EVIDENCE-BASED PRACTICE FOR HOMESCHOOLED CHILDREN WITH ASD:

GROUP COMPARISON AND PARENT-IMPLEMENTED INTERVENTION

by

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(Under the Direction of Jonathan M. Campbell and Scott P. Ardoin)

ABSTRACT

A sample of 114 parents of children with autism spectrum disorder (61 homeschool; 53 traditional school) from across the U.S. completed an online survey on their educational experiences. A multivariate analysis of covariance (MANCOVA), controlling for gender and diagnosis, indicated a statistically significant main effect between groups on educational experiences, Wilks's $\Lambda = .40$, $F(5, 65) = 18.84$, $p < .001$, $\eta_p^2 = .60$. Educational group had a statistically significant effect on satisfaction with educational placement, interactions with education professionals, child's social-emotional functioning, child's safety, and stress placed on the family. Overall, homeschool programming was described as having significantly fewer aspects of evidence-based practice than traditional school programming with minimal differences between groups in the extracurricular/social activities provided. Study 2 evaluated the effect of a self-management intervention implemented by three parents of children with autism spectrum disorder in the home environment, including participant self-monitoring and self-evaluation, on on-task behavior during independent work completion. Results indicate that parents implemented intervention procedures with high fidelity ($M = 98.92\%$), intervention led to increased on-task behavior across participants (NAP = 1.0 for all participants, M increase from

baseline = 60.67%; Cohen's d = 3.46), results maintained post-intervention, parents and children

rated procedures as high in social validity, and observation via live video technology resulted in

high correspondence between parent and child ratings (M = 90.03%). This study extends the use

of live video technology for parents to collect data during intervention. Visual analysis methods

incorporated masked visual analysis to control for Type I error and to increase the internal

validity and scientific credibility of this single-case design study. The blind data analyst

correctly identified baseline and treatment segments for each participant, thus results represented

a significant intervention effect on on-task behavior (p = .03). Masked visual analysis methods

control for Type I error in single-case research and provide a summary statistic that is easily

interpreted across fields.

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INTRODUCTION AND LITERATURE REVIEW

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is characterized by impairments in social communication and interaction, as well as restricted, repetitive, and stereotyped interests and behaviors (American Psychiatric Association [APA], 2013). Current prevalence estimates indicate that 1 in 68 children present with ASD, representing an increase from previous epidemiological estimates of 1 in 88 children (Centers for Disease Control and Prevention (CDC), 2014; CDC, 2012). Accounting for parent report of ASD symptomatology, prevalence estimates may be as high as 1 in 50 children (Blumberg et al., 2013). This developmental disability presents as a spectrum of impairment that can impact development in cognitive, social, communicative, sensory, and motor domains (APA, 2013; Ruble & Dalrymple, 2002). Individuals with ASD also exhibit high comorbidity with other disorders; approximately 76% present with at least one comorbid condition and 41% with two or more (Simonoff et al., 2008). Common comorbid diagnoses include intellectual disability, anxiety disorder, attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and epilepsy (Mannion, Leader, & Healy, 2013; Simonoff et al., 2008). As a result of the complex set of symptoms and comorbid conditions associated with ASD, children may receive services from a number of different education professionals within a traditional educational environment.

Educating Children with ASD in the Traditional Education System

Educating children with ASD is particularly difficult due to the heterogeneous presentation of ASD across individuals and lack of a single intervention to target all deficit areas. Although there are core deficits characteristic of ASD, a diagnosis does not lead to individualized education program (IEP) objectives, teaching practices, or classroom placements (Ruble & Dalyrmple, 2002). Furthermore, a clear gap exists in the translation of research to practice. Federal education law, specifically the No Child Left Behind Act (NCLB, 2001) and the Individuals with Disabilities Education Improvement Act (2004) mandate the use of researched-based educational interventions; however, less than 10% of teachers of children with ASD employ evidence-based instructional practices (Hess, Morrier, Heflin, & Ivey, 2011). In addition, despite the increase in children identified with ASD, heightened public awareness, and increasing numbers of training programs focused on students with ASD, there is a national shortage of professionals adept at implementing evidence-based academic and behavioral interventions with students with ASD (Barnhill, Sumutka, Polloway, & Lee, 2014; Mauch, Pffefferle, Booker, Pustell, & Levin, 2011). In-service teacher training on working with individuals with ASD is largely delivered through abbreviated workshops and conferences. Research indicates that teachers require individualized direct support models to successfully implement evidence-based interventions that are unlikely to be provided through brief didactic trainings (Odom, 2009).

According to the United States (U.S.) Department of Education, National Center for Education Statistics (2014), 6.4 million students received special education services during the 2011-2012 school year, representing 13% of those students enrolled in public school. The number of children, ages 3 to 21, served in the Autism category of the Individuals with

Disabilities Education Act (IDEA; 1997) comprised 7% of those served in special education.

Approximately 30-40% of students with ASD in public elementary and middle schools receive

some part of their instruction within a general education setting (Sanford, Levine, & Blackorby,

2008). The U.S. Department of Education, National Center for Special Education Research

reported that 62% of secondary students with ASD enroll in at least one general education

course. These courses are more likely to be in nonacademic (52%; e.g., physical education,

study skills) than academic (36%) or vocational (31%) areas (Newman, 2007).

As more students with ASD are identified, the need increases for professionals with

specialized knowledge in education programming for this population. By virtue of these students

receiving some part of their education in general education settings, they are likely to have

teachers who lack adequate training and experience in working with children with ASD (Myles

& Simpson, 2002). The overall lack of education professionals with training in developing

collaborative and individualized programs for children with ASD has been documented

(Hendricks, 2011; Morrier, Hess, & Heflin, 2011). Thus, with an increase in the number of

children diagnosed with ASD and identification at earlier ages, professionals without adequate

training in ASD will be increasingly providing education services for this population.

Within general education settings, students with ASD will increasingly interact with

typically developing peers at school (Campbell, Morton, Roulston, & Barger, 2011). Due to

deficits in social communication characteristic of ASD, these children often struggle with peer

interactions. Research suggests that children with ASD interact with peers half as frequently as

their agemates and endorse higher rates of loneliness than peers (Bauminger, Shulman, & Agam,

2003). Furthermore, evidence suggests that the social interactions of children with ASD are

characterized by less social acceptance, companionship, and reciprocity as compared to peers

(Chamberlain, Kasari, & Rotheram-Fuller, 2007). In addition, bullying is an identified concern for children with ASD (Heinrichs, 2003), with approximately 30% of this population reported to experience social victimization at school (van Roekel, Scholte, & Didden, 2010). Research indicates that students in elementary and middle school have minimal knowledge of ASD beyond a cursory classification of autism as a disability. This dearth of knowledge may perpetuate a lack of acceptance and victimization from peers (Campbell & Barger, 2011; Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Campbell et al., 2011).

A further complicating factor in educating children with ASD in the traditional education system is students' aberrant behavior. Individuals with developmental disabilities may engage in problem behavior of various topographies, such as aggression, self-injurious behavior, disruptive behavior, property destruction, elopement, negative vocalizations, pica, and stereotypy (APA, 2013; Hanley, Iwata, & McCord, 2003). Education professionals are charged with managing problem behavior that occurs within the educational setting and developing behavioral interventions to address such problem behavior. Under IDEA (1997), a functional behavioral assessment (FBA) is required for individuals who demonstrate aberrant behavior that impedes learning of themselves or others. Following such assessment, an individual's education team must develop a behavior intervention plan to address problem behavior (Drasgow & Yell, 2001).

