with one another, as were participants' levels of cognitive fusion at each time point and participants' treatment selection knowledge at each time point. Participants' willingness to select evidence-based treatments at preworkshop and postworkshop were significantly positively correlated, but not at follow-up. Furthermore, as expected based on previous ACT studies and the ACT model, acceptance and cognitive fusion were significantly positively correlated at preworkshop, postworkshop, and follow-up.

Zero-order correlations between dependent variables and participants' background characteristics and ratings of workshop experiences were also conducted in order to screen for potential covariates (see Table 6). Variables screened as covariates included: child age, time since diagnosis, social desirability, and trait mindfulness, as well as participants' ratings of group cohesiveness and workshop satisfaction. Time since diagnosis was the only covariate identified, as it was significantly positively correlated with acceptance at preworkshop and postworkshop, as well as with cognitive fusion at postworkshop. Therefore, time since diagnosis was included as a covariate in the main analyses.

**Baseline group equivalence.** Participants in each group were compared based on key participant characteristics (i.e., parent age, family income, child age, time since diagnosis, trait mindfulness, and social desirability) and study variables (i.e., acceptance, cognitive fusion, willingness to select evidence-based treatments, treatment selection knowledge) using independent samples t-tests in order to confirm that random assignment to groups successfully

Table 5

*Zero-Order Correlations between Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12
<b>Preworkshop</b>												
1. Acceptance	-											
2. Cognitive Fusion	.84**	-										
3. Willingness to Select EBTs	-.03	-.01	-									
4. Treatment Selection Knowledge	-.34	-.29	.11	-								
<b>Postworkshop</b>												
5. Acceptance	.89**	.81**	-.10	-.45*	-							
6. Cognitive Fusion	.92**	.83**	-.06	-.44*	.96**	-						
7. Willingness to Select EBTs	-.05	.01	.62**	.07	-.03	.04	-					
8. Treatment Selection Knowledge	-.36	-.24	.18	.81**	-.51**	-.42*	.08	-				
<b>Follow-up</b>												
9. Acceptance	.56**	.51	.31	-.19	.62**	.61**	.14	-.05	-			
10. Cognitive Fusion	.68**	.64**	.17	-.30	.81**	.80**	.19	-.25	.88**	-		
11. Willingness to Select EBTs	-.46	-.47*	.32	.07	-.56**	.52*	.32	.22	-.26	-.45*	-	
12. Treatment Selection Knowledge	-.36	-.30	-.07	.75**	-.41	-.39	.00	.81**	-.13	-.34	.13	-

*Note.* EBTs = Evidence-based treatments. \* $p < .05$ . \*\* $p < .01$ . Acceptance measured using AAQ-II-A; lower scores represent higher levels of acceptance.

Table 6

Zero-Order Correlations between Covariates and Dependent Variables

	Child Age	Time Since Diagnosis	Social Desirability	Trait Mindfulness	Group Cohesiveness	Workshop Satisfaction
<b>Preworkshop</b>						
Acceptance	.17	.41*	.01	.01	-.10	.02
Cognitive Fusion	.03	.36	.06	.04	-.06	-.01
Willingness to Select EBTs	-.11	.07	-.17	.07	.13	.17
Treatment Selection Knowledge	-.14	-.28	-.03	-.34	.30	-.23
<b>Postworkshop</b>						
Acceptance	-.10	.42*	-.00	.03	-.20	.08
Cognitive Fusion	.14	.47*	.02	.07	-.17	.08
Willingness to Select EBTs	-.07	-.02	-.13	.02	.07	-.16
Treatment Selection Knowledge	-.26	-.19	-.10	-.30	.34	-.24
<b>Follow-up</b>						
Acceptance	.19	.11	-.25	-.03	-.17	-.03
Cognitive Fusion	.13	.30	-.22	-.06	-.29	-.05
Willingness to Select EBTs	-.18	-.10	-.13	.19	.36	.15
Treatment Selection Knowledge	-.23	-.39	-.15	-.38	.26	-.32

Note. EBTs = Evidence-based treatments. Acceptance measured using AAQ-II-A; lower scores represent higher levels of acceptance.

\* $p < .05$

resulted in no meaningful differences between groups at preworkshop. Results of these analyses revealed no significant differences between groups at preworkshop (Table 7).

Comparisons of key participant characteristics and study variables using independent samples t-tests were also conducted to identify any differences in sample characteristics between participants from the Windsor data collection and participants from the Toronto data collection. Results of these analyses revealed that there were no significant differences between locations at preworkshop (Table 8).

**Workshop fidelity.** Fidelity for each workshop group was assessed in several ways. First, scores on either the ACT Workshop Fidelity Measure or the Support Workshop Fidelity Measure were calculated. These scores represent the extent to which workshop facilitators adequately covered each learning objective of the respective workshop. Scores were calculated as the ratio of total achieved fidelity score to the total possible fidelity score (Moncher & Prinz, 1991). That is, fidelity scores were calculated by summing the scores for each item to establish an achieved fidelity score and then dividing this value by the highest possible score (i.e., perfect fidelity). Using this method, fidelity for the Acceptance workshop was .857 in Windsor and .847 in Toronto, reflecting high levels of treatment integrity in both locations (Perepletchikova & Kazdin, 2006). Similarly, fidelity for the Support workshop was .896 in both Windsor and Toronto, reflecting high levels of treatment integrity (Perepletchikova & Kazdin, 2005).

Additionally, t-tests were used to compare fidelity ratings of the Acceptance workshop with fidelity ratings of the Support workshop to determine whether fidelity ratings differed between workshop types. Using this method, Acceptance workshop fidelity ratings ( $M = .852$ ,  $SD = .007$ ) and Support workshop fidelity ratings ( $M = .896$ ,  $SD = .000$ ) were not found to differ,  $t(1) = -8.800$ ,  $p = .662$ .

Table 7

*Results of t-tests demonstrating Preworkshop Equivalence between Groups*

Variable	ACT Workshop Group <i>M(SD)</i>	Support Workshop Group <i>M(SD)</i>	<i>t</i>	<i>P</i>
Parent age	41.43(7.68)	46.40(12.65)	-1.27	.22
Family income	\$49,692.31(31414.92)	\$31,414.92(8712.932)	-.91	.37
Child age	8.29(4.98)	12.11(6.96)	-1.70	.10
Time since diagnosis	3.76(3.36)	6.67(5.92)	-1.59	.12
Acceptance	17.71(10.49)	18.33(9.40)	-1.68	.87
Cognitive fusion	21.50(12.85)	19.27(9.78)	.53	.60
Willingness to select EBTs	40.14(6.80)	39.87(9.21)	.09	.93
Treatment selection knowledge	6.07(2.23)	4.87(2.64)	1.32	.20

*Note.* EBTs = evidence-based treatments; time since diagnosis is reported in years.

Table 8

*Results of t-tests demonstrating Preworkshop Equivalence between Locations*

Variable	Windsor <i>M(SD)</i>	Toronto <i>M(SD)</i>	<i>t</i>	<i>P</i>
Parent age	41.11(11.31)	45.30(10.40)	-.98	.34
Family income	\$63,285.00(125,697.77)	\$49,868.42(36,413.46)	1.47	.16
Child age	9.33(8.15)	10.70(5.45)	-.53	.60
Time since diagnosis	3.11(2.85)	6.25(5.49)	-1.61	.12
Acceptance	16.78(7.28)	18.60(10.83)	-.46	.65
Cognitive fusion	23.44(7.60)	18.95(12.42)	1.00	.33
Willingness to select EBTs	45.44(6.54)	47.55(7.47)	2.73	.20
Treatment selection knowledge	5.67(2.00)	5.35(2.72)	.31	.76

*Note.* EBTs = evidence-based treatments; time since diagnosis is reported in years.

**Group cohesiveness.** In order to examine whether group cohesiveness differed between workshop groups, a t-test comparing ratings of group cohesiveness (i.e., participants' total scores on the Group Cohesiveness Scale) between ACT group participants and Support group participants was conducted. Results revealed that ratings of group cohesiveness for the ACT group ( $M = 29.71$ ,  $SD = 2.585$ ) and Support group participants ( $M = 28.27$ ,  $SD = 3.918$ ) did not differ,  $t(27) = 1.165$ ,  $p = .254$ . Similarly, a t-test comparing ratings of groups cohesiveness between participants in Windsor and Toronto was conducted. Results revealed that ratings of group cohesiveness for Windsor ( $M = 28.33$ ,  $SD = 3.50$ ) and Toronto ( $M = 29.25$ ,  $SD = 7.28$ ) did not differ,  $t(27) = -.672$ ,  $p = .811$ .

**Workshop satisfaction.** In order to examine whether participant workshop satisfaction differed between groups, a t-test comparing ratings of workshop satisfaction (i.e., participants' total scores on the Workshop Satisfaction Scale) between ACT group participants and Support Group participants was conducted. Results revealed that ratings of participant satisfaction with the ACT workshop ( $M = 23.14$ ,  $SD = 2.770$ ) and the Support workshop ( $M = 20.93$ ,  $SD = 3.845$ ) did not differ,  $t(27) = 1.764$ ,  $p = .089$ . Similarly, a t-test comparing ratings of workshop satisfaction between participants in Windsor and Toronto was conducted. Results revealed that ratings of participant satisfaction in the Windsor groups ( $M = 21.78$ ,  $SD = 3.49$ ) and the Toronto groups ( $M = 22.10$ ,  $SD = 3.58$ ) did not differ,  $t(27) = -.226$ ,  $p = .946$ .

### **Main Quantitative Analyses**

**Overview.** Quantitative analyses included split-plot repeated measures analyses of variance (ANOVAs) (Hypotheses 1a, 1b, 1c, 3a, and 3b), trend analyses (Hypotheses 2a and 2c), paired samples t-tests (Hypotheses 2b and 2d), and moderation models (Hypotheses 4a, 4b, 4c, and 4d). The Bonferroni correction was not applied for multiple analyses, as this procedure is



known to inflate type II error rate and was not necessary given that each ANOVA was performed on a different dependent variable and hypotheses were informed by previous research (Field, 2013).

**Research question 1: Changes over time between groups.** To determine how acceptance, cognitive fusion, and willingness to select evidence-based treatments changed between groups over time, three split-plot repeated measures analyses of variance (ANOVAs), including significant covariates where appropriate, were conducted to assess changes between groups over time in: (a) acceptance, (b) cognitive fusion, and (c) willingness to select evidence-based treatments. Significant main effects were followed up with trend analyses and significant interactions were followed up with either simple effects analyses or trend analyses.

**Testing Hypothesis 1a.** It was hypothesized that acceptance would differ significantly between workshop groups over time, with ACT group participants showing greater increases in acceptance over time than Support group participants. A split-plot repeated measures ANOVA controlling for time since diagnosis was conducted to test this hypothesis. Mauchly's test indicated that the assumption of sphericity had been violated,  $\chi^2(2) = .668, p = .022^1$ . Degrees of freedom were therefore corrected using Greenhouse-Geisser estimates of sphericity. There was no significant main effect for time irrespective of group,  $F(1.502, 30.037) = .766, p = .439, \eta^2 = 0.037^2$ , and no significant main effect for group irrespective of time  $F(1, 20) = .179, p = .677, \eta^2 = .009^3$ . However, there was a significant group x time interaction,  $F(1.502, 30.037) = 3.862, p = .043, \eta^2 = .162^4$ , such that group and time accounted for 16.2% of the variance in

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<sup>1</sup>  $\chi^2(2) = .668, p = .003$  in dataset with multiple imputed values

<sup>2</sup>  $F(1.465, 38.084) = .261, p = .702, \eta^2 = .010$  in dataset with multiple imputed values

<sup>3</sup>  $F(1, 26) = .55, p = .447, \eta^2 = .022$  in dataset with multiple imputed values

<sup>4</sup>  $F(1.465, 38.084) = 1.601, p = .217, \eta^2 = .058$  in dataset with multiple imputed values

participants' acceptance scores. Post hoc simple effects analyses were conducted to determine at which time points acceptance scores varied significantly by groups. These analyses revealed that acceptance scores were not significantly different between the ACT workshop group and the Support workshop group at postworkshop,  $t(21) = .055, p = .955, \eta p^2 = .006$ . However, the difference in acceptance scores between the ACT workshop and the Support workshop at follow-up approached significance,  $t(21) = 1.835, p = .081, \eta p^2 = .138$ , with ACT workshop participants showing higher acceptance than Support workshop participants at follow-up (Figure 2). Taken together, these findings reveal that Hypothesis 1a was partially supported. Changes in acceptance differed significantly over time by workshop group; however, although ACT group participants showed trends toward greater increases in acceptance from postworkshop to follow-up than Support group participants, the difference in acceptance between groups at follow-up failed to reach statistical significance. In other words, although the trajectories of change in participants' acceptance were significantly different between groups over time, the differences in levels of acceptance between groups at postworkshop and follow-up failed to reach statistical significance.

***Testing Hypothesis 1b.*** It was hypothesized that cognitive fusion would differ significantly between workshop groups over time, with ACT group participants showing greater decreases in cognitive fusion over time than Support group participants. A split-plot repeated measures ANOVA controlling for time since diagnosis was conducted to test this hypothesis. Mauchly's test of sphericity was not significant,  $\chi^2(2) = .751, p = .066^5$ , indicating that the assumption of sphericity was satisfied. Results showed that there was no significant main effect

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<sup>5</sup>  $\chi^2(2) = .871, p = .179$  in dataset with multiple imputed values

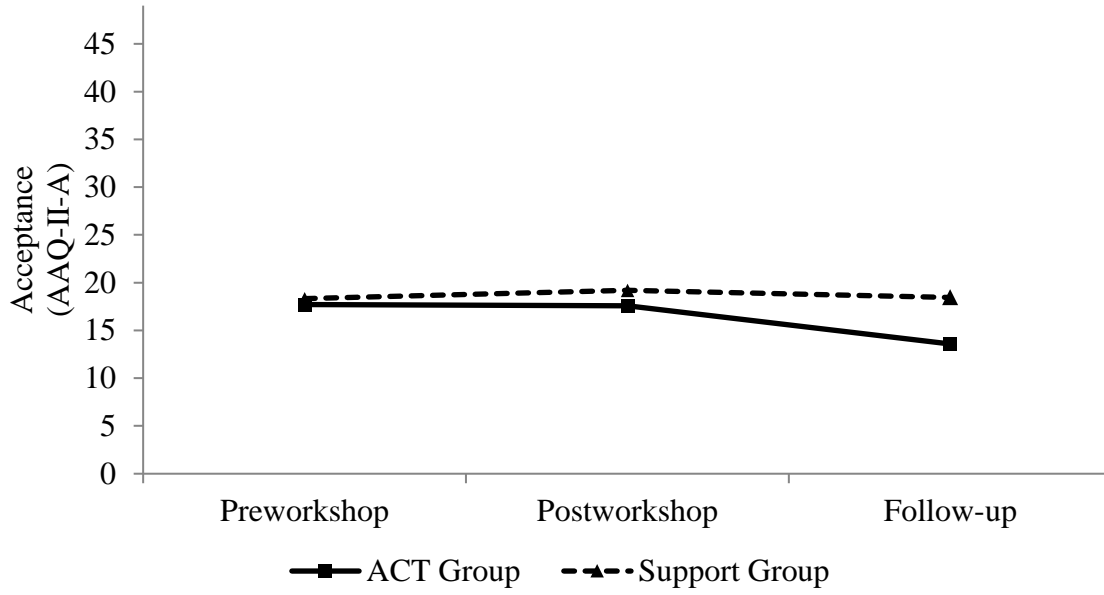


Figure 2. Changes in acceptance over time by group,

Note. Lower AAQ-II-A scores represent higher levels of acceptance.

for time irrespective of group,  $F(2, 40) = 1.253, p = .297, \eta^2 = .059^6$ , and no significant main effect for group irrespective of time  $F(1, 20) = .038, p = .847, \eta^2 = .002^7$ . However, there was a significant group x time interaction,  $F(2, 40) = 4.888, p = .013, \eta^2 = .196^8$ . Post hoc simple effects analyses revealed no significant difference in cognitive fusion between groups at postworkshop,  $t(21) = .339, p = .738, \eta^2 = .005$ . The difference in cognitive fusion between groups at follow-up failed to reach significance,  $t(21) = 1.188, p = .248$ , although ACT workshop participants demonstrated lower cognitive fusion at follow-up (Figure 3) and workshop type accounted for 6.3% of the variance in participants' cognitive fusion at follow-up,  $\eta^2 = .063$ . Taken together, these findings reveal that Hypothesis 1b was partially supported. Although changes in cognitive fusion differed significantly by workshop group over time, the differences in cognitive fusion between ACT workshop participants and Support workshop participants at postworkshop and follow-up failed to reach statistical significance. In other words, although the trajectories of change in participants' cognitive fusion over time were significantly different between groups, the differences in cognitive fusion between groups at postworkshop and follow-up failed to reach statistical significance.

**Testing Hypothesis 1c.** It was hypothesized that willingness to select evidence-based treatments would differ significantly between groups over time, with ACT group participants showing greater increases in willingness to select evidence-based treatments over time than Support group participants. A split-plot repeated measures ANOVA was conducted to test this hypothesis.

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<sup>6</sup>  $F(2, 52) = .464, p = .631, \eta^2 = .018$  in dataset with multiple imputed values

<sup>7</sup>  $F(1, 26) = .031, p = .861, \eta^2 = .001$  in dataset with multiple imputed values

<sup>8</sup>  $F(2, 52) = 5.300, p = .008, \eta^2 = .169$  in dataset with multiple imputed values

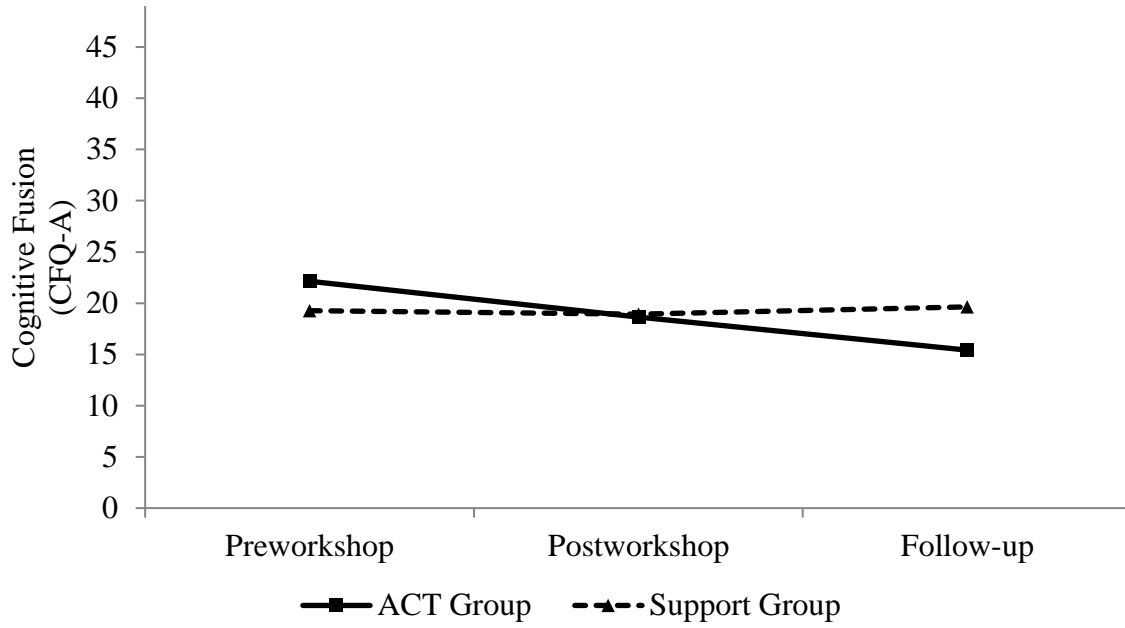


Figure 3. Changes in cognitive fusion over time by group.

Mauchly's test of sphericity was not significant,  $\chi^2(2) = .942, p = .552^9$ , indicating that the assumption of sphericity was satisfied. Results showed that there was no significant main effect for group irrespective of time,  $F(1, 21) = .001, p = .977, \eta^2 = .000^{10}$ , and no significant group x time interaction,  $F(2, 42) = .501, p = .609, \eta^2 = .023^{11}$ . However, there was a significant main effect for time irrespective of group,  $F(2, 42) = 11.492, p < .001, \eta^2 = .354^{12}$ . Trend analyses revealed that there was a significant linear trend in the pattern of means,  $F(1, 21) = 21.785, p < .001, \eta^2 = .509^{13}$ , such that willingness to select evidence-based treatments varied as a function of time irrespective of group membership, with steady decreases in willingness to select evidence-based treatments observed over time among participants in both workshop groups (see Figure 4). Taken together, these findings reveal that Hypothesis 1c was not supported in the present study; ACT group participants did not show greater increases in their willingness to select evidence-based treatments than did Support group participants. To the contrary, decreases in participants' willingness to select evidence-based treatments were observed over time in both groups.

**Research question 2: Postworkshop to follow-up changes in ACT process variables.**

To determine how participants' levels of acceptance and cognitive fusion changed between postworkshop and follow-up time points, trend analyses investigating the patterns of change over time were examined for acceptance and cognitive fusion.

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<sup>9</sup>  $\chi^2(2) = .899, p = .250$  in dataset with multiple imputed values

<sup>10</sup>  $F(1, 27) = .115, p = .737, \eta^2 = .004$  in dataset with multiple imputed values

<sup>11</sup>  $F(2, 54) = .056, p = .946, \eta^2 = .002$  in dataset with multiple imputed values

<sup>12</sup>  $F(2, 54) = 10.048, p < .001, \eta^2 = .271$  in dataset with multiple imputed values

<sup>13</sup>  $F(1, 27) = 15.880, p < .001, \eta^2 = .370$  in dataset with multiple imputed values

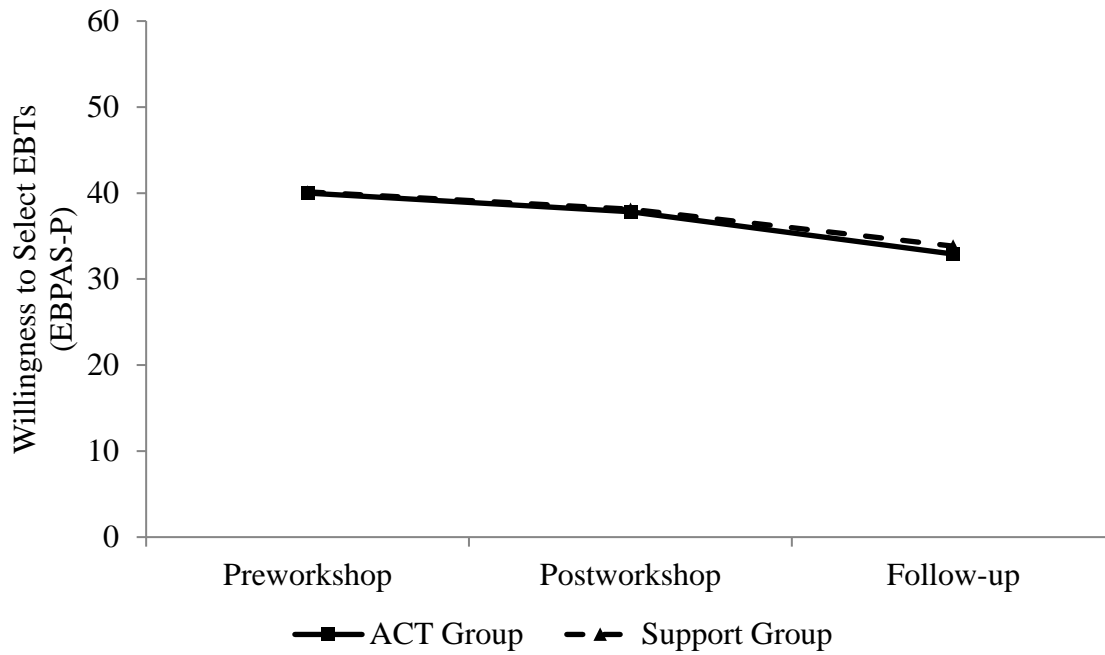


Figure 4. Changes in willingness to select evidence-based treatments over time by group, with lower EBPAS-P scores representing lower willingness to select evidence-based treatments.

Note. EBTs = evidence-based treatments.

**Testing Hypothesis 2a.** It was hypothesized that increases in acceptance would continue between postworkshop and follow-up within the ACT workshop group. As previously described, following the detection of a significant group x time interaction for acceptance,  $F(1.502, 30.037) = 3.862, p = .043, \eta^2 = 0.162$ , a trend analysis examining changes in acceptance within the ACT workshop group over time, controlling for time since diagnosis, was conducted. This analysis revealed a significant linear trend,  $F(1, 10) = 5.982, p = .035, \eta^2 = .374$ , with steady increases in acceptance observed over time among ACT group participants. Taken together, these findings reveal that Hypothesis 2a was supported in the present study; participants in the ACT group displayed stable increases in their acceptance from preworkshop to postworkshop and from postworkshop to follow-up.

**Testing Hypothesis 2b.** It was hypothesized that there would be no significant change in acceptance within the Support workshop group over time. As previously described, following the detection of a significant group x time interaction for acceptance, paired samples t-tests comparing acceptance scores within the Support workshop group at preworkshop and postworkshop, as well as at postworkshop and follow-up, were conducted. These analyses revealed no significant change in acceptance from preworkshop to postworkshop,  $t(10) = -.345, p = .737$ , or from postworkshop to follow-up,  $t(10) = -1.255, p = .238$ . Taken together, these findings reveal that Hypothesis 2b was supported in the present study; participants in the Support group did not show significant change in their acceptance over time.

**Testing Hypothesis 2c.** It was hypothesized that decreases in cognitive fusion would continue from postworkshop to follow-up within the ACT workshop group. As previously described, following the detection of a significant group x time interaction,  $F(2, 40) = 4.888, p = .013, \eta^2 = 0.196$ , a trend analysis examining changes in cognitive fusion within the ACT



workshop group over time, controlling for time since diagnosis, was conducted. This analysis revealed a quadratic trend which approached statistical significance,  $F(1, 10) = 4.155, p = .069, \eta p^2 = .294$ , with cognitive fusion decreasing in the ACT workshop group between preworkshop and postworkshop, then continuing to decrease from postworkshop to follow-up. As such, these findings reveal that Hypothesis 2b was not supported in the present study; although participants in the ACT group displayed decreases in their cognitive fusion from preworkshop to postworkshop and from postworkshop to follow-up, this trend failed to reach statistical significance.