Federal education law mandates parental involvement in the education of children with disabilities (IDEA, 1997); however interactions between parents of children with ASD and education professionals are frequently characterized by confusion, frustration, tension, and a lack of cooperation that impede effective service delivery (Lake & Billingsley, 2000). According to Stoner et al. (2005), parents of children with ASD report feeling dismissed by education professionals and the need to repeatedly request referrals and advocate for services which leads

to compromised trust in the education system and heightened trust in their own intuition. Research suggests that parents' trust in education professionals is correlated with the perceived ability of education professionals to meet the needs of their children with ASD (Dominque, Cutler, & McTarnagan, 2000).

Homeschooling Children with ASD

The increase in anecdotal reports published in the lay literature over the past decade (e.g., Dowty & Cowlishaw, 2002; Harnett, 2004; Pyles, 2004; Schetter & Lighthall, 2009) suggests that the number of families providing homeschool instruction is increasing. No current published reports identify the number of homeschooled children with ASD. Pyles (2004) estimated that 3,300 to 5,000 children with ASD are homeschooled in the U.S.; however, the author does not indicate how these estimates were derived. Simmons (2014) estimated that approximately 20,113 to 35,400 children with ASD in the U.S. may be educated at home. These numbers were obtained by assuming equal prevalence of ASD at the time of analysis (i.e., 1 in 88 and 1 in 50) in the U.S. homeschool population (i.e., approximately 1,770,000 students; Noel, Stark, Redford, & Zuckerberg, 2013).

From a small sample size of nine families (*M* age of child = 11.89 years, range: 9-15 years), Simmons (2014) reported that parents began homeschooling children with ASD at a mean grade of 4.33 (range: 1-9). Transition periods were reported to be particularly concerning due to heightened expectations (e.g., use of a locker, changing classes); all parents reported beginning to homeschool prior to students entering high school (i.e., grade 9) and eight of the nine parents reported beginning to homeschool before the transition to middle school (i.e., grade 6). Seven of the nine children described in this initial study were identified by parents as presenting with Asperger's Disorder and the other two participants presented with Autistic Disorder. Diagnostic

categories from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text

Revision (*DSM-IV-TR*; APA, 2000) were used to characterize participants, as diagnoses were

rendered under the previous diagnostic system (Simmons, 2014).

      Homeschool legislation. Homeschooling is a legal educational option that is regulated by

state jurisdiction and varies by state in the level of requirements (Ray, 2011; Smith & Farris,

2011). Parents are required to comply with legal guidelines in the state in which they are

implementing home education programming, regardless of their state of residency. Some states

exercise high levels of regulation and may require parents to provide the state with notice of

intent to homeschool, meet minimum teacher credentials, have curriculum approved by state

officials, submit test scores or other evaluation of progress, and be subject to site visits by the

state. Other states have no requirements once parents have started homeschooling (Homeschool

Legal Defense Association, 2016; Smith & Farris, 2011). For example, in the state of Georgia

parents are required to possess a minimum of a high school diploma or general equivalency

diploma (GED) to provide homeschool instruction. Parents may also employ an educator who

meets these minimum credentials to provide instruction. Homeschool instruction in the state of

Georgia should be provided in the content areas of reading, language arts, mathematics, science,

and social studies for the equivalent of 180 days with a minimum of 4.5 hours of instruction per

day. From the end of third grade, homeschooled students are required to participate in national

standardized testing at least every three years (O.C.G.A. § 20-2-690).

      Reasons parents choose to homeschool. According to the National Center for Education

Statistics (Noel et al., 2013), parents frequently choose to homeschool due to: (a) concern about

the educational environment (25%); (b) dissatisfaction with academic instruction (19%); (c)

desire for religious instruction (16%); and (d) other reasons (21%; e.g., time, travel, finances,

distance). A small percentage of parents endorsed homeschooling due to their child's special

needs not being adequately met by the school (1.72%); however, Noel et al. (2013) considered

this percentage as not meeting minimum reporting standards (< 3%). Of note, when the national

survey was previously conducted in 2007, 3.6% of surveyed parents endorsed their child's

special needs as the most salient reason for homeschooling (Bielick, 2008).

Simmons (2014) initiated systematic inquiry into the reasons parents provide for their

decision to homeschool children with ASD. From interviews conducted with nine homeschool

families in the state of Georgia, Simmons (2014) gleaned that the decision to homeschool could

be characterized by two distinct trajectories: a carefully considered process or shortly following a

specific catalyst event. Catalyst events typically included a compromise in the safety and social-

emotional functioning of the child with ASD and were described by parents as coinciding with

negative interactions with education professionals. Five rank ordered themes that emerged from

participant narratives for the decision to homeschool included:

1. Dissatisfaction with educational placement.

2. Negative interactions with education professionals.

3. Social-emotional responses of children to traditional school.

4. Safety of child.

5. Stress placed on the family.

Parents reported that dissatisfaction with educational placement and negative interactions

began when their child was in early elementary school, while concerns regarding safety and

social-emotional welfare were reported to increase as a function of the amount of time their child

was in school. High familial stress levels were reported throughout the child's time in traditional

school. All participants in this study indicated that they had consulted with outside resources in

making the decision to homeschool and/or immediately after beginning to homeschool.

Specifically, seven of nine participants consulted with resources on the internet (e.g., education

websites), six consulted with other families, five relied on books on autism and education, two

participated in autism groups (i.e., in person and online), and two relied on other forms of media,

(e.g., television programming and documentaries; Simmons, 2014).

Although there is a paucity of research on homeschooling children with ASD, several

authors have investigated reasons for homeschooling children with other disabilities. According

to Princiotta and Bielick (2006), the primary reasons cited by parents for homeschooling children

with disabilities include: (a) discontent with academic instruction, (b) concerns regarding their

child's safety, and (c) dissatisfaction with the learning environment. Parsons and Lewis (2010)

identified school, child, and parent factors that contributed to parents' decision to homeschool

children with special needs, including ASD, in the United Kingdom. Such factors included

dissatisfaction with education provision and accommodation of children's educational needs,

children's negative affect toward school, children's negative peer interactions, and parents'

attempt to best provide for their child.

Homeschool educational experiences of children with ASD. Research with the

broader homeschool population suggests that a small percentage of parents subscribe to the

philosophy of unschooling, characterized by self-directed learning with no formal teachers,

textbooks, or instruction (Martin-Chang, Gould, & Meuse, 2011; Ray, 2010; Taylor-Hough,

2010). Holt (1964) first presented the unschooling philosophy as a viable means of reforming

the traditional education system or as a homeschool method. This educational philosophy is one

of the recommended approaches to homeschooling children with ASD presented in a number of

parent self-help books (e.g., Dowty & Cowlishaw, 2002; Hartnett, 2004; Pyles, 2004; Schetter & Lighthall, 2009).