**Testing Hypothesis 2d.** It was hypothesized that there would be no significant change in cognitive fusion within the Support workshop group over time. As previously described, following the detection of a significant group x time interaction for cognitive fusion, paired samples t-tests comparing cognitive fusion scores within the Support workshop group at preworkshop and postworkshop, as well as at postworkshop and follow-up, were conducted. These analyses revealed no significant change in cognitive fusion from preworkshop to postworkshop,  $t(10) = 1.281, p = .229$ , or from postworkshop to follow-up,  $t(10) = -.269, p = .793$ . Taken together, these findings reveal that Hypothesis 2d was supported in the present study; participants in the Support group did not show significant change in their cognitive fusion over time.

**Research question 3: Knowledge of ASD treatment selection.** To determine how knowledge of ASD treatment selection changed between groups over time, a split-plot analysis of variance (ANOVA) was conducted. Significant main effects were followed up with post hoc trend analyses.

*Testing Hypothesis 3a.* It was hypothesized that treatment selection knowledge would increase significantly from preworkshop to postworkshop in both the ACT group and the Support group. A split-plot repeated measures ANOVA was conducted to test this hypothesis. Mauchly's test of sphericity was not significant,  $\chi^2(2) = .934, p = .506^{14}$ , indicating that the assumption of sphericity was satisfied. Results showed that there was no significant main effect of group irrespective of time,  $F(1, 21) = .100, p = .755, \eta^2 = .005^{15}$ , and no significant group x time interaction,  $F(2, 42) = .124, p = .884, \eta^2 = .006^{16}$ . However, there was a significant main effect of time irrespective of group,  $F(2, 42) = 13.180, p < .001, \eta^2 = .386^{17}$ . These findings reveal that Hypothesis 3a was supported in the present study; significant increases in treatment selection knowledge were observed over time for participants in both the ACT group and the Support group (Figure 5).

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<sup>14</sup>  $\chi^2(2) = .895, p = .237$  in dataset with multiple imputed values

<sup>15</sup>  $F(1, 27) = .721, p = .403, \eta^2 = .026$  in dataset with multiple imputed values

<sup>16</sup>  $F(2, 54) = 1.539, p = .224, \eta^2 = .313$  in dataset with multiple imputed values

<sup>17</sup>  $F(2, 54) = 14.236, p < .001, \eta^2 = .345$  in dataset with multiple imputed values

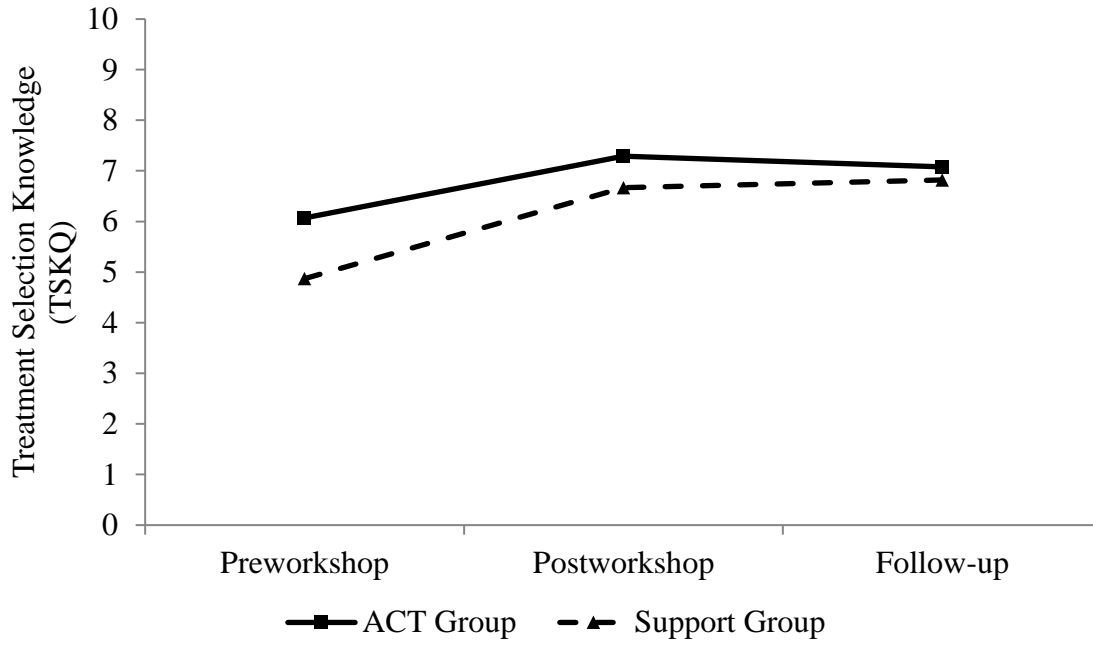


Figure 5. Changes in treatment selection knowledge over time by group, with higher TSKQ scores representing greater treatment selection knowledge

**Testing Hypothesis 3b.** It was hypothesized that increases in treatment selection knowledge would be maintained from postworkshop to follow-up in both the ACT group and the Support group. Following the detection of a significant main effect for time irrespective of group as previously described,  $F(2, 42) = 13.180, p < .001, \eta^2 = .386$ , a post hoc trend analysis was conducted to determine the shape of the pattern of means. This analysis revealed a significant quadratic trend,  $F(1, 21) = 19.197, p < .001, \eta^2 = .478^{18}$ , with participants in both groups showing a steep increase in their treatment selection knowledge from preworkshop to postworkshop, followed by relatively stable treatment selection knowledge from postworkshop to follow-up. Taken together, these findings reveal that Hypothesis 3b was supported in the present study; gains in treatment selection knowledge were maintained from postworkshop to follow-up in both the ACT group and the Support group (Figure 5).

**Research question 4: Acceptance and cognitive fusion as moderators.** To determine whether acceptance and cognitive fusion moderated the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments, change scores were computed for acceptance and cognitive fusion from preworkshop to postworkshop and from postworkshop to follow-up. Using the PROCESS macro plug-in for SPSS (Hayes, 2013), preworkshop to postworkshop change scores for acceptance and cognitive fusion were included as moderators between treatment selection knowledge and willingness to select evidence-based treatments at postworkshop in separate analyses. Similarly, postworkshop to follow-up change scores for acceptance and cognitive fusion were included as moderators between treatment

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<sup>18</sup>  $F(1, 27) = 14.648, p = .001, \eta^2 = .352$  in dataset with multiple imputed values

selection knowledge and willingness to select evidence-based treatments at follow-up in separate analyses.

*Testing hypothesis 4a.* The relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments at postworkshop was hypothesized to be moderated by parents' changes in acceptance from preworkshop to postworkshop. In step 1, postworkshop treatment selection knowledge and change in acceptance from preworkshop to postworkshop were entered as predictors of willingness to select evidence-based treatments at postworkshop. Results indicated that parents' treatment selection knowledge and changes in acceptance from preworkshop to postworkshop did not significantly predict their willingness to select evidence-based treatments at postworkshop,  $R^2 = .014$ ,  $F(3, 25) = .115$ ,  $p = .950$ . Parents' treatment selection knowledge was not a significant predictor of their willingness to select evidence-based treatments at postworkshop,  $b = .416$ ,  $SE = .778$ , 95% CI [-1.186, 2.019]. Similarly, changes in parents' acceptance from preworkshop to postworkshop was not a significant predictor of postworkshop willingness to select evidence-based treatments,  $b = .142$ ,  $SE = .356$ , 95% CI [-.592, .876]. Finally, the interaction between parents' treatment selection knowledge and their changes in acceptance from preworkshop to postworkshop did not significantly predict their willingness to select evidence-based treatments at postworkshop,  $b = .028$ ,  $SE = .161$ , 95% CI [-.304, .360]. The  $R^2$  change between the two predictors and the interaction was .001,  $F(1, 25) = 0.031$ ,  $p = .862$ . Taken together, these findings indicate that Hypothesis 4a was not supported in the present study; changes in parents' acceptance from preworkshop to postworkshop did not moderate the relation between their treatment selection knowledge and their willingness to select evidence-based treatments at postworkshop.

**Testing hypothesis 4b.** The relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments at follow-up was hypothesized to be moderated by changes in parents' acceptance from postworkshop to follow-up. In step 1, follow-up treatment selection knowledge and change in acceptance from postworkshop to follow-up were entered as predictors of willingness to select evidence-based treatments at follow-up. Results indicated that parents' treatment selection knowledge and changes in acceptance from postworkshop to follow-up did not significantly predict their willingness to select evidence-based treatments at follow-up,  $R^2 = .265$ ,  $F(3, 19) = 2.289$ ,  $p = .111$ . Parents' treatment selection knowledge did not predict their willingness to select evidence-based treatments at follow-up,  $b = -.421$ ,  $SE = .704$ , 95% CI [-1.896, 1.053]; however, changes in acceptance from postworkshop to follow-up predicted parents' willingness to select evidence-based treatments at follow-up,  $b = .442$ ,  $SE = .195$ , 95% CI [.033, .851]. The interaction between parents' treatment selection knowledge and their changes in acceptance from postworkshop to follow-up did not significantly predict their willingness to select evidence-based treatments at follow-up,  $b = -.055$ ,  $SE = .079$ , 95% CI [-.221, .110]. The  $R^2$  change between the two predictors and the interaction was .019,  $F(1, 19) = 0.491$ ,  $p = .492$ . Taken together, these findings indicate that Hypothesis 4b was not supported in the present study; changes in parents' acceptance from postworkshop to follow-up did not moderate the relation between their treatment selection knowledge and their willingness to select evidence-based treatments at follow-up.

The significant association between changes in acceptance from postworkshop to follow-up and willingness to select evidence-based treatments at follow-up is nonetheless important to note, despite that acceptance failed to reach statistical significance as a moderator between parents' treatment selection and their willingness to select evidence-based treatments. This

finding indicates that parents with greater change in acceptance from postworkshop to follow-up had higher levels of willingness to select evidence-based treatments at follow-up.

*Testing hypothesis 4c.* The relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments at postworkshop was hypothesized to be moderated by parents' changes in cognitive fusion from preworkshop to postworkshop. In step 1, postworkshop treatment selection knowledge and change in cognitive fusion from preworkshop to postworkshop were entered as predictors of willingness to select evidence-based treatments at postworkshop. Results indicated that parents' treatment selection knowledge and changes in cognitive fusion from preworkshop to postworkshop did not significantly predict their willingness to select evidence-based treatments at postworkshop,  $R^2 = .039$ ,  $F(3, 25) = .342$ ,  $p = .795$ . Treatment selection knowledge did not predict willingness to select evidence-based treatments at postworkshop,  $b = .449$ ,  $SE = .772$ , 95% CI [-1.141, 2.039]. Changes in cognitive fusion from preworkshop to postworkshop also did not predict willingness to select evidence-based treatments at postworkshop,  $b = .520$ ,  $SE = .845$ , 95% CI [-1.220, 2.260]. The interaction between parents' treatment selection knowledge and their changes in cognitive fusion from preworkshop to postworkshop did not significantly predict their willingness to select evidence-based treatments at postworkshop,  $b = -.044$ ,  $SE = .123$ , 95% CI [-.298, .210]. The  $R^2$  change between the two predictors and the interaction was .005,  $F(1, 25) = .126$ ,  $p = .726$ . Taken together, these findings indicate that Hypothesis 4c was not supported in the present study; changes in parents' cognitive fusion from preworkshop to postworkshop did not moderate the relation between their treatment selection knowledge and their willingness to select evidence-based treatments at postworkshop.

**Testing hypothesis 4d.** The relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments at follow-up was hypothesized to be moderated by changes in parents' cognitive fusion from postworkshop to follow-up. In step 1, treatment selection knowledge and change in cognitive fusion from postworkshop to follow-up were entered as predictors of willingness to select evidence-based treatments at follow-up. Results indicated that parents' treatment selection knowledge and changes in cognitive fusion from postworkshop to follow-up did not significantly predict their willingness to select evidence-based treatments at follow-up,  $R^2 = .065$ ,  $F(3, 19) = .442$ ,  $p = .726$ . Treatment selection knowledge did not predict willingness to select evidence-based treatments at follow-up,  $b = .273$ ,  $SE = .701$ , 95% CI [-1.195, 1.741]. Changes in cognitive fusion from postworkshop to follow-up also did not predict willingness to select evidence-based treatments at follow-up,  $b = .256$ ,  $SE = .266$ , 95% CI [-.403, .363]. The interaction between parents' treatment selection knowledge and their changes in cognitive fusion from postworkshop to follow-up did not significantly predict their willingness to select evidence-based treatments at follow-up,  $b = -.020$ ,  $SE = .183$ , 95% CI [-.403, .363]. The  $R^2$  change between the two predictors and the interaction was .001,  $F(1, 19) = .012$ ,  $p = .914$ . Taken together, these findings indicate that Hypothesis 4d was not supported in the present study; changes in parents' cognitive fusion from postworkshop to follow-up did not moderate the relation between their treatment selection knowledge and their willingness to select evidence-based treatments at follow-up.

### **Qualitative Results**

**Content categories for research question 5: Parents' feedback regarding their experiences during the workshop.** Participants in both the ACT workshop and the Support workshop shared predominantly positive experiences in the Workshop Satisfaction Survey. The



content categories derived from participants' responses are discussed below (see Appendix I for tables outlining the number of participants who endorsed each content category). Most participants in the ACT group identified that they liked the ACT elements of the workshop such as mindfulness and values, while some participants identified most liking the information provided and the opportunity to share their experiences with one another. Similarly, most participants in the Support group identified that they most liked the information they gained from the workshop, while some parents identified most liking the opportunity to share their experiences with other parents.

Most ACT group participants reported that there was nothing they liked least about the workshop, although a few participants indicated that they least liked particular aspects of the content and presentation style. A few Support group participants also reported that there was nothing they liked least about the workshop, although others reported least liking that the workshop was too long, had anxiety-provoking content (e.g., learning about "the treatment options that could be harmful"), and had too few participants.

When asked about 'things you would change or do differently', some participants in the ACT group indicated personal changes they pledged to make as a result of participating in the workshop rather than their suggested changes to the workshop, which was the intended meaning of the question. For instance, parents made comments such as "I will do things mindfully [and] look for evidence-based treatments for my child" and "I would stop being guilty for the past and focus on what I can do now for the future". A few ACT group participants also indicated that they would have liked the workshop to include more interactive exercises and specific information about programs, and some of these parents made suggestions about logistical changes. Some participants in the Support group suggested making no changes to the workshop,

while others suggested making the workshop discussions more structured or changing the workshop length, location, content, and group size.

When asked whether they had additional feedback about their experiences in the workshop, most participants in the ACT workshop did not respond, while some shared that the workshop was a positive experience for them. As one parent shared, “What a great experience as a parent to discover more tools and connect with other parents”. ACT participants described the workshop as helpful, practical, and enjoyable. Participants in the Support group expressed gratitude for the information provided, as well as for the parent support elements of the workshop. They noted an appreciation for the diversity of the parents in attendance, as well as the limitations of current research in the field of ASD treatments. Finally, as one parent stated, “We need more sessions like these”.

**Content categories for research question 6: Parents’ feedback regarding their experiences between postworkshop and follow-up.** Participants in the ACT workshop and the Support workshop shared their experiences in the three months following participating in the workshop on the Follow-up Experiences Survey. The content categories derived from their responses are discussed below (see Appendix J for tables outlining the number of participants who endorsed each content category). Some parents in the ACT group reported a lasting impact of the knowledge about evidence-based treatments that they gained from the workshop, while others reported that the workshop encouraged them to independently investigate available treatment options, that they are now more mindful in their everyday lives, and that they now feel less alone. In contrast, three parents in the ACT group reported that the workshop did not significantly impact their lives over the past three months.

Some parents who participated in the Support group reported that the workshop left them with increased feelings of empowerment and confidence in their ability to advocate for their children, as well as helped them come to a greater understanding of ASD and their children and develop a more positive attitude. In contrast, three parents in the Support group reported that the workshop did not have a lasting impact on their lives. For example, one parent stated, “I came out knowing the same as when I went in”.

Most participants in both the ACT and Support groups reported that the most important thing they learned in the workshop was treatment-related information. A few ACT group participants also discussed the importance of social support and noted the lasting significance of the more holistic view of their child which they learned through the workshop. As one parent shared, “Take time to look at all aspects of your child, not just the 'the Disabilities'. Take care of the whole individual just like the exercise we did. Take time to look and taste the 'raspberry'. You will be surprised what can be discovered”. In addition to the treatment-related information, a few Support group participants also that the most important lesson they learned was to trust their instincts and knowledge of their children, noting that “every individual with autism is different”. One Support group participant shared that the sense of social support and learning that they are “not alone on this journey” was the most important thing they learned in the workshop.

Three months following completion of the workshop, some participants in the ACT group reported feeling more hopeful and less stressed than they had before completing the workshop. Some parents noted that their attitudes and behaviours did not significantly change as a result of participating in the workshop. Other parents reported feeling more knowledgeable, hopeful, and supported with respect to selecting treatments. One parent described frustration, noting “I am more frustrated by the lack of services for our adult ASD community and for my

son". In comparison, three parents in the Support group noted that their attitudes and behaviours had not significantly changed as a result of participating in the workshop. Some other parents reported that the workshop helped them to become more knowledgeable and open minded regarding available treatments and information.

Some ACT group participants reported improved overall quality of life for themselves and their families in the three months following the workshop. Parents also reported that their children have benefitted from parents' increased mindfulness, improved capacity to advocate on behalf of their children, and spending more time together. Some Support group participants reported that their children benefitted from their increased confidence in making treatment-related decisions, as well as improved strategies and specific intervention approaches, and decreased parental stress.

Half of the participants in the ACT workshop shared having realized the importance of parents of children with ASD having adequate treatment selection knowledge. They also mentioned the importance of giving parents the opportunity to connect with each other. Further, parents noted the importance of an open but cautious approach to investigating treatments, the benefits of mindfulness, and the importance of the parental role. These parents also advocated for increased access to individualized services and supports for their children. Some participants in the Support workshop also discussed the importance of parents of children with ASD having adequate treatment selection knowledge. Others discussed the importance of including parent perspectives, outlined their future plans for their children, or did not respond.

### **Summary of Quantitative Results**

The trajectories of change in participants' acceptance were found to differ significantly between groups over time. Although increases in acceptance were observed over time among

participants in the ACT workshop group, the differences in acceptance between groups at postworkshop and follow-up failed to reach significance. Similarly, trajectories of change in participants' cognitive fusion also varied significantly by group and time. Although decreases in cognitive fusion were observed over time among participants in the ACT workshop group, the differences in cognitive fusion between groups at postworkshop and follow-up failed to reach significance. Surprisingly, willingness to select evidence-based treatments was not influenced by workshop type. Instead, willingness to select evidence-based treatments was observed to decrease over time for participants in both the ACT group and the Support group. Treatment selection knowledge was also not influenced by workshop type, as participants in both the ACT group and the Support group displayed significant increases in their treatment selection knowledge from preworkshop to postworkshop. These gains were maintained at 3-month follow-up. Finally, although neither acceptance nor cognitive fusion were found to significantly moderate the relation between participants' treatment selection knowledge and their willingness to select evidence-based treatments, a positive association was identified between parents' changes in acceptance from postworkshop to follow-up and their willingness to select evidence-based treatments at follow-up. At this time point, parents displaying greater change in acceptance from postworkshop to follow-up had higher levels of willingness to select evidence-based treatments.

### **Summary of Qualitative Results**

At postworkshop, parents in both groups reported that the workshop was useful and enjoyable. They appreciated the information they received and the opportunity to connect with other parents of children with ASD. Participants in both groups recommended some logistical changes to the workshop, such as increasing the group size, adding more interactive components,

and changing the location or duration. Parent responses differed between groups in terms of the aspect of the workshop they most liked, with ACT workshop participants identifying ACT-specific content (e.g., mindfulness, cognitive defusion exercises) and Support workshop participants identifying treatment-related information.

At three-month follow-up, parents in both workshop groups reported increased knowledge about ASD treatment selection, as well as increased openness and enhanced confidence in their ability to select treatments for their children. Participants in both groups identified that the most important thing they learned in the workshop was tips and strategies for selecting treatments and highlighted the importance of parents of children with ASD having access to treatment-related information. Parent responses differed between groups in that ACT workshop participants reported feeling more positive and hopeful three-months after completing the workshop, while Support workshop participants reported feeling more open-minded and knowledgeable. ACT workshop participants also commented that their children's quality of life had improved in the three-months since the workshop, while Support group participants noted increased understanding of their children.

## DISCUSSION

The present randomized pilot feasibility trial examined the potential benefits of incorporating ACT components into a standard one-day educational workshop on selecting treatments for children with ASD. In the study, a new group workshop aimed at enhancing both knowledge and psychological flexibility in parents of children with ASD was developed. The outcomes of this workshop were evaluated against a similar workshop aimed at enhancing knowledge while providing general parent support. A repeated measures design in which open-ended items were embedded within quantitative questionnaires was used to explore differences in effects between groups over time, as well as participants' experiences during the workshops and at three-month follow-up. In the sections that follow, a review of the study findings, as well as discussion of how they fit into the existing body of literature are presented. Clinical implications are also discussed, as well as study strengths, limitations, and directions for future research.

### Review of Study Findings

ACT workshop participants were expected to show greater increases in acceptance (i.e., greater openness to experiencing thoughts and emotions related to their children's ASD), greater decreases in cognitive fusion (i.e., reduced tendency to buy into and get stuck on particular thoughts about their children's ASD), and greater increases in willingness to select evidence-based treatments than Support workshop participants over time.

**Acceptance.** Although the differences in participants' acceptance between groups failed to reach statistical significance at both postworkshop and follow-up, the trajectories of change in participants' levels of acceptance were found to vary significantly between groups over time. Specifically, linear increases in acceptance were observed over time within the ACT workshop

group, while no change in acceptance was observed over time within the Support workshop group. This finding is consistent with results from similar group ACT studies which have found significant increases in acceptance over time following participation in ACT workshops or groups (e.g., Blackledge & Hayes, 2006; Fung et al., 2018; Gregg et al., 2007). In the present study, participation in the ACT workshop was associated with increases in parents' acceptance of their thoughts and emotions related to parenting a child with ASD over time.

Parents' qualitative responses at three-month follow-up may further enrich the interpretation of the finding of continued increases in parents' acceptance from postworkshop to follow-up in addition to between preworkshop and postworkshop. Three months after completing the workshop, some ACT workshop participants reported feeling more positive and hopeful. It may be that practicing acceptance (i.e., fully and actively embracing both pleasant and unpleasant thoughts, emotions, and bodily sensations; Luoma, Hayes, & Walser, 2007) led parents in the ACT group to more fully connect with positive experiences with their children in their day-to-day lives over time (e.g., sharing enjoyment while playing together). Greater openness to experiencing the positive thoughts and emotions associated with these actions could be connected to parents' reported increased positivity and hopefulness over time. Furthermore, parents who are more willing to experience both the positive and negative thoughts and feelings associated with interacting with their children may also be more willing to spend quality time engaging with their children. This could explain the improved quality of life for their children reported by some ACT group participants three-months after participating in the workshop.

One possible explanation of the failure to detect differences in acceptance between groups at postworkshop may be the relatively short duration of exposure to ACT content in the present study. Workshops in the present study took place over only one session (6.5 hours),



unlike in the study by Luoma and colleagues (2007) in which the 12-hour ACT component of the intervention was delivered to participants over 8 weekly sessions. As such, participants in Luoma and colleagues' (2007) study had the opportunity to benefit from continued reflection and experiencing between each session, as well as longer duration of exposure to ACT content, likely contributing to greater increases in acceptance immediately following completion of the final session.

The group format of the ACT *Swamp and Mountain Metaphor* used to introduce the concept of acceptance in the ACT workshop (Hayes & Strosahl, 2004) may have also contributed to finding that participants' levels of acceptance were not significantly different between the two groups at postworkshop or follow-up. In this metaphor, parents' values with respect to their children's lives (e.g., happiness, contribution to society, belongingness) were represented by a beautiful mountain. A swamp was said to represent parents' unpleasant, distressing, or uncomfortable thoughts and emotions which could interfere with their ability to reach the mountain (e.g., thoughts that the child may never fully 'recover', fears about missing out on a treatment that may have had a miraculous effect). Acceptance was explained as a willingness to wade through the swamp in order to continue travelling toward the mountain.

Although this exercise was helpful in introducing the concept of acceptance within the ACT framework, the group format used to introduce acceptance may not have created sufficient activation of emotion within individual participants to actually teach acceptance in practice, rather than merely in theory. Acceptance work in ACT typically involves individuals intentionally seeking out uncomfortable or distressing thoughts and emotions through in vivo experiential exercises in order to practice actively accepting

them (e.g., Luoma, Hayes, & Walser, 2007). In the present study, however, the group exercise used to introduce acceptance may not have been the optimal method of creating emotional arousal and practicing acceptance ‘in the moment’. It should be noted, though, that seeking to intentionally activate participants’ distressing thoughts and emotions could potentially have had harmful effects within this group format in which they could not be sufficiently processed (e.g., leaving participants in emotional distress and without proper support following the workshop). As such, acceptance may be an ACT process which is better targeted through ongoing, individualized Acceptance and Commitment *Therapy*, or a combination of individualized Acceptance and Commitment Therapy and group Acceptance and Commitment Training, rather than through a one-day group Acceptance and Commitment Training workshop.

Although the greatest difference in acceptance between groups in the present study was observed at follow-up, this difference failed to reach statistical significance. The failure to detect significant differences in acceptance between groups, particularly at follow-up, is best explained by the small sample size and resulting low statistical power in the present study. This will be further discussed in limitations and directions for future research.

**Cognitive fusion.** Although the differences in participants’ cognitive fusion between groups failed to reach statistical significance at both postworkshop and follow-up, the trajectories of change in participants’ levels of cognitive fusion were found to vary significantly between groups over time. Specifically, ACT group participants displayed reductions in cognitive fusion at each time point, while Support group participants’ levels of cognitive fusion remained relatively unchanged over time. This finding is partially consistent with results of similar studies comparing education with ACT groups to education-only or general support groups. These studies have demonstrated long-lasting decreases in cognitive fusion after participating in even

brief ACT interventions, compared with no change in control conditions (Gregg, Callaghan, Hayes, and Glenn-Lawson 2007; Varra, Hayes, Roget, and Fischer, 2008).

This quantitative finding was further substantiated in the present study by qualitative responses from parents in the ACT workshop group. Most ACT workshop participants identified the mindfulness and defusion exercises as their most-liked workshop component, whereas most Support workshop participants identified information as their most-liked workshop component. The increased hopefulness and positivity reported by some ACT workshop participants at follow-up add additional support to the finding of their decreasing levels of cognitive fusion over time. With decreased cognitive fusion, ACT group participants may have been better able to separate themselves from their thoughts and less likely to become “stuck” in their focus on distressing topics (e.g., fears about their children’s futures). In combination with additional practice of mindfulness and acceptance, the increased hopefulness and positivity reported by some ACT workshop participants at follow-up may be an anticipated finding.