Unschooling directly contradicts the best practices literature on educating children with ASD. Both the National Professional Development Center on ASD (2014) and the National Autism Center's National Standards Project (2009) present lists of evidence-based education programs and treatments for individuals with ASD that are largely characterized by high levels of structure and multiple opportunities to practice target skills (Wong et al., 2014). Specifically, the literature indicates that instruction is most effective for individuals with ASD when presented in short intervals within intensive and highly structured learning environments (Schreibman, 2000). Expectations and contingencies should be clearly established and consistency in teaching strategies is critical (Koegel, Koegel, & Carter, 1999). The unique learning needs of individuals with ASD may be supported by structuring physical and temporal components of the environment, employing concrete and visual systems, and establishing a climate of reinforcement (Earles, Carlson & Bock, 1998; Heflin & Alberto, 2001). In addition to the structure of the environment, generalization and maintenance should be actively programmed (Horner, Dunlap, & Koegel, 1988). All of the cited research-supported programming strategies for children with ASD stand in contrast to the unschooling philosophy whereby students are expected to acquire knowledge through unstructured interaction with their environment following their own instincts (Holt, 1964).

Hurlbutt (2011) qualitatively described the experiences and perceptions of nine families homeschooling children with ASD and indicated that parents believe they have determined a feasible treatment plan that the school system was unable to and/or unwilling to implement. Specifically, Hurlbutt identified the following themes: (a) parents are both involved in and

knowledgeable about ASD, (b) parents are implementing various individualized programs, (c) parents' opinions differ from public school teachers regarding the ideal educational focus, and (d) parents feel that both parents should agree with the decision to homeschool (Hurlbutt, 2011).

To date, only one study has systematically aimed to quantify the homeschool education provided for children with ASD. Of the nine homeschool programs described in Simmons (2014), five of the nine parents reported utilizing the educational philosophy of unschooling to varying degrees. Unschooling ranged from the entirety of the education program to an approach employed during one or two days each week.

Simmons (2014) characterized the level of structure of homeschool environments as ranging from low to high. Structure was defined by the following indicators: (a) a predictable schedule, (b) clearly presented expectations, (c) direct provision of instruction, (d) an instructional workspace, (e) multiple opportunities to respond, and (f) performance feedback. Level of structure was determined as follows: Low = 0-2 indicators; Moderate = 3-4 indicators; and High = 5-6 indicators. Six of the nine homeschool environments described by parents were characterized by low to moderate structure (Simmons, 2014), which does not adhere to practice parameters for individuals with ASD (Schreibman, 2000; Wong et al., 2014)

In regards to the amount of instruction delivered, Simmons (2014) found that, per parent report, homeschooled children with ASD received instruction for a mean of 4.0 hours per day (range: 0.8 - 8.4 hours per day). Of note, five of nine parents were not in compliance with the minimum legal requirement of 4.5 hours of instruction provided per day in the state of Georgia (O.C.G.A. § 20-2-690). Furthermore, six of the nine children did not receive instruction in all required content areas (i.e., reading, language arts, mathematics, social studies, and science) per Georgia state education law (O.C.G.A. § 20-2-690). Eight of the nine families interviewed relied

on an independent individual with teaching credentials (e.g., certified special education teacher) to implement some part of the homeschool program (Simmons, 2014). Monitoring adherence to home education law is the responsibility of the local board of education and school superintendent; written notice of suspected violations must be provided to a child's parent or guardian. If home study requirements are not met following such notification, the local superintendent is required to report violations to the juvenile court, or other designated court with jurisdiction. Conviction results in a misdemeanor violation, with consequences up to $100 (Georgia Department of Education, *n.d.*). Educational concerns may be reported to social services and parents may be charged with educational neglect in 23 states (Child Welfare Information Gateway, 2011).

Simmons (2014) reported that four of the nine homeschooled children received what parents considered ancillary services, including occupational therapy, physical therapy, speech therapy, talk therapy, and massage therapy. Research suggests that the services and interventions implemented for children with ASD in the home and community often lack empirical support (e.g., massage therapy, animal therapy, dance therapy; Green et al., 2006). Simmons found that parents of children with ASD were implementing interventions lacking empirical support; however, most were characterized by parents as social or leisure activities rather than ancillary services (e.g., trapeze therapy, therapeutic horseback writing, art therapy). Children participated in social activities, such as scouts, sports, and art classes, for a mean of 2.56 hours per week (range: 0-7 hours).

Research has found high levels of stress in parents of children with ASD, including those implementing home-based behavioral interventions for young children; however, there was not a statistically significant difference in stress levels between groups. Parents of children with ASD

reported higher stress levels than parents of children with other developmental disabilities (Hastings & Johnson, 2001). Given the documented stresses associated with homeschooling (Rathmell, 2012) and literature suggesting that homeschooled students frequently return to traditional educational environments after two years of homeschooling (Ray, 1997), it is important to consider the longitudinal course of homeschooling. Simmons (2014) reported that six of the nine parents interviewed indicated that they did not anticipate their child returning to traditional school. In this study, two parents noted that they may consider their child returning to traditional school, while one parent currently had plans for her child to return in the near future. Of note, this parent indicated that the reason for her child returning to traditional school was the inability to continue homeschooling due to financial limitations (Simmons, 2014).

Reported benefits and challenges. ASD homeschool parents have reported several benefits that homeschooling has afforded their family. Such benefits directly related to the five themes of parents' decision to homeschool, such as increased intellectual stimulation, individualized instruction, social emotional growth, lack of negative peer interactions, and reduced stress on the child and family (Simmons, 2014).

Parents have also indicated various challenges to homeschooling children with ASD and noted areas where they might benefit from parent training or other supports. One concern that was mentioned by several parents, especially salient for those directly providing the home instruction, was the amount of on-task time during independent work completion. Parents expressed difficulty completing their own tasks within the home due to the necessity of prompting their child to remain on-task. This concern was particularly pertinent for those parents who were employed from home and thus needed their child to work independently for designated periods of time (Simmons, 2014).

Homeschooling Children with Other Special Needs

As no studies have assessed the outcomes of homeschooling children with ASD,

examining research on homeschooling other special needs populations is warranted. Research

indicates that homeschooled students with ADHD and learning disabilities displayed greater

gains in the domains of reading, spelling, and mathematics when compared to peers in a

traditional special education environment (Duvall, Delquadri, & Ward, 2004; Duvall, Ward,

Delquadri, & Greenwood, 1997).

Research indicates that educational gains are correlated with active engagement in

academic tasks (Delquadri, Greenwood, Stretton, & Hall, 1983). Stanley and Greenwood (1981)

conceptualized academic engaged time as a complex set of teacher and student behaviors that

indicate responding to teacher presented instructional stimuli (e.g., teacher position during

instruction, type of instruction, reading aloud, reading silently, writing). Homeschooled students

with ADHD and learning disabilities were found to be academically engaged at twice the rate of

peers in traditional special education (Duvall et al., 2004; Duvall et al., 1997). Due to the

individualized nature of homeschooling, homeschooled children with ADHD received 5.5 times

the amount of one-to-one instruction as peers in traditional education environments. Academic

engaged time was also found to be correlated with fewer competing behaviors, such as

inappropriate talking-out (Duvall et al., 2004).