Relational Frame Theory may provide further insight into the finding of decreasing levels of cognitive fusion among ACT workshop participants and consistent levels of cognitive fusion among Support workshop participants. Relational Frame Theory posits that individuals automatically form internal associations between various events and particular thoughts and emotions (e.g., Hayes, 2004). Research has demonstrated that, as these relational frames are often automatic and implicit, directly challenging the associations between events and particular thoughts and emotions serves to increase the size and power of the relational network by incorporating new events which become associated with the distressing thoughts and emotions (Barnes-Holmes, Barnes-Holmes, McHugh, & Hayes, 2004). Hayes, Fox, Gifford, Wilson, Barnes-Holmes, and Healy (2001) proposed that forming new, more useful associations to

individuals' relational networks may be more effective in creating lasting change than trying to directly disrupt existing distressing relational frames.

In the present study, parents' cognitive fusion was targeted through teaching and rehearsing strategies for separating oneself from thoughts, as well as through presenting parents with new information. The validity of their thoughts was not directly challenged, as is often done in Cognitive-Behavioural Therapy (CBT). In doing so, parents were able to form *new*, perhaps more helpful relational frames which persisted following the completion of the workshop. For example, parents commonly report thoughts such as "all treatments are helpful in some way", from which it can be difficult to separate themselves. Within the ACT workshop, experiential activities such as the *Leaves on a Stream Exercise* were introduced to help participants learn to separate themselves from these types of thoughts (i.e., to decrease cognitive fusion). In addition, parents were also presented with new information about ASD treatments and their empirical support. It is believed that the combination of these strategies promoted development of more helpful relational frames with respect to ASD treatments, which persisted following completion of the workshop. These results demonstrate the importance of active, in-the-moment experiencing and processing in ACT, rather than psychoeducation alone.

**Willingness to select evidence-based treatments.** Contrary to expectations, participants' willingness to select evidence-based treatments was found to vary by time but not by group, such that willingness to select evidence-based treatments steadily decreased in both workshop groups over time. This finding was initially puzzling. However, it may be better understood within the context of Relational Frame Theory. Relational Frame Theory posits that attempting to disrupt or disprove relations that individuals have formed between particular events and distressing thoughts and emotions typically serves to expand these negative relational frame networks

(Blackledge, 2003; Hayes, 2004). In the present study, both the ACT workshop and the Support workshop exposed parents to a great deal of group discussion. Participants in both groups therefore had the opportunity to hear other parents' diverse opinions on ASD treatment selection (e.g., negative experiences with government-funded agencies, perceived improvement in children's behaviours following non-evidence-based treatments such as a gluten-free diet, unfounded beliefs in vaccine injury, and perceived medical biases of the academic community). It may be, then, that participants' existing relational frame networks were expanded through exposure to the opinions of other group members. Researchers have demonstrated that even being exposed to information or opinions which are contrary to one's previously held beliefs can often result in strengthening existing beliefs (Paynter et al., 2019). Additionally, as relational frames are constantly being formed as individuals are exposed to different stimuli (Hayes, 2004), these expanded unhelpful relational frame networks may have continued to expand over time, leading to negative cascading effects which could explain the decreases in willingness to select evidence-based treatments found in participants in both workshop groups at three-month follow-up.

In one study, Varra and colleagues (2008) noticed that professional counsellors who completed an educational workshop on current research findings in preventative care and strength-based leadership skills prior to exposure to information about evidence-based treatments showed decreases in their willingness to select evidence-based treatments from preworkshop to postworkshop, although this trend did not reach statistical significance. It may be that being presented with alternative information serves to further expand individuals' existing relational frame networks, leading their opinions to become more entrenched. Although this explanation is

consistent with Relational Frame Theory, it does not account for the decreases in willingness to select evidence-based treatments observed in ACT workshop participants over time. In contrast, Varra and colleagues (2008) found increased willingness to use evidence-based treatments at postworkshop and follow-up in participants who completed an ACT workshop prior to being exposed to information about evidence-based treatments.

Participants' qualitative responses on the Follow-up Experiences Survey may offer additional insight into the observed decreases in participants' willingness to select evidence-based treatments at follow-up. At three-month follow-up, participants in both workshop groups reported increased treatment selection knowledge, as well as increased openness and enhanced confidence in their ability to select appropriate treatments for their children. It is possible that these changes may have led parents to be more open-minded to *non*-evidence-based treatment approaches, and more confident in these treatment selection choices rather than relying on recommendations from researchers and clinicians. This is consistent with previous research demonstrating a positive relation between openness and use of non-evidence-based treatments in health professionals (Paynter, Sulek, Luskin-Saxby, Trembath, & Keen, 2018). This effect may have been further exacerbated in the present study due to the use of the Evidence-Based Practice Attitude Scale (Parent) to measure willingness to select evidence-based treatments. For example, parents with higher levels of openness and self-efficacy may have been more likely to strongly endorse items such as "I know better than academic researchers how to care for my child", which would have resulted in lower scores on this measure.

Although the potential negative impact of both types of workshop on parents' willingness to select evidence-based treatments is important to acknowledge, other and perhaps more likely explanations for the reported decreases in willingness to select evidence-based treatments over

time in both workshop groups include the measure used to assess the construct and the operationalization of the construct itself. First, the Evidence-Based Practice Attitudes Scale (EBPAS; Aarons, 2004) used in the current study was originally developed for the purpose of investigating mental health practitioners' attitudes toward using evidence-based practices with their clients. Although there is a precedent for modifying this measure to assess attitudes toward evidence-based practice among other populations such as teachers (Monahan, McDaniel, George, & Weist, 2014), it is possible that even with modifications, the EBPAS-P was not the most sensitive measure to assess parents' attitudes toward evidence-based treatments for their children with ASD. For example, for the purposes of the present study, items from the original EBPAS such as "I am willing to try new types of therapy/interventions even if I have to follow a treatment manual" and "how likely would you be to adopt a treatment/intervention if it was required by your state?" were modified. In an attempt to increase their relevance to parents' treatment decision-making for their children, those items became "I am willing to try new types of therapy/interventions even if they require me or the treatment provider to follow a treatment manual" and "how likely would you be to adopt a treatment/intervention if it was required to qualify for government funding?". As such, the items included in this measure may not have accurately reflected the most salient considerations parents make when selecting treatments for their children with ASD.

The appropriateness of the construct of willingness to select evidence-based treatments as a primary outcome of the present study should also be considered. Use of non-evidence-based treatments is common among parents of children with ASD (e.g., Green, Pituch, Itchon, Choi, O'Reilly, & Sigafos, 2006; Paynter, Trembath, & Lane, 2018; Wong & Smith, 2006); however, parents most commonly employ several different

treatment approaches (some which are evidence-based and some which are not) simultaneously with their children (e.g., Drouillard, 2012; Goin-Kochel, Myers, & Mackintosh, 2007). As such, the concern is more that parents' inclusion of non-evidence-based treatments in their children's treatment plans may lead to opportunity cost (i.e., missing out on evidence-based treatments) or cause direct harm. Thus, it may have been more appropriate in the present study to have investigated how increased psychological flexibility affects parents' selection of *non*-evidence-based treatments for their children with ASD, rather than merely their willingness to select evidence-based treatments.

**Patterns of change in ACT process variables.** It was predicted that participants in the ACT group would continue to demonstrate changes in acceptance and cognitive fusion from postworkshop to follow-up, while participants in the Support group would show no differences in acceptance and cognitive fusion over time. That is, ACT group participants were expected to show additional increases in acceptance and additional decreases in cognitive fusion from postworkshop to follow-up, while no change was expected in the Support group.

**Acceptance.** Acceptance (i.e., openness to experiencing thoughts and emotions related to their children's ASD) was found to increase over time for ACT workshop participants, with the highest levels of acceptance observed at three-month follow-up. This finding indicates that ACT group participants continued to show increases in their acceptance after completing the ACT workshop, while Support group participants' acceptance did not change over time. These results are consistent with findings indicating further improvement on ACT-specific process measures in the months following completion of ACT workshops or groups (e.g., Fung, Lake, Steel, Bryce, Gould, Tarbox, & Coyne, 2018; & Lunsky, 2018; Varra, Hayes, Roget, & Fischer, 2008).



This finding is particularly important given that the ACT workshop provided participants with only a few hours of ACT-specific content, delivered in group format. As such, the substantial benefits observed as a result of this intervention with minimal time and financial demands make it particularly well suited for public health institutions or community organizations to provide at a low cost to parents. This one-time intervention with the potential for positive cascading effects is also particularly well suited for parents of children with ASD, as their substantial time spent caring for and supporting their children often leaves little time for interventions aimed at supporting themselves.

Furthermore, the finding of increasing acceptance in ACT group participants but not in Support group participants suggests that these improvements were related to ACT-specific workshop content, rather than simply to common factors known to affect the efficacy of therapeutic interventions such as duration of intervention and therapist factors (e.g., Arian et al., 2010; Cuijpers, Driessen, Hollon, vanOppen, Barth, & Andersson, 2012; Lenhart, Wells, & Lochman, 2008). As these common factors were consistent between workshop groups and participants' levels of acceptance did not differ between groups at preworkshop assessment, it is reasonable to conclude that the observed increases in ACT workshop participants' acceptance over time were related to their participation in the ACT workshop.

***Cognitive fusion.*** ACT group participants demonstrated reductions in cognitive fusion at each time point, while Support group participants' levels of cognitive fusion did not change over time. Relational frame theory states that one of the goals of ACT is expanding relational frame networks to include more helpful associations between particular events and particular thoughts and emotions (Blackledge, 2003). As individuals implicitly form associations during their day-to-day lives (Hayes, 2004), the expanded, more helpful relational frame networks developed

through participation in the ACT workshop may, through time, lead to additional positive relational frames being formed. Participation in the ACT workshop therefore may have resulted in cascading positive effects for parents, such that greater reductions in cognitive fusion were seen at three-month follow-up than immediately following completion of the workshop.

**Treatment selection knowledge.** It was predicted that treatment selection knowledge would increase in both workshop groups from preworkshop to postworkshop. Treatment selection knowledge was also expected to be maintained in both workshop groups at three-month follow-up.

***Treatment selection knowledge at postworkshop.*** Treatment selection knowledge was found to vary over time but not by group, with participants in both groups demonstrating significantly increased knowledge from preworkshop to postworkshop. Previous research has similarly demonstrated that adding ACT as a supplement to education-based workshops did not result in decreased retention of information compared to education-only workshops in a sample of healthcare professionals (Gregg, Callaghan, Hayes, and Glenn-Lawson, 2007). Thus, participants in the ACT group had the opportunity to benefit from ACT-specific content (e.g., increased acceptance, decreased cognitive fusion), while still retaining the same knowledge about ASD and treatment selection as participants in the Support group. This is particularly important, given that participation in ACT groups has been associated with mental health benefits such as reduced stress and social isolation for parents of children with ASD (Lunsky, Fung, Lake, Lee, & Bryce, 2018).

Participants in both groups shared that the most important things they learned in the workshop were tips and strategies for selecting treatments for children with ASD. This qualitative information corroborates observed increases in participants' knowledge of ASD

treatment selection from preworkshop to postworkshop in both the ACT workshop and the Support workshop.

*Treatment selection knowledge at follow-up.* Treatment selection knowledge was found to remain stable between postworkshop and follow-up time points for participants in both the ACT and Support workshops. In other words, the gains in treatment selection knowledge made by parents in both the ACT and the Support workshops were maintained three months after completing the workshops. It is possible that this information was retained because parents spent additional time reflecting on the content or putting the information into practice in their day-to-day lives following workshop completion. The finding that parents in both workshop groups reported increased confidence in their abilities to select treatments for their children with ASD at follow-up lends further support to this hypothesis. Finally, participants in both groups highlighted the importance of parents of children with ASD having access to treatment-related information. They appreciated the knowledge gained through the workshop and reported that other parents would benefit from this additional information when making treatment-related decisions on behalf of their children.

**ACT process variables as moderators.** It was predicted that the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments would be moderated by acceptance and cognitive fusion both at postworkshop and follow-up time points.

Acceptance and cognitive fusion were not found to significantly moderate the relation between parents' treatment selection knowledge and their willingness to select evidence-based treatments at either postworkshop or follow-up time points, possibly due

to the insufficient power afforded by the small sample size in the present study. However, a significant association was found between parents' increases in acceptance from postworkshop to follow-up and their willingness to select evidence-based treatments at follow-up. Specifically, parents who showed the greatest increases in their acceptance in the three months following workshop completion reported the highest levels of willingness to select evidence-based treatments at follow-up. This positive relation between acceptance and willingness to select evidence-based treatments is consistent with findings from Varra and colleagues (2008), who demonstrated increased willingness to use evidence-based treatments among professional counselors who completed an ACT workshop prior to completing a workshop about evidence-based treatments.

### **Clinical Implications**

Incorporating elements of ACT into standard community educational workshops and support groups has many potential benefits for parents of children with ASD. This intervention was shown to be as effective as the Support workshop (comprised of education and general parent support) for increasing parents' treatment selection knowledge, while offering the added benefits of increased acceptance and decreased cognitive fusion. Previous research has demonstrated associations between changes in these ACT processes variables (i.e., acceptance and cognitive fusion) and mental health benefits including: decreased depressive symptoms (Blackledge & Hayes, 2006; Lunsky, Fung, Lake, Steel, & Bryce, 2018; Poddar et al., 2015) and parenting-related stress (Kowalkowski, 2013; Lunsky, Fung, Lake, Steel, & Bryce, 2018), as well as increased participation in self-care activities (Fung, Lake, Steel, Bryce, & Lunsky, 2018) and enhanced coping skills (Clarke, Kingston, Wilson, Bolderston, & Remington, 2012). Increased acceptance in a general sample of parents has also been shown to be associated with

decreased internalizing and externalizing behaviours in children (e.g., Brassell, Rosenberg, Parent, Rough, Fondacaro, & Seehus, 2016). The relatively low cost and low resource demand aspects of incorporating ACT components into existing community education and support groups for parents of children with ASD makes this a feasible method of supporting parents of children with ASD. Furthermore, ACT exercises can be readily tailored to suit a wide range of topics relevant to parents of children with ASD (e.g., managing challenging behaviours, the importance of self-care, strategies for enhancing play and interactions, navigating the school system).

Parent feedback was overwhelmingly positive for both types of workshop in the present study. Participants in both the ACT workshop and the Support workshop reported high levels of satisfaction with the workshop they participated in, and these ratings did not differ significantly between groups. This is consistent with results from a related study in which parents of children with ASD in an education and support group reported similar satisfaction levels to participants in a mindfulness group (Lunsky, Hastings, Weiss, Palucka, Hutton, & White, 2017). In the present study, parents in both groups reported feeling more knowledgeable and confident in their abilities to make treatment decisions on behalf of their children at three-month follow-up. They noted the importance of parents of children with ASD having access to both information and support in order to best serve their children.

Interventions aimed at supporting parents in selecting effective treatments for their children with ASD are particularly important at this time, given the recently announced changes to the Ontario Autism Program (Ministry of Children, Community, and Social Services, 2019). Under this revised program, families are allotted childhood budgets

which are provided to them directly and which they may use to access interventions and supports for their children. Specifically, children under the age of six are eligible to receive \$20,000 annually, while children aged six and over are eligible to receive \$5,000 annually. Although the Ministry of Children, Community, and Social Services (2019) has recently announced that it plans to develop a needs-based model of funding, few details are currently known. In this new direct funding model, parents are faced with the challenge of navigating through the myriad treatments available, many of which may be non-evidence-based or provided with little-to-no quality oversight from regulatory bodies. This places enormous responsibility on parents for evaluating the quality of empirical support for various interventions and their ability to meet the individual needs of their children. Although the Ministry of Children, Community, and Social Services has stated that it will develop an independent intake agency in the next year to assist parents throughout this process, families who begin receiving their childhood budgets after this new program took effect on April 1, 2019 are now tasked with selecting treatments for their children with minimal support. Given that difficulty completing lengthy paperwork and limited understanding of bureaucratic processes have been identified as barriers to immigrant parents accessing services for their children with ASD in Canada (Khanloul, Haque, Mustafal, Vazquez, Mantini, & Weiss, 2017), parents with learning challenges, parents with lower levels of education, and parents for whom English is their second language are likely to be most impacted by these changes.

Additionally, for many families, these new childhood budgets represent a considerable reduction in financial support in comparison to what they had previously been eligible for. As such, parents may feel forced to make a difficult choice between evidence-based treatments such as intensive behaviour analysis (which can cost approximately \$80,000/year) and non-evidence-

based interventions (e.g., technology aids), which are often less expensive. Interventions aimed at increasing parents' knowledge of ASD treatments and their varying levels of empirical support while simultaneously addressing the emotional factors which often affect treatment-related decisions may be of particular value in addressing these concerns.

### **Strengths of the Present Study**

The present study contributes to and builds upon the existing literature in several ways. This was the first study to the author's knowledge to investigate the potential benefits of adding elements of acceptance and commitment training to standard educational workshops to increase parents' willingness to select evidence-based treatments for their children with ASD. Furthermore, in this investigation, the ACT workshop (comprised of education and ACT) was evaluated against the Support workshop (comprised of education and general parent support), which represented a high-quality service commonly accessed by parents of children with ASD (Mandell & Salzer, 2007). This design allowed the researcher to assess whether the ACT workshop was more effective in promoting willingness to select evidence-based treatments in parents of children with ASD than the most common workshops currently available. Random assignment of participants to workshop groups increased the likelihood that groups would be equivalent in terms of variables of interest before the workshop. Utilizing the same two facilitators for both the ACT workshop and the Support workshop in each location also helped to ensure that between-groups differences in treatment effects could not be attributed to facilitator characteristics.

Additionally, variables of interest were measured at three time points (i.e., preworkshop, postworkshop, and follow-up). This allowed for analyses of change in

which participants acted as their own controls. The repeated measures design of the present study also allowed the researcher to conduct trend analyses to better understand the pattern of change over time for participants in each group.

The present study also contributed to the literature by incorporating measures to assess the proposed process-level variables which were hypothesized based on theory and previous research to act as the mechanisms of change in the ACT workshop group. Including measures of acceptance and cognitive defusion allowed for examination of the extent to which changes in these core ACT processes were responsible for changes in parents' willingness to select evidence-based treatments, although no significant moderation effects were found in the present study. It was also possible to measure whether participation in the ACT workshop was associated with increased acceptance and decreased cognitive fusion at postworkshop and follow-up.

An additional strength of the present study was that a measure of parents' understanding and retention of workshop information (i.e., the Treatment Selection Knowledge Quiz) was incorporated at each time point. This allowed the researcher to confirm that both the ACT and Support groups demonstrated significant increases in their treatment selection knowledge from preworkshop to postworkshop and that these gains were maintained at three-month follow-up in both groups.

The present study also incorporated a process for assessing workshop fidelity in each condition. The inclusion of these workshop fidelity measures allowed the investigator to confirm that there were high levels of integrity for the ACT workshop and the Support workshop in both locations (Perepletchikova & Kazdin, 2006), indicating that the learning objectives identified for each workshop were sufficiently covered by workshop facilitators. The inclusion of these



measures also allowed the investigator to confirm that treatment fidelity did not differ significantly between ACT and Support workshop conditions in the present study.

Finally, two parents of children with ASD served as Parent Advisors throughout the research process in order to ensure that the study design and results were suitable, meaningful, and useful to parents of children with ASD. These two parents of children with ASD were key collaborators throughout all stages of the research process, including designing the study, collecting data, and interpreting results. This approach to conducting research recognizes that all studies are influenced to some degree by the implicit biases held by researchers (Fletcher-Watson et al., 2018). Collaborating with stakeholders from the population of interest in research helps to ensure that information gained from the study reflects the beliefs and experiences of the participant group, rather than only the researchers. In the present study, Parent Advisors were instrumental in terms of helping to select which information to include in the psychoeducation component of the workshops, pilot testing study measures, advising on recruitment practices, and assisting with interpretation of data.

### **Limitations and Future Directions**

A number of factors should be taken into consideration when reviewing the findings of this study and planning for future studies. A small sample size was the most significant limitation of the present study. Although efforts to expand recruitment and promote participation were made, the final sample size of 23 participants was far below the size needed to conduct analyses with adequate power (e.g., at least 50 participants required for moderation analyses). Therefore, the sample size in the present study likely resulted in under-detection of effects due to insufficient power. For example, between-

group differences in acceptance and cognitive fusion which approached statistical significance at follow-up may have achieved significance with a larger participant sample, given their medium effect sizes. Although a sample size of 23 participants is comparable to or larger than the sample sizes in many published studies of group ACT interventions and group interventions for parents of children with ASD (e.g., Banach, Iudice, Conway, & Couse, 2010; Blackledge & Hayes, 2006; Chiang, 2014; Fung, Lake, Steel, Bryce, & Lunsky, 2018; Lunsky, Fung, Lake, Steel, & Bryce, 2018; Luoma et al., 2007), a larger sample size in future studies would allow for conducting statistical analyses with increased power, particularly to detect moderating effects and differences between groups at various time points.

Recruiting participants from a clinical community population poses special challenges not found when recruiting participants from University undergraduate participant pools. The pool of potential participants is smaller and requires a more focused recruitment approach in these clinical samples. Recruitment in the present study targeted distributing materials through ASD-related community organization email lists and various ASD-related community events. However, this approach introduced a sampling bias in that parents of children with ASD who were not actively involved in the ASD community were unlikely to be recruited for the study. Parents who participated were therefore likely to be already relatively well supported, informed, and thus less in need of the intervention. Thus, participants in both groups in the present study were found to have relatively high levels of acceptance at the preworkshop time point (i.e., no scores in the clinically significant range [24-28; Bond et al., 2011] were observed at any time point), which may have contributed to a ceiling effect in which there was less room for improvement as a result of participating in the workshop. Future studies could benefit from

recruiting parents through more universally experienced touch points (e.g., upon receiving the initial diagnosis or at a follow-up appointment).

In an attempt to maximize recruitment, restrictions were not placed on the age of participants' children in the present study. As a result, participants' children ranged in age from 4 to 26 years and their time since diagnosis ranged from 1 year to 18 years. Child age was not found to be correlated with participants' levels of acceptance, cognitive fusion, treatment selection knowledge, or willingness to select evidence-based treatments at any time point. However, time since diagnosis was found to be associated with parents' acceptance at preworkshop and postworkshop, as well as with parents' cognitive fusion at postworkshop. These results highlighted the greater impact of parents' internal processes, rather than child-related factors, in influencing parents' psychological flexibility and treatment decision-making. As such, the present study focused on parent-related factors without directly assessing the impact of child-related factors (e.g., child age, developmental level), which poses an additional limitation. These factors would be interesting to explore in future studies of ACT workshops for parents of children with ASD.

The nature of the sample of parents of children with ASD in the present study represents another limitation to the generalizability of findings. The sample of parents of children with ASD who participated in the present study were all English-speaking and were predominantly mothers, most of whom were married and had at least some College or University education. As recruitment primarily took place through ASD-related organizations, participants in the present study also may have had higher levels of acceptance of their children's diagnoses and were more active participants in the ASD

community than many parents of children with ASD. Thus, generalization of findings to parents outside this very specific population should be made with caution. Future research on this topic would benefit from recruitment of larger and more diverse samples of parents of children with ASD, particularly those who are not already connected to the ASD community. This could be achieved through specifically addressing barriers to participation (e.g., childcare, travel, length of time) in the design of studies, being clear about study procedures and potential benefits during recruitment, encouraging ‘word of mouth’ recruitment, and finding creative solutions for reducing demands on participants (e.g., incorporating online components to remove travel requirements).

For parents of children with ASD, lack of appropriate childcare is a significant barrier to research participation. During recruitment for the present study, many parents cited lack of childcare as the reason they were unable to participate. As the present study involved only parents and not their children, participants were required to provide their own childcare for the full 6.5-hour time frame of the weekend workshop. Finding qualified individuals to provide childcare for children with ASD is known to be especially challenging (e.g., Houser, McCarthy, Lawer, & Mandell, 2014). Despite the researcher’s attempts to organize childcare through the community organization hosting the workshop, this was ultimately not possible due to concerns regarding cost and liability. As a result, many participants had to rely on their partners to care for their children while they attended the workshop, which would not have been possible for single parents or families in which one parent works during weekends. Offering childcare would significantly reduce barriers to parents’ participation in future community-based interventions for parents of children with ASD.

In terms of measurement limitations, self-report questionnaires were used in the present study to measure all variables of interest. As such, accuracy of data obtained is dependent on participants' understanding of items, capacity for self-reflection, and willingness to accurately report their internal experiences (Austin, Gibson, Deary, McGregor, & Dent, 1998). Although participants' scores on each study measure were not significantly correlated with their scores on a measure of social desirability, the capacity for potential bias remains.

An additional measurement limitation in the present study was the use of the Evidence-Based Practice Attitudes Scale – Parent (EBPAS-P; Aarons, 2004) as a measure of willingness to select evidence-based treatments in parents of children with ASD. This measure was adapted for use in the current study from the original form developed to assess *professionals'* willingness to adopt evidence-based practices in their clinical care (Aarons, 2004). The extent to which the EBPAS-P truly captured *parents'* willingness to select evidence-based treatments for their children in the present study is unknown. Furthermore, parents' responses on a questionnaire designed to measure *willingness* to select evidence-based treatments may fail to accurately reflect the real-world treatment-related decisions they make on behalf of their children with ASD, which are often influenced by practical considerations (e.g., availability, cost). That is, a parent may be willing to select an evidence-based treatment for his/her child but may not be able to access this treatment due to limited resources, long wait times, or limited availability.

Given that the researcher was one of the workshop facilitators in the present study, it was not possible for all workshop facilitators to be blind to research hypotheses. This introduced the potential for the researcher to intentionally or unintentionally lead

workshops in such a way as to bias results in favour of supporting the hypotheses. In order to protect against this potential experimenter bias, workshop co-facilitators were blinded to study hypotheses, and treatment fidelity measures were incorporated to allow for analyses to confirm that workshops were facilitated as intended.

The type of fidelity measure used in the present study also represents a limitation. Although the ‘gold standard’ practice for ensuring program fidelity in behavioural health research involves audio or videotaping sessions and conducting random reviews of recordings to assess fidelity (Bellg et al., 2004), the Parent Advisor and researcher believed that doing so in the present study would have placed undue stress on workshop participants. As such, efforts were made to ensure workshop fidelity through facilitators following detailed PowerPoint slides and a facilitator manual, as has been done in similar published studies (e.g., Fung, Lake, Steel, Bryce, & Lunsky, 2018; Varra, Hayes, Roget, & Fisher, 2008). Workshop fidelity in each condition was then assessed using a paper-and-pencil fidelity measure designed specifically for use in the present study. Although these measures were completed by observers or cofacilitators without direct knowledge of study hypotheses, results may nonetheless have been biased in favour of desirability. Future studies would benefit from addressing these limitations by using less intrusive recording methods (e.g., audio recording followed by transcription of sessions and coding) to avoid undue stress while allowing for more direct and systematic assessment of workshop fidelity (Breitenstein, Gross, Garvey, Hill, Fogg, & Resnick, 2010).