Increasing academic engaged time has been shown to result in concomitant increases in

academic performance for children with learning disabilities (Delquadri, Greenwood, Whorton,

Carta, & Hall, 1986; Duvall, Delquadri, Elliott, & Hall, 1992; Duvall et al., 1997; Greenwood,

Delquadri, & Hall, 1984), emotional disturbances (Ysseldyke, Thurlow, Christenson, &

McVicar, 1988), and hearing impairments (Otis-Wilborn, 1984). One specific component of

academic engaged time, academic responding, has been shown to increase the academic performance of children with ASD (Kamps, Leonard, Dugan, Boland, & Greenwood, 1991).

Duvall et al. (1997) examined the teaching practices employed by parents homeschooling children with learning disabilities and found that parents largely engaged in the same teaching behaviors as public school special education teachers. Specifically, parents and teachers presented content in the same expository teaching format, engaged students in discussions, and required independent completion of assignments. Duvall at al. found that special education teachers employed more strategies, such as peer tutoring, to increase the academic engagement of students. Homeschool parents engaged children with learning disabilities at higher rates than did special education teachers, despite their lack of formal teacher training (Duvall et al., 1997).

Parents' direct involvement in educational interventions for students with learning disabilities and low-achieving students is shown to lead to improved academic performance for these students (Broden, Beasley, & Hall, 1978; Duvall et al., 1992; Gang & Poche, 1982; Greenwood et al., 1984; Thurston & Dasta, 1990). Furthermore, research shows that academic achievement is a function of the time spent actively responding to the curriculum (Greenwood et al., 1984). Homeschooling provides an opportunity for increasing academic engaged time through individualized instruction and multiple opportunities to respond; however, research suggests that parents are not employing strategies used by special education teachers to increase academic engagement (Duvall et al., 1997) or are relying on methods, such as unschooling, that are documented to be less effective than structured homeschooling and public school teaching (Martin-Chang et al., 2011).

In addition to the aforementioned concerns with the unschooling educational philosophy, other aspects of homeschooling may have adverse effects for children with ASD. Arguments

regarding limited opportunities for socialization and inadequate teacher training have been made against homeschooling for typically developing students and those with special needs (Duvall et al., 1997). Deficits in social communication and social interaction are core features of ASD and without specific programmed social opportunities for peer modeling and practice of social skills, children with ASD may continue to exhibit deficits in such social communicative behaviors. Interaction with typically developing peers, facilitated by the traditional education system, may promote learning of the appropriate social behaviors that were modeled by classmates, lead to increased social acceptance, and decrease stigmatization (Frederickson, 2010).

Significance of the Present Studies

Although there has seemingly been an increase in parents homeschooling children with ASD in the past decade (Dowty & Cowlishaw, 2002; Harnett, 2004; Pyles, 2004; Schetter & Lighthall, 2009), to date, only Simmons (2014) systematically addressed reasons parents choose to homeschool children with ASD and quantified the homeschooling experiences of this group; however the study was limited by a small sample size. No study to date has evaluated interventions for homeschooled children with ASD.

The purpose of these studies is to add to the scant body of literature on homeschooling children with ASD by (a) extending the results of Simmons (2014) with a larger sample from across the U.S., (b) comparing the educational experiences of homeschooled children and those children currently attending traditional school, and (c) conducting a parent-implemented intervention to address an identified challenge to homeschooling children with ASD. Study 1 used a nationally disseminated survey created from information gleaned from Simmons to further evaluate the reasons parents choose to homeschool children with ASD and the amount of evidence-based practice parents are implementing. The purpose of the first study was not only to

extend the literature, but to compare the educational experiences of homeschool and traditional school families to determine whether similarities exist in experiences and what factors differentiate groups. Study 2 evaluated the effects of a parent-implemented self-management intervention with families currently homeschooling children with ASD to increase on-task time during independent work completion. The intervention was designed to address the socially valid concern raised by parents of increasing student on-task time during independent work completion (Simmons, 2014).

Together, the studies provide valuable information regarding the education of children with ASD. The outcomes of the studies have important implications for parents, teachers, and practitioners regarding the education of children with ASD, both within the traditional education system and within homeschool environments. The intent of this research is to describe the educational experiences of this population and respond to parent-identified needs; the author is not advocating for or against the practice of homeschooling children with ASD.

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CHAPTER 2

COMPARISON OF THE EDUCATIONAL EXPERIENCES OF HOMESCHOOL AND TRADITIONALLY SCHOOLED CHILDREN WITH ASD[1]

Abstract

A sample of 114 parents of children with autism spectrum disorder (61 homeschool; 53

traditional school) from across the U.S. completed an online survey on their educational

experiences. The groups significantly differed in diagnosis, with significantly more individuals

with Asperger's Disorder in the homeschool group, but did not differ in child age,

socioeconomic status, caregiver education, or caregiver age. A multivariate analysis of variance

(MANCOVA), controlling for gender and diagnosis, indicated a statistically significant main

effect of educational group on educational experiences, Wilks's $\Lambda = .40$, $F(5, 65) = 18.84$, $p <$

.001, $\eta_p^2 = .60$. Educational group had a statistically significant effect on satisfaction with

educational placement, interactions with education professionals, child's social-emotional

functioning, child's safety, and stress placed on the family. Caregivers reported that

homeschooled children participated in significantly more hours of social activities with peers per

week and spent significantly more time around only adults. Homeschooled children received

more community-based instruction; however, other aspects of evidence-based practice (e.g.,

structure of the educational environment, immediacy of consequences for problem behavior)

were significantly greater in the traditional school group. Homeschool parents noted a positive

increase in motivation to learn, active engagement, and family functioning and a favorable

decrease in problem behavior and stress since beginning to homeschool. There was not a

significant correlation between caregiver education or training and evidence-based practice or

extracurricular/social activities. Eighty-two percent of homeschool parents indicated that they

could benefit from parent training and provided information on current challenges and areas of

need. Findings provide important directions for improving the educational experiences of

children with ASD and insight into areas where intervention should be directed.

INDEX WORDS: autism spectrum disorder, homeschool, education, evidence-based practice

Introduction

Autism spectrum disorder (ASD) is characterized by impairments in social communication and repetitive, restricted, and stereotyped behaviors and interests (American Psychiatric Association [APA], 2013). Children with ASD present with a spectrum of impairment that can affect social, communicative, cognitive, sensory, and motor development (Ruble & Dalrymple, 2002). As such, children with ASD present with various challenges in a traditional educational setting and may require services from different professionals.

The Individuals with Disabilities Education Act (IDEA, 1997) mandates parent involvement in the education of individuals with disabilities; however, the interactions between parents of children with ASD and education professionals are often characterized by confusion, frustration, contention, and lack of cooperation that impede the effectiveness of service delivery (Lake & Billingsley, 2000). Parents of children with ASD report feeling the need to initiate referrals and battle for services, and report that concerns are often dismissed by professionals (Stoner et al., 2005). According to Stoner et al. (2005), these feelings described by parents lead to their hindered trust in the education system and heightened trust in their own instincts. Parents' trust is reportedly based on their perception of the ability of education professionals to meet the needs of their children with ASD (Dominque, Cutler, & MicTarnagan, 2000).

Coinciding with research reporting dissatisfaction with traditional education provision, there has been an increase in anecdotal reports on homeschooling children with ASD published in the lay literature (e.g., Dowty & Cowlishaw, 2002; Harnett, 2004; Pyles, 2004; Schetter & Lighthall, 2009). This increase suggests that homeschooling children with ASD may have

increased in prevalence in the past decade. No published studies to date have examined the prevalence rate of homeschooling children with ASD. Pyles (2004) estimated that 3,300 to 5,000 children with ASD in the U.S. are homeschooled; however, no information was provided as to how this prevalence rate was determined and numbers are likely to have increased in the past decade. Simmons (2014) estimated that the prevalence of children with ASD educated at home may be closer to 20,113 to 35,400. This prevalence estimate was calculated by assuming equal proportion of ASD in the U.S. homeschool population at the time of analysis (i.e., 1 in 88 and 1 in 50 of approximately 1,770,000 homeschooled students; Noel, Stark, Redford, & Zuckerberg, 2013).

Despite a purported increase in parents choosing to homeschool children with ASD, currently only one interview study with a small sample size ($n = 9$) has systematically addressed reasons parents decide to homeschool this population (Simmons, 2014). In addition, Simmons (2014) is the only study to quantify the homeschooling experiences and evidence-based practice provided for this population. Children described in this study had a mean age of 11.89 years (range: 9-15 years) and parents reported that seven of the nine children presented with Asperger's Disorder and two presented with Autistic Disorder per diagnostic categories from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (*DSM-IV-TR*; APA, 2000), in place at the time of the study.

Reasons Parents Decide to Homeschool Children with ASD

The mean grade parents reported beginning to homeschool children with ASD was 4.33 (range = 1-9), with a median grade of 5.0. Parents indicated concerns with their child's transition to middle and high school; all parents reported beginning to homeschool prior to grade 9 with eight of nine parents beginning to homeschool prior to grade 6 (Simmons, 2014).

Simmons (2014) characterized parents' decisions to homeschool by two distinct trajectories: following one particular catalyst event or after a long and carefully considered process.

A thematic analysis of interview data, employing the constant comparative method (Glaser & Strauss, 1967), revealed five themes of reasons parents decide to homeschool children with ASD. Themes are ordered by their frequency of mention within individual participant narratives and across parents (Simmons, 2014):

1. Dissatisfaction with educational placement.

2. Negative interactions with education professionals.

3. Social-emotional responses of child to traditional school.

4. Safety of child.

5. Stress placed on the family.

Parents reported high levels of stress on the family throughout their child's time in the traditional education system. Dissatisfaction with educational placement and negative interactions with staff were reported to begin in early elementary school, while concerns regarding social-emotional functioning and safety of children appeared to increase with grade level (Simmons, 2014).

Evidence-based Practice in Homeschools

Within traditional school environments, there is an explicit gap in the translation of research to practice. Both the No Child Left Behind Act (NCLB, 2001) and the Individuals with Disabilities Education Improvement Act (IDEIA, 2004) require that the educational interventions implemented are evidence-based. However, research suggests that evidence-based practices are implemented by less than 10% of educators of children with ASD (Morrier, Hess, & Heflin, 2011). Odom (2009) notes that teachers require direct, individualized models and support in

order to successfully implement evidence-based interventions. Similarly, parents are unlikely to implement evidence-based practices without such training and support.

Research indicates that a small subgroup of homeschooling parents subscribe to the educational philosophy of unschooling, first espoused by Holt (1964) as a means of reforming the education system or as a viable method of homeschooling. Unschooling is characterized by self-directed learning with no instructors, textbooks, or formal instruction (Martin-Chang, Gould, & Meuse, 2011; Ray, 2010; Taylor-Hough, 2010). Several parent self-help books on homeschooling children with ASD have identified unschooling as a viable educational approach (Dowty & Cowlishaw, 2002; Hartnett, 2004, Pyles, 2004; Schetter & Lighthall, 2009). Simmons (2014) found that five of the nine homeschooling parents reported employing the unschooling approach for some part of their curriculum, despite its contradiction with ASD best practices literature. For example, it is well-established that intensive and highly controlled learning environments, short instructional intervals, clear contingencies and expectations, and direct programming for generalization and maintenance are often effective for children with ASD (Schreibman, 1999). In addition, it is recommended that the educational environment include high levels of physical and temporal structure, concrete visual systems, and reinforcement of appropriate behavior (Earles, Carlson & Bock, 1998; Heflin & Alberto, 2001). Six of the nine learning environments described by ASD homeschooling parents were identified as having only low to moderate structure, as characterized by the following indicators: (a) a predictable schedule, (b) clear expectations, (c) direct instructional provision, (d) a specific instructional workspace, (e) multiple response opportunities, and (f) performance feedback (Simmons, 2014).

Homeschool legislation requirements vary by state, spanning a continuum of high regulation to no structure. Consequences for not adhering to home education law may include a

misdemeanor violation subject to a fine or referral to social services for consideration of educational neglect. In Georgia, the homeschool program is required to include instruction in five content areas (i.e., reading, language arts, mathematics, social studies, and science). In addition, the instructional year should consist of the equivalent of 180 days with, at minimum, 4.5 hours of instruction per day (O.C.G.A. § 20-2-690, 2010). According to Simmons (2014), homeschooling parents reported that their child with ASD received instruction from 0.8 to 8.4 hours per day (mean = 4.0 hours per day). Of these nine parents, five did not meet the minimum of 4.5 hours per day and six of the nine children did not receive instruction in all state required content areas (Simmons, 2014). For eight of nine families, at least some part of the home instruction was provided by an individual outside of the family with teaching credentials. Many of the social activities and ancillary services described by parents did not have an established evidence-basis (e.g., animal therapy, massage therapy, art therapy), consistent with research suggesting that the interventions and services selected for children with ASD often lack empirical support (Green et al., 2006). Parents reported that children participated in social activities for a mean of 2.56 hours per week (range: 0-7 hours per week), many of which were with peers with disabilities.

Purpose of the Current Study

Currently, no study has focused on the homeschooling experiences of children with ASD from across the United States. Despite the small research base on homeschooling children with other disabilities, children with ASD represent a different population with unique characteristics and educational needs that warrant documentation. The purpose of this study is twofold. First, this study extended the results of Simmons (2014) by sampling parents from across the U.S. in order to describe the reasons parents choose to homeschool children with ASD and the

educational experiences they are providing. Second, the study compared the educational experiences and demographic information of homeschooled children and those currently attending traditional school to identify characteristics that may differentiate groups.

The following research questions were addressed:

1. What reasons do parents provide for their decision to homeschool children with ASD?

2. To what extent are evidence-based practices being incorporated in homeschool programming for children with ASD?

3. What are specific characteristics of the homeschool experiences provided for children with ASD?

4. Does a significant correlation exist between demographic variables and amount of evidence-based practice and extra-curricular/social activities provided by ASD homeschool parents?

5. Do homeschool and traditional school families of children with ASD differ in demographic variables (e.g., age of child, gender of child, SES)?

6. Do the reported educational experiences differ between homeschool and traditional school groups with ASD, controlling for significant demographic variables?

7. Does the current education provided differ between homeschool and traditional school groups with ASD, controlling for significant parent demographic variables?