The design of the study may have also introduced several limitations. For instance, workshop participants may have influenced each other, given that workshops involved participants interacting with one another through group discussions and exercises for 6.5 hours.

Although workshops were heavily structured in an attempt to reduce this likelihood, group influence was informally observed within both the ACT workshop and the Support workshop.

As discussed earlier, the phrasing of open-ended items in the Workshop Satisfaction Survey (Kowalkowski, 2013) and Follow-up Experiences Survey may represent another measurement limitation within the present study. Specifically, unclear item phrasing may have led participants to interpret some items differently at times than the researcher had intended. For example, when asked what they would change about the workshop, several participants identified changes they had seen in themselves as a result of participating in the workshop, rather than offering their feedback on how the workshop could be improved. Pilot testing these qualitative items with a sample of parents would have likely been helpful in ensuring clarity of phrasing. Furthermore, adding a semi-structured interview component in addition to open-ended survey items would have also helped to ensure participants' understanding of the questions. Semi-structured interviews would have also allowed parents to provide more detailed feedback, likely yielding richer data and strengthening the qualitative component of the study.

In terms of limitations related to external validity of the ACT workshop, it is important to note that although many mental health professionals could facilitate workshops comprised of education and general parent support, fewer mental health professionals have sufficient training in ACT to facilitate workshops incorporating ACT exercises and teaching. In the present study, ACT workshop facilitators completed specific ACT readings and trainings (e.g., attending a 2-day intensive ACT workshop, completing a 12-week ACT course at McMaster University) to prepare, had previous

experience facilitating ACT groups, and were supervised by a registered psychologist with experience in ACT. This additional training may reflect a barrier for some professionals.

However, it should be noted that ACT groups can also be led by lay facilitators with appropriate training and support. For example, several parents of children with ASD in the Toronto area have been trained to effectively facilitate ACT workshops and support groups for other parents of children with ASD and participant feedback from these parent-facilitated groups has been quite positive (Fung, Lake, Steel, Bryce, & Lunsky, 2018; Lunsky, Fung, Lake, Steel, & Bryce, 2018).

Finally, the present study was largely exploratory as it was one of the first to specifically investigate the topic. As such, any significant effects of the ACT workshop should be replicated in additional studies using a larger sample size and multivariate statistics to more comprehensively address the relevant research questions.

## **Conclusion**

The present randomized pilot feasibility trial sought to examine the benefits of incorporating elements of Acceptance and Commitment Training (ACT) into a standard one-day educational workshop for parents of children with ASD. Although the trajectories of change in participants' acceptance and cognitive fusion differed significantly between workshop groups over time with ACT workshop participants showing increases in acceptance and decreases in cognitive fusion, differences in acceptance and cognitive fusion between groups failed to reach significance. Unexpectedly, willingness to select evidence-based treatments decreased over time for participants in both groups. ASD treatment selection knowledge increased from preworkshop to postworkshop for parents in both groups and these gains were maintained at three-month follow-up. Acceptance and cognitive fusion were not found to moderate the relation between participants' treatment selection knowledge and their willingness to select evidence-based



treatments, possibly due to insufficient statistical power. However, increases in parents' acceptance from postworkshop to follow-up were found to be positively correlated with parents' willingness to select evidence-based treatments at follow-up. Although ACT group participants reported that the ACT components were their most liked aspect of the workshop, participants in both groups reported that the treatment selection information was the most important thing they learned in the workshop. Participants in both groups were highly satisfied with the workshops and reported feeling more knowledge and confident in their ability to effectively select treatments for their children at follow-up.

Overall, results of the present study demonstrate the feasibility of incorporating ACT into educational community workshops for parents of children with ASD. Although the ACT workshop was not associated with increased willingness to select evidence-based treatments, both workshops were associated with increases in parents' treatment selection knowledge, with preliminary support for additional benefits of the ACT workshop in terms of increased acceptance and decreased cognitive fusion. Replication of these findings with larger samples should be prioritized in future research, as well as further investigation into additional benefits of these types of 'hybrid' community interventions for parents of children with ASD.

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## APPENDICES

**Appendix A: Permissions for Study Measures**

Measure	Permission Obtained From
EBPAS-P*	Gregory Aarons, Professor, Department of Psychiatry, UC San Diego School of Medicine (email communication; March 12, 2015)
AAQ-II-A	Frank Bond, Director, Institute of Management Studies, Goldsmiths College, London, UK (website for the Association of Contextual Behavioral Science)
CFQ-II-A	David Gillanders, Professor, University of Edinburgh (website for the Association of Contextual Behavioral Science)
MAAS	This measure is in the public domain and does not require author permission for its use (Brown & Ryan, 2003)
MCSDS-SF	This measure is in the public domain and does not require author permission for its use (Strahan & Gerbasi, 1972)
WSS*	Jennifer Kowalkowski, Psychologist, Beaumont Hospital, Grosse Pointe, MI (email communication; May 13, 2015)
GCS	This measure is in the public domain and does not require author permission for its use (Wongpakaran et al., 2013)

\**Note.* Permission granted to use and modify the measure.

**Appendix B: Demographic Questionnaire**

Please let us know a bit about yourself.

**1. Your Gender:** \_\_\_\_\_

**2. Your Age:** \_\_\_\_ years

**3. Your Marital Status:** \_\_\_\_\_

**4. Your Annual Household Income:** \$ \_\_\_\_\_

**5. Your Education:**

- a)  High School or Less
- b)  Some College/University
- c)  College/University or Post-Graduate

**6. Your Employment Status:**

- a)  Full-Time
- b)  Part-Time
- c)  Unemployed
- d)  Retired

**7. Your Spouse/Partner's Employment Status:**

- a)  Full-Time
- b)  Part-Time
- c)  Unemployed
- d)  Retired
- e)  Not applicable

**8. Child's birthday:** month (a) \_\_\_\_\_ & year (b): \_\_\_\_\_

**9. Child's gender:** \_\_\_\_\_

**10. Child's birthplace:** city (a) \_\_\_\_\_, province (b) \_\_\_\_\_, country (c): \_\_\_\_\_

**11. Your relationship to your child:**

- a)  birth parent
- b)  other parent/caregiver (please specify): \_\_\_\_\_

**Which race or ethnicity** do you identify with the most for yourself and for your child?  
 (Please check one in each column)

12. You	13. Your Child	Race or Ethnicity
		a) Aboriginal
		b) Arab
		c) Black
		d) Chinese
		e) Filipino
		f) Japanese
		g) Korean
		h) Latin American
		i) South Asian (East Indian, Pakistani, Sri Lankan, etc.)
		j) Southeast Asian (Cambodian, Indonesian, Laotian, Vietnamese, etc.)
		k) West Asian (Afghan, Iranian, etc.)
		l) White
		m) Other (please specify): _____

**14. In what year was your child diagnosed** as having Autism Spectrum Disorder (ASD)?

\_\_\_\_\_

**Appendix C: Treatment Selection Knowledge Quiz**

Below you will find several questions about selecting treatments for children with Autism Spectrum Disorder (ASD). Please circle the *best* response for each item.

- |  |
|--|
| 1. What is meant by the term 'evidence-based treatment'?   |
| a. Following the advice of professionals in order to best support your child with ASD  |
| b. A treatment that was developed based on findings from research studies  |
| c. A treatment that has been proven to be effective in multiple high-quality research studies  |
| d. A treatment that was effective for another child with ASD in the community  |
| 2. Which of the following treatment elements are consistently found in research to have the most positive impact on children with ASD? |
| a. Treatments involving dietary adjustments and/or vitamin supplements   |
| b. Treatments administered by trained professionals only   |
| c. Treatments with high parental involvement   |
| d. Treatments focused on teaching academic skills  |
| 3. Which of the following is a drawback of many evidence-based treatments?   |
| a. They may have only been shown to be effective in one study  |
| b. They have more risks to the child with ASD  |
| c. They cannot be tailored to the individual child   |
| d. They may have not been proven to be effective with diverse groups of children with ASD  |
| 4. Which of the following statements about ASD is most generally true?   |
| a. ASD is caused by the MMR (measles, mumps, and rubella) vaccine  |
| b. There is no cure for ASD  |
| c. Most children with ASD never learn to speak   |
| d. Individuals with ASD cannot live independently  |
| e. All treatments for ASD are effective  |
| 5. Which of the following ASD treatments is <u>not</u> supported by research?  |
| a. Gluten-free/casein-free diet  |
| b. Parent training   |
| c. Behavioural interventions   |
| d. Naturalistic teaching strategies  |

- |   |
|---|
| 6. Which treatment endorsement below is the most trustworthy?<br>a. An endorsement from a psychologist or physician, based on their own knowledge<br>b. An endorsement from another parent of a child with ASD, based on personal experience and 'real life' events<br>c. An endorsement from a national or provincial ASD organization based on stories from many parents of children with ASD<br>d. An endorsement from yourself, based on your sense of your child, family values, and a critical review of the treatment research |
| 7. To be effective, an ASD treatment must address the cause of ASD<br>a. True<br>b. False   |
| 8. Parents can be <u>least</u> suspicious about treatments for ASD which involve:<br>a. High 'upfront' cost<br>b. Claims of a cure<br>c. Large investment of time and effort<br>d. Treating underlying biological processes linked to ASD   |
| 9. Which of the following is most often true of news reports of ASD treatments?<br>a. They offer first-hand scientific information about ASD treatments<br>b. They are more difficult to access than scientific journal articles<br>c. They leave out important details about the quality of research support for the treatment<br>d. They are more difficult to understand than scientific journal articles  |
| 10. Which of the following ASD treatments has the most research support?<br>a. Picture exchange communication system (PECS)<br>b. Applied behaviour analysis (ABA)<br>c. Music therapy<br>d. Structured teaching  |



### Appendix E: ACT Workshop Fidelity Measure

**Instructions:** Please reflect on the workshop you just observed and indicate (by circling one number between 1 to 7 as indicated on the scale below) the extent to which each learning objective was covered by workshop facilitators. Please be as honest as possible.

1	2	3	4	5	6	7
Not at all covered	Covered only minimally	Somewhat covered	Covered to a moderate extent	Covered somewhat thoroughly	Thoroughly covered	Extremely thoroughly covered

1. Recognition of widespread misinformation about ASD and ASD treatments	1	2	3	4	5	6	7
2. Understanding of term 'evidence-based treatment' as it relates to ASD	1	2	3	4	5	6	7
3. Understanding of benefits and drawbacks of evidence-based treatments	1	2	3	4	5	6	7
4. Understanding of current evidence behind popular ASD treatment approaches	1	2	3	4	5	6	7
5. Knowledge of how to find quality information about evidence-based ASD treatments	1	2	3	4	5	6	7
6. Knowledge of how to critique/identify quality of ASD information in popular media	1	2	3	4	5	6	7
7. Knowledge of what to ask ASD treatment providers when selecting treatments	1	2	3	4	5	6	7
8. Knowledge of parents' rights in relation to their children's treatment	1	2	3	4	5	6	7
9. Acceptance of distressing thoughts and emotions related to their children having ASD and parenting children with ASD	1	2	3	4	5	6	7
10. Contact and engagement with themselves and their children in the present moment	1	2	3	4	5	6	7
11. Separation from the influence of distressing thoughts about their children or aspects of their parenting	1	2	3	4	5	6	7
12. Awareness of their stable senses of self which exist outside of and separate from their parenting roles	1	2	3	4	5	6	7
13. Identification of life values and current barriers to value-consistent living	1	2	3	4	5	6	7
14. Development of concrete goals and commitment to engaging in values-consistent behaviours	1	2	3	4	5	6	7



### Appendix F: Support Workshop Fidelity Measure

**Instructions:** Please reflect on the workshop you just observed and indicate (by circling one number between 1 to 7 as indicated on the scale below) the extent to which each learning objective was covered by workshop facilitators. Please be as honest as possible.

1	2	3	4	5	6	7
Not at all covered	Covered only minimally	Somewhat covered	Covered to a moderate extent	Covered somewhat thoroughly	Thoroughly covered	Extremely thoroughly covered

1. Recognition of widespread misinformation about ASD and ASD treatments	1	2	3	4	5	6	7
2. Understanding of term 'evidence-based treatment' as it relates to ASD	1	2	3	4	5	6	7
3. Understanding of benefits and drawbacks of evidence-based treatments	1	2	3	4	5	6	7
4. Understanding of current evidence behind popular ASD treatment approaches	1	2	3	4	5	6	7
5. Knowledge of how to find quality information about evidence-based ASD treatments	1	2	3	4	5	6	7
6. Knowledge of how to critique/identify quality of ASD information in popular media	1	2	3	4	5	6	7
7. Knowledge of what to ask ASD treatment providers when selecting treatments	1	2	3	4	5	6	7
8. Knowledge of parents' rights in relation to their children's treatment	1	2	3	4	5	6	7
9. Sharing of experiences with other workshop participants	1	2	3	4	5	6	7
10. Development of sense of social support with other workshop participants	1	2	3	4	5	6	7
11. Development of rapport with workshop facilitators	1	2	3	4	5	6	7

## Appendix G: Letter of Information and Consent Form



### Title of Study: Selecting Treatments for Children with Autism Spectrum Disorder

You are asked to participate in a research study conducted by Brianne Drouillard, under the supervision of Dr. Marcia Gragg, from the Department of Psychology at the University of Windsor. This study is a Doctoral Dissertation research project.