The results of this study hold significant relevance for improving the education of children with ASD, both in traditional schools and in homeschools. Limitations to the traditional education system endorsed by parents that contribute to the decision to homeschool children with ASD are important to identify and potentially remediate. In light of the fact that teachers of

students with ASD largely do not implement evidence-based educational practices (Morrier et

al., 2011) and Simmons (2014) reported a lack of evidence-based practice in homeschool

environments, it is important to quantify further the educational experiences provided to

homeschooled children with ASD. Given that social deficits are characteristic of ASD and

Simmons noted a lack of socialization opportunities in homeschools for children with ASD,

assessment on a national level is necessary. Such quantification may lead to recommendations

for families homeschooling children with ASD to improve homeschool practice. Home

education is likely to result in stress on parents and research has documented the negative impact

of stress on mental health of parents and overall family functioning (Abelson, 1999). As such,

identifying and responding to parent reported needs within homeschool programming is

important.

Method

Participants

Participants included 114 parents of children with ASD, 61 parents who homeschool and

53 whose children attended traditional school. A power analysis conducted using G*Power

(Faul, Erdfelder, Lang, & Buchner, 2007) suggested that a sample size of approximately 50

participants per condition was needed to detect a moderate effect of the independent variable

(i.e., school status) on the dependent variables (i.e., satisfaction with educational placement,

interactions with education professionals, child's social-emotional functioning, child's safety,

stress placed on the family, extracurricular and social activities, and amount of evidence-based

practice implemented), resulting in a total sample size of at least 100 (i.e., 50 per group). The

homeschool group included participants from 24 states and the traditional school group included

participants from 20 states (See Figure 2.1).

Figure 2.1.

Survey Respondents by U.S. State.

Parents whose children were between 6 and 18 years of age with a current ASD diagnosis (e.g.,

Autistic Disorder, Asperger's Disorder, Pervasive Developmental Disorder – Not Otherwise

Specified [PDD-NOS]) were recruited to participate in this study. Of note, ASD diagnosis was

based on parent report.   Diagnostic categories from DSM-IV-TR (APA, 2000) were listed as

diagnostic options on survey measures as most children likely received diagnoses under the

previous classification system prior to the release of DSM-5 in 2013. To be included in the

homeschool group, parents were required to be currently homeschooling their child with ASD

(i.e., parent registered with the state as homeschooling). Parents who homeschool children with

ASD were recruited through national online homeschool groups and listservs, such as Autism

Spectrum Learning at Home, Autism to be Homeschooling (Aut2BeHome), Autism

Homeschooling Families, and Homeschooling Special Needs Kidz, and word of mouth. To be

included in the traditionally schooled group, parents needed to have a child with ASD who

resided at home and currently attended traditional school (e.g., public school, private school,

parochial school). Parents of traditionally schooled children with ASD were recruited through

national online ASD groups and listservs, such as Autism-Awareness-Action; Autism Resources,

Information, Support; and Parents of Children with Autism, and word of mouth.

Measures

       Survey measure (Survey of ASD Educational Experiences; SASDEE). Two initial

focus groups were conducted with six parents who homeschool children with ASD and six

participants whose children attended traditional school to elicit a description of parents'

homeschooling experiences and a description of parents' experiences with the traditional

education system, respectively. Based on information gleaned from the interviews, the SASDEE

were developed to further document parents' experiences with homeschooling and with the

traditional education system. Survey items regarding the amount of evidence-based practice

implemented in both homeschools and traditional schools were developed from the National

Professional Development Center on ASD (2014) and the National Autism Center's National

Standards Project (2009) best practice standards for educating children with ASD (Wong et al.,

2014).

       Two additional focus groups were conducted with three homeschool participants and

three traditional school participants to pilot and revise the survey measures. Participants

reviewed a paper copy of the survey and suggested revisions in the areas of content, wording,

additions, and deletions. Based on feedback from the homeschool participants, six content

revisions were made (e.g., response options added for decision to homeschool, K-12 specified for traditional school); two changes were made in item wording; and no items were added or deleted. Two clarifying statements (i.e., differentiating demographic section on parents from demographic section on children) were added following a participant suggestion. For the traditional school participants, feedback resulted in one content revision (i.e., response option added for why one would consider homeschooling), one change in wording (i.e., specification of services child received *at any time*), no items added or deleted, and one additional change (i.e., addition of page numbers). Following these parent suggested revisions, the author made additional revisions and then revisions were suggested by committee members. The author made an additional series of revisions that were approved by committee members. Revisions are summarized in Table 2.1. The online version of the final survey was completed by one homeschool and one traditional school parent to test the online system and offer final revisions. No additional changes were made at this stage. The homeschool survey took approximately 20 minutes to complete and the traditional school survey took approximately 15 minutes to complete.

Questions were grouped conceptually and yielded total scores in the following domains: (a) satisfaction with current educational placement (Domain 1, nine items, $\alpha = .95$, inter-item correlations ranged from .53 to .83); (b) interactions with education professionals (Domain 2, five items, $\alpha = .90$, inter-item correlations ranged from .57 to .82); (c) child's social-emotional functioning (Domain 3, five items, $\alpha = .87$, inter-item correlations ranged from .47 to .75); (d) child's safety (Domain 4, five items, $\alpha = .83$, inter-item correlations ranged from .23 to .77); (e) stress placed on the family (Domain 5, five items, $\alpha = .94$, inter-item correlations ranged from .68 to .86); (f) extracurricular and social activities (Domain 6, four items, $\alpha = .23$, inter-item

Table 2.1.

Homeschool and Traditional School Survey Revisions

Educational Group		Content	Wording	Items Added	Items Deleted	Other Revisions
Homeschool	Parent Suggested Revisions	6	2	0	0	2
	Author Revisions	2	7	11	1	0
	Committee Suggested Revisions	1	31	4	0	0
	Author Revisions	7	1	18	0	0
Traditional School	Parent Suggested Revisions	1	1	0	0	1
	Author Revisions	4	6	15	0	0
	Committee Suggested Revisions	1	29	4	1	0
	Author Revisions	7	1	18	0	0

correlations ranged from -.03 to .50); and (g) evidence-based practice (Domain 7, nine items, α = .42, inter-item correlations ranged from .01 to -.35) that were compared between homeschooling and traditionally schooling families. See Table 2.2 for complete inter-item correlation results.

Domain 3 (social-emotional functioning) initially included six items and yielded an α = .80. When analyzing individual items, the perceived need for child to take medication to function in school did not have a high inter-item correlation with the other items, range: .06 to .23. As such, this item was removed from the domain. In Domain 6, skewness and kurtosis values were outside of normal limits (+/- 2) of a univariate distribution (George & Mallery, 2010). Analysis of individual participant data revealed three outliers in the item pertaining to the number of hours spent in social activities. As such, these three participants' data were removed from all analyses that included Domain 6. Skewness and kurtosis for all other domain and item scores were within normal limits. See Table 2.3 for complete skewness and kurtosis values.

Table 2.2.

Inter-item Correlations by Domain

Domain	Items	Satisfaction with placement	Satisfaction with program	Confident program implemented	Satisfied with support	Satisfied with teachers	Teachers understood child	Administrators understood child	Confident adequate education	No. of things school does well
1	Satisfaction with placement	1.00	.83	.75	.74	.55	.60	.66	.70	.66
	Satisfaction with program	.83	1.00	.80	.76	.63	.63	.65	.79	.69
	Confident program implemented	.75	.80	1.00	.83	.66	.72	.76	.79	.79
	Satisfied with support	.74	.76	.83	1.00	.77	.71	.72	.70	.74
	Satisfied with teachers	.55	.63	.66	.77	1.00	.64	.62	.53	.59
	Teachers understood child	.60	.63	.72	.71	.64	1.00	.75	.64	.59
	Administrators understood child	.66	.65	.76	.72	.62	.75	1.00	.67	.71
	Confident adequate education	.70	.78	.78	.70	.53	.64	.67	1.00	.72
	No. of things school does well	.66	.69	.79	.74	.59	.59	.71	.72	1.00

Domain	Items	Interactions with edu professionals	Need to fight	Listen to opinions	Sense of cooperation	Arguments
2	Interactions with edu professionals	1.00	.61	.73	.75	.65
	Need to fight	.61	1.00	.58	.62	.57
	Listen to opinions	.73	.59	1.00	.82	.64
	Sense of cooperation	.75	.62	.82	1.00	.58
	Arguments	.65	.57	.64	.58	1.00

Domain	Items	Anxiety	Depression	Emotional outbursts	Self-confidence	Worry about health	Need to take meds*
3	Anxiety	1.00	.75	.70	.47	.51	.10
	Depression	.75	1.00	.59	.60	.59	.09
	Emotional outbursts	.70	.59	1.00	.51	.53	.17
	Self-confidence	.47	.60	.51	1.00	.48	.23
	Worry about health	.51	.48	.53	.48	1.00	.06
	Need to take meds*	.10	.09	.17	.23	.06	1.00

4	Worry about safety	Confident manage bx	Confident supervised	Mistakenly punished	Peer interactions
Worry about safety	1.00	.70	.77	.44	.23
Confident manage bx	.70	1.00	.73	.58	.36
Confident supervised	.77	.73	1.00	.42	.31
Mistakenly punished	.44	.58	.42	1.00	.42
Peer interactions	.23	.36	.31	.42	1.00

5	Stress on family	Stress on child	Impact on relationships	Frustration	Disruption of family
Stress on family	1.00	.86	.73	.81	.77
Stress on child	.86	1.00	.68	.69	.70
Impact on relationships	.73	.68	1.00	.71	.81
Frustration	.81	.69	.71	1.00	.75
Disruption of family	.77	.70	.81	.75	1.00

6	No. extracurricular activities	Hrs social activities	Freq interactions with peers	Freq around adults
No. extracurricular activities	1.00	.50	.24	.17
Hrs social activities	.50	1.00	-.03	.10
Freq interactions with peers	.24	-.03	1.00	.32
Freq around adults	.17	.10	.32	1.00

7	Freq one-on-one	Community-based instruction	Freq child-directed learning	Structure of environment	Structure of schedule	Behavioral expectations	Consequences for problem bx	Data-based decisions	No. EBP characteristics
Freq one-on-one	1.00	-.06	-.05	.03	.01	-.08	-.05	.18	.15
Community-based instruction	-.06	1.00	-.24	-.30	-.21	.06	-.07	-.02	-.03
Freq child-directed learning	-.05	-.24	1.00	.27	.22	-.06	-.08	-.09	-.15
Structure of environment	.03	-.30	.27	1.00	.25	.16	.33	.25	.30
Structure of schedule	.01	-.21	.22	.25	1.00	.11	.25	.21	.13
Behavioral expectations	-.08	.06	-.06	.16	.12	1.00	.22	.11	.32
Consequences for problem bx	-.05	-.07	-.08	.33	.25	.22	1.00	.35	.28
Data-based decisions	.18	-.02	-.09	.25	.21	.11	.35	1.00	.25
No. EBP characteristics	.15	-.03	-.15	.30	.13	.32	.28	.25	1.00

Note. * denotes items that were excluded from analyses; no. = number; edu = education; bx = behavior; hrs = hours; freq = frequency; meds = medications; EBP = evidence-based practice

Table 2.3.

Skewness and Kurtosis of Domains and Items

Item/Domain	Skewness	Kurtosis	Item/Domain	Skewness	Kurtosis
DOMAIN 1	0.45	-1.17	DOMAIN 6*	2.44	9.40
Satisfaction with placement	0.19	-1.58	DOMAIN 6 EXCLUDED	0.30	-0.58
Satisfaction with program	0.35	-1.35	No. of extracurricular activities	0.52	0.41
Confident program implemented	0.56	-0.97	Hrs social activities*	3.16	13.43
Satisfied with support	0.18	-1.53	Hrs social activities EXCLUDED	0.8	0.43
Satisfied with teachers	-0.20	-1.34	Freq interactions with peers	-0.18	-0.81
Teachers understood child	0.21	-1.31	Freq around adults	-0.27	-1.19
Administrators understood child	0.53	-1.14	DOMAIN 7	0.23	-0.64
Confident adequate education	0.31	-1.29	Freq one-on-one instruction	0.57	0.81
No. of things school does well	0.91	-0.49	Community-based instruction	-0.39	-1.23
DOMAIN 2	-0.04	-0.84	Freq child-directed learning	0.01	-0.83
Interact with edu professionals	-0.35	-1.02	Structure environment	-0.75	0.26
Need to fight	0.39	1.21	Structure schedule	-0.60	-0.40
Listen to opinions	0.22	-0.79	Behavioral expectations	-0.65	0.37
Sense of cooperation	0.30	-0.84	Consequences for problem bx	-1.29	1.78
Arguments	-0.79	-0.62	Data-based decisions	-0.02	-1.75
DOMAIN 3*	-0.17	-1.00	No. of EPB characteristics	0.01	-1.18
DOMAN 3 EXCLUDED	-0.14	-1.15			
Anxiety	-0.49	-1.11			
Depression	-0.19	-1.22			
Emotional outbursts	-0.16	-0.95			
Self-confidence	0.56	-0.76			
Worry about health	-0.31	-1.32			
Need to take medications*	-0.17	-1.72			
DOMAIN 4	-0.17	-0.95			
Worry about safety	-0.42	-1.15			
Confident can manage bx	0.14	-1.16			
Confident supervised	0.02	-1.28			
Mistakenly punished	-0.57	-0.93			
Peer interactions	-0.24	-1.2			
DOMAIN 5	-0.08	-1.14			
Stress on family	-0.32	-1.28			
Stress on child	-0.24	-1.49			
Impact on personal relationships	0.48	-1.11			
Frustration	-0.33	-1.4			
Disruption of family	0.32	-1.39			

Note. * denotes items that were excluded from analyses; no. = number; edu = education; bx = behavior; hrs = hours; freq = frequency; EBP = evidence-based practice

The questionnaire for homeschooling parents included items (a) to determine the amount and quality of evidence-based educational practices being delivered, (b) to assess needs in parents' current programming, and (c) to document parents' experiences homeschooling. Surveys were administered and data stored within Qualtrics, an online survey domain. Survey measures are presented in Appendix A and Appendix B for homeschool and traditional school participants, respectively.

Procedures

The study was reviewed and approved by the University of Georgia Institutional Review Board. Consent was obtained online from each participant prior to accessing the questionnaire. Each participant received a $5 check for their participation. A sample of homeschooling and traditionally schooling parents of children with ASD was recruited using online listservs and groups. Recruitment materials contained a link to the electronic survey and the researcher's contact information if participants preferred to receive a mailed copy of the survey. Only one participant in the traditional school group requested and completed a paper copy of the survey.

Data were entered and summed into seven domains as described in the Measures section. See Appendix C for survey items by domain and point values assigned to response options. Statistical analyses were then conducted to identify any differences between the reported experiences of homeschooling and traditionally schooling parents of children with ASD and similarities in experiences and needs identified across homeschooling participants.

Data analysis. Data were analyzed using IBM SPSS Statistics v.22.

Homeschool within-group analyses. Research Question 1 was evaluated using descriptive analyses to examine responses to survey items on factors parents considered in their decision to homeschool (e.g., percentage of parents that considered each factor, percentage of

parents that considered each factor most salient, mode of most salient factor). Research Question 2 was assessed with descriptive analyses of survey responses regarding evidence-based practice (e.g., percentage of children receiving frequent one-to-one instruction, percentage of children with a highly structured schedule, percentage of children for whom multiple exemplars are presented). Research Question 3 was answered by conducting descriptive analyses of responses to survey items on the homeschool experience provided (e.g., the mean and range of amount of hours of instruction and amount of time spent in socialization activities; the mode and percentage of who provides homeschool instruction, the homeschooling model used, educational focus of instruction, amount of community-based instruction, and amount of child-directed learning). To evaluate Research Question 4, correlations were calculated between socioeconomic status (SES), number of other children, number of other children with a disability, parent education level, parent training in education, and parenting training in ASD and the amount of evidence-based practice and extracurricular/social activities provided (i.e., domain scores).

Between-groups analyses. Inferential analyses were conducted to compare responses to survey items between homeschooling parents and traditionally schooling parents. To evaluate Research Question 5, a *t* test was conducted to test whether a significant difference existed between groups for age of child. Chi-square statistics were calculated to test for differences between groups on categorical variables (i.e., gender of child, SES, parent education level, parent training in education, and parenting training in ASD).

In order to evaluate Research Question 6, first the appropriateness of using demographic variables as covariates was assessed by calculating separate correlations between age of child, gender of child, and SES and each of the five domain scores related to reported experiences with the traditional education system (i.e., satisfaction with educational placement, interactions with

education professionals, child's social-emotional functioning, child's safety, and stress placed on the family). Specifically, a Pearson correlation was calculated between age of child and each of the domain scores; a point-biserial correlation was calculated to determine the relationship between gender of child and diagnosis and each of the domain scores. Diagnosis was coded dichotomously as Autistic Disorder or other autism spectrum disorder. Of note, if parents reported that a child had received multiple diagnoses on the autism spectrum (e.g., Autistic Disorder and Asperger's Disorder), this was coded as other autism spectrum disorder. A Spearman's rho correlation was calculated between SES and each of the domain scores. A Spearman's rho correlation was also calculated to determine the association between parent education level, parent training in education, and parenting training in ASD and the two domain scores related to current educational experiences (i.e., extracurricular and social activities and evidence-based practice). Next, domain scores were compared between groups. For each demographic variable that was significantly correlated with the domain scores, correlations were calculated between these variables. If correlations did not exceed .50, these variables were included as covariates in the subsequent analyses. A multivariate analysis of variance or covariance (MANOVA/MANCOVA) was used to evaluate if differences existed between groups on reported experiences with the traditional education system (i.e., domain scores of satisfaction with educational placement, interactions with education professionals, child's social-emotional functioning, child's safety, and stress placed on the family), controlling for any significant differences in age of child, gender of child, diagnosis, and SES. Participants' data were excluded from the MANOVA or MANCOVA if they indicated that they had always homeschooled as they would not be able to adequately respond to questions regarding their experiences with the traditional education system. To evaluate Research Question 7, a MANOVA or MANCOVA

was conducted to determine whether significant differences existed between groups on current

educational experiences (i.e., domain scores in extracurricular/social activities and evidence-

based practice), controlling for differences in parent education level, parent training in education,

and parenting training in ASD when applicable. In the presence of a significant multivariate

effect in either analysis, a post-hoc univariate analysis of covariance (ANCOVA) or a post-hoc

analysis of variance (ANOVA) was conducted to test for specific differences between groups.

Of note, listwise deletion was used to exclude participants from both multivariate analyses due to

missing data on any of the items that loaded into domain scores.

<div align="center">**Results**</div>

Results are organized and presented according to the seven research questions articulated

above.

Reasons Parents Provide for Decision to Homeschool Children with ASD

Caregivers endorsed a mean of 6.01 of 12 reasons (range: 1-12; $SD = 3.56$) for

homeschooling. Reasons that factored into the decision to homeschool included: (a)

dissatisfaction with educational placement: 74.58%, (b) dissatisfaction with educational

program: 74.58%, (c) need to fight for services: 62.71%, (d) child's negative feelings towards

school: 62.71%, (e) concern about child's safety: 59.32%, (f) school's inability to manage

behavior: 57.63%, (g) negative interactions with education professionals: 52.54%, (h) concern

about child's health: 45.76%, (i) disruption in family routine: 44.07%, (j) confusion with the

education system: 13.56%, (k) desire for religious-based instruction: 11.86%, (l)

recommendation of education professionals: 5.08%, (m) child was in legal trouble: 1.69%, and

(n) other reasons: 30.51%. Other reasons specified by parents included the following: school's

refusal to develop an IEP or 504 plan, recommendation of a diagnostic clinician, child became

suicidal, bad school district, teacher's lack of teaching ability, freedom to pursue child's interests, better educational option, concern for child's emotional well-being, lack of social development opportunities, and social isolation/bullying. See Table 2.4 for descriptive data on reasons for homeschooling.

The most salient reason parents endorsed for homeschooling was dissatisfaction with the educational program, as indicated by 25.00% of participants. Additional salient reasons for homeschooling included: (a) concern about child's safety: 13.33%, (b) need to fight for services: 13.33%, (c) concern about child's health: 11.67%, (d) child's negative feelings towards school: 8.33%, (e) school's inability to manage behaviors: 5.00%, (f) disruption in family routine: 5.00%, (g) desire for religious-based instruction: 5.00%, and (h) other reasons: 13.33%. No caregivers selected confusion with the education system, negative interactions with education professionals, or child was in legal trouble as the most salient reason for homeschooling. See Table 2.4 for descriptive data on parents' most salient reasons for homeschooling.

Evidence-based Practice in Current Homeschool Program

Homeschool parents reported that their child received one-on-one instruction *most of the day* for 0.00% of participants, *part of the day* for 49.15%, *occasionally* for 42.37%, and *not at all* for 8.47%. Instruction in the community occurred *almost all the time* for 42.37% of participants, *frequently* for 42.37%, *once in a while* for 0.00% of participants, and *almost never* for 15.25%. The frequency that learning was described as child-directed was *almost never* for 5.17% of participants, *once in a while* for 37.93%, *frequently* for 41.40%, and *almost all the time* for 15.52%. Only 6.67% of homeschool parents reported following the unschooling model of homeschooling.

Table 2.4.

Percentage of Caregiver Reasons for Homeschooling

	Dissatisfaction with educational placement	Need to fight for services	Child's negative feelings towards school	Concern for child's safety	School's inability to manage behavior	Negative interactions with education Profs	Concern for child's health	Disruption in family routine	Confusion with the education system	Desire for religious-based instruct	Rec of education prof