If you have any questions or concerns about the research, please feel to contact Brianne Drouillard ([drouillb@uwindsor.ca](mailto:drouillb@uwindsor.ca)) or Dr. Marcia Gragg (519) 253-3000 Ext. 2227.

### PURPOSES OF THE STUDY

- To evaluate the effectiveness of an educational workshop for teaching parents about selecting treatments for their children with Autism Spectrum Disorder
- To evaluate the effectiveness of different ways of supporting parents to use the information from the workshop

### PROCEDURES

If you volunteer to participate in this study, you will be asked to:

- Agree to be randomly assigned to one of two types of workshops about selecting treatments for children with Autism
  - *Both types of workshop have the same information* about choosing treatments for children with Autism, but include different ways of supporting parents to use the information
- Attend a workshop about choosing treatments for children with Autism, and complete questionnaires about your family, yourself, and your knowledge about selecting treatments before and after the workshop (6.5 hours in total)
  - Bring a copy of your child's diagnostic report to the workshop and allow researchers to record diagnostic information
- Complete questionnaires about your family, yourself, and your knowledge about selecting treatments online or in-person 3 months after the workshop (10 minutes)

The total time to complete the study is less than 7 hours.

### POTENTIAL RISKS AND DISCOMFORTS

Some aspects of the workshop may remind you of some uncomfortable thoughts or feelings about your child, about ASD, or about treatment selection experiences. You can access professional support by calling the Distress Centre of Windsor and Essex County at 519-256-5000 or speak to the researcher about scheduling a meeting with the supervising Psychologist.

## POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Learning more about how to choose treatments for your child with Autism may help your child access high quality treatments at an earlier age. You may also feel more supported and empowered as a decision maker for your child. Supporting parents in choosing treatments for their children with Autism had not been studied very much yet, so it is important to learn more about the best ways to do this.

## COMPENSATION FOR PARTICIPATION

As a token of thanks for participating in the study, you will be offered a \$5 Tim Horton's gift card after completing the initial workshop and a \$10 Tim Horton's gift card at the three-month follow-up.

## CONFIDENTIALITY

We will keep the paperwork and your answers to questionnaires for this study confidential. They will be identified only by a code number. The researchers will keep the data from this study locked in a secure location for seven years after the study is completed. All data and forms will be shredded or deleted after seven years. By law, there are exceptions to confidentiality. Researchers must report any suspicions of child abuse or neglect to the Children's Aid Society, and we may need to inform the supervising Psychologist as well. If we feel that you are at imminent risk of hurting yourself or others, we may need to tell someone without your permission to help keep you or others safe, and we may need to inform the supervising Psychologist.

## PARTICIPATION AND WITHDRAWAL

You may choose to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequence. You may also refuse to answer any questions you do not want to answer and remain in the study. You may contact the researchers at any point prior to completing your follow-up questionnaire to remove your data from the study.

## FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Research findings will be posted after completion of the study on Dr. Gragg's website.

Web address: [www.uwindsor.ca/autism](http://www.uwindsor.ca/autism) (click on "student research" and "Brienne Drouillard")

Results will be made available no later than August 31, 2017.

## SUBSEQUENT USE OF DATA

These data may be used in subsequent studies, in publications, and in presentations.

## RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: [ethics@uwindsor.ca](mailto:ethics@uwindsor.ca)

## SIGNATURE OF RESEARCH PARTICIPANT

I understand the information provided for the study **Selecting Treatments for Children with Autism Spectrum Disorder** as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

## SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

\_\_\_\_\_  
Signature of Investigator

\_\_\_\_\_  
Date

## Appendix H: Post-Study Letter of Information and Debriefing Form



### Title of Study: Supporting Treatment Selection in Parents of Children with Autism Spectrum Disorder: An Educational Workshop with Acceptance and Commitment Therapy

Thank you for your participation in this study by Brianne Drouillard, M.A. from the Psychology Department at the University of Windsor. This study is part of her Doctoral Dissertation in Child Clinical Psychology. Dr. Marcia Gragg, Ph.D., C.Psych., is supervising the study. If you would like more information or if you have any questions or concerns, please feel free to contact Brianne at [drouillb@uwindsor.ca](mailto:drouillb@uwindsor.ca) or Dr. Gragg at [mgragg@uwindsor.ca](mailto:mgragg@uwindsor.ca).

### BACKGROUND OF THE STUDY

- Treatment selection can be a complex and overwhelming process for many parents of children with Autism
- Parents often receive little support when selecting treatments, and their most common sources of information often contain misleading or inaccurate information
- Despite widespread availability of high-quality, evidence-based treatments, many parents report using non-evidence-based treatments with their children with Autism
- Research has shown that information alone often does not lead to changed attitudes toward evidence-based treatments
- Parents of children with Autism appear to be less influenced by research evidence for treatments than by more emotional factors when selecting treatments
- Acceptance and Commitment Training has been shown, when combined with information, to increase willingness to use evidence-based treatments

### PURPOSE OF THE STUDY

- To examine the effectiveness of a workshop combining treatment selection information with elements of Acceptance and Commitment Training to increase parents' willingness to select evidence-based treatments for their children with Autism
- Results of the study have the potential to improve early access to evidence-based treatments for children with Autism and to help parents feel more informed and empowered as decision-makers on behalf of their children with Autism

### PROCEDURES AND RATIONALE

- Participants in this study were randomly assigned to one of two types of workshop:
  1. **Education with Acceptance and Commitment Training (ACT)**
    - Included elements of ACT with information about treatment selection
    - ACT is an evidence-based approach which has been used to support parents of children with ASD by helping them struggle less with difficult thoughts and feelings and take action to do the things that are most important to them
  2. **Education with Support**
    - Included parent support group-style discussion with information about treatment selection
    - Parent support groups are an evidence-based approach which has been used to support parents of children with ASD by helping them connect with other parents to gain information, tips, and form supportive bonds
- ***Both workshops contained the same information about selecting treatments for children with Autism***

- It was necessary to compare the Education with ACT workshop with the Education with Support workshop to see whether the Education with ACT workshop would lead to greater increases in parents' willingness to select evidence-based treatments for their children with Autism than the Education with Support workshop, which is what is typically received by parents in the community
- It was necessary to keep specific study hypotheses and group assignment secret until after you completed follow-up questionnaires so that this information would not influence how you answered items on the questionnaires
- We ask that you do not tell other participants about the purpose of the study since any pre-knowledge will bias the data for that person and thus cannot be used

## GROUP ASSIGNMENT DISCLOSURE

In this study, you were randomly assigned to the **[insert type of workshop]** workshop condition. Please do not hesitate to ask the researcher any questions you have about the purpose, rationale, and any procedures used in this study. If you wish, you may participate in the workshop to which you were not assigned at a later date. Please contact the researcher to arrange this.

## PARTICIPATION AND WITHDRAWAL

Now that you are fully informed about the purpose of the study, why it was necessary to blind participants to group assignment, and which workshop group you participated in, you may choose to have your data included in this study or not. At this point, you may withdraw your information without consequence by contacting the researcher.

## FEEDBACK OF THE RESULTS OF THIS STUDY TO PARTICIPANTS

Research findings will be posted no later than August 31, 2017 on Dr. Gragg's website → [www.uwindsor.ca/autism](http://www.uwindsor.ca/autism) (click on "student research" and "Brienne Drouillard")

## PROFESSIONAL SUPPORT RESOURCES

If participating in this study caused you to experience distress, you can access free, confidential, and immediate professional support by contacting the Distress Centre of Windsor and Essex County at 519-256-5000. Please contact the Canadian Mental Health Association at the Windsor branch (519-255-7440) or the Leamington branch (519-326-1620) if you would like to access free, confidential, ongoing therapeutic support in the community.

## PARTICIPATION IN FUTURE STUDIES

Would you like to be contacted by a member of the University of Windsor Autism Research Group to learn more about participating in future studies? (Please check one box)

Yes, please let me know about future studies

No, thanks

## RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant or the use of deception in this study, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: [ethics@uwindsor.ca](mailto:ethics@uwindsor.ca)

## SIGNATURE OF RESEARCH PARTICIPANT

I understand the purpose of the study **Supporting Treatment Selection in Parents of Children with Autism Spectrum Disorder: An Educational Workshop with Acceptance and Commitment Training** as described herein. I understand why participants were not told their group assignments until completing data collection. I was informed which type of workshop I participated in. My questions have been answered to my satisfaction, and I agree to include my data in this study.

[click yes or no]

**Appendix I: Content Categories Derived from Participant Responses at Postworkshop**

Table 9

*Most Liked Aspects of the Workshop*

Content Category	<i>n</i>
ACT Group	
ACT exercises	8
Information	5
Sharing experiences	4
Everything	1
Setting	1
Facilitators	1
No response	0
Support Group	
Information	11
Sharing experiences	4
Facilitators	1
Everything	1
No response	0

\**Note.*  $N_{\text{ACT}} = 15$ ,  $N_{\text{Support}} = 14$ . Participants may have offered multiple responses to each item.

Table 10

*Least Liked Aspects of the Workshop*

Content Category	<i>n</i>
ACT Group	
Nothing	9
Content	2
No response	2
Presentation style	1
Support Group	
Nothing	3
Logistical aspects	3
Content	2
No response	4

\**Note.*  $N_{\text{ACT}} = 15$ ,  $N_{\text{Support}} = 14$ . Participants may have offered multiple responses to each item.



Table 11

*What Parents Would Change about the Workshop*

Content Category	<i>n</i>
ACT Group	
Personal changes	4
More interactive elements	3
Nothing	2
Content	2
Logistical changes	2
No response	1
Support Group	
Nothing	5
Logistical changes	3
More structure	2
Content	1
No response	1

\**Note.*  $N_{\text{ACT}} = 15$ ,  $N_{\text{Support}} = 14$ . Participants may have offered multiple responses to each item.

Table 12

*Additional Feedback about the Workshop*

Content Category	<i>n</i>
ACT Group	
Positive experience	4
Information was useful	2
Presenters were effective	1
Enjoyed connecting with other parents	1
Practical considerations of selecting treatments	1
No response	7
Support Group	
Information was useful	2
Desire to include other family members	2
Enjoyed connecting with other parents	2
Limitations of current research/future areas of need	2
No response	3

\**Note.*  $N_{\text{ACT}} = 15$ ,  $N_{\text{Support}} = 14$ . Participants may have offered multiple responses to each item.

**Appendix J: Content Categories Derived from Participant Responses at Follow-up**

Table 13

*Impact from Postworkshop to Follow-up*

Content Category	<i>n</i>
ACT Group	
Increased knowledge of evidence-based treatments	3
Increased openness and independence in selecting treatments	3
No real change	3
Increased support	1
Increased mindfulness	1
No response	0
Support Group	
Increased openness/empowerment/advocacy	3
No real change	3
Increased understanding of ASD/my child	2
More positive attitude	1
No response	1

\**Note.* Total  $N_{ACT} = 13$ ,  $N_{Support} = 10$ . Participants may have offered multiple responses to each item.

Table 14

*Most Important Lessons Learned*

Content Category	<i>n</i>
ACT Group	
Tips/strategies for selecting treatments	9
More holistic view of child/ASD	2
Importance of social support	1
No response	0
Support Group	
Tips/strategies for selecting treatments	7
Trusting instincts/knowledge of child	2
Importance of social support	1
No response	0

\**Note.*  $N_{ACT} = 13$ ,  $N_{Support} = 10$ . Participants may have offered multiple responses to each item.

Table 15

*Changes in Attitudes and Behaviours at Follow-up*

Content Category	<i>n</i>
ACT Group	
More positive, hopeful, less stressed	5
No real change	3
More mindful	1
Increased understanding of treatment selection	1
More frustrated about lacking services	1
No response	1
Support Group	
No real change	3
More open minded	2
Increased understanding of treatment selection	2
More positive	1
Enhanced support	1
No response	1

\**Note.* N<sub>ACT</sub> = 13, N<sub>Support</sub> = 10. Participants may have offered multiple responses to each item.

Table 16

*Benefits to Children*

Content Category	<i>n</i>
ACT Group	
Improved quality of life	4
Improved interventions/strategies	2
Enhanced understanding and support	2
Enhanced advocacy skills	1
Increased mindfulness	1
No response	0
Support Group	
Enhanced confidence in selecting treatments for own child	4
Improved interventions/strategies	2
Decreased parental stress	2
Increased connection with other parents	1
No real change	1
No response	1

\**Note.* N<sub>ACT</sub> = 13, N<sub>Support</sub> = 10. Participants may have offered multiple responses to each item.

Table 17

*What Parents Would Like Researchers to Know*

Content Category	<i>n</i>
ACT Group	
Importance of treatment selection knowledge	6
Importance of parents connecting with each other	2
Workshop was helpful/positive	2
Increased services/supports are needed	1
Benefits of mindfulness for parents	1
No response	1
Support Group	
Importance of treatment selection knowledge	4
Parent plans and next steps	2
No response	2
Importance of parent perspectives	1
Nothing	1

\**Note.* N<sub>ACT</sub> = 13, N<sub>Support</sub> = 10. Participants may have offered multiple responses to each item.

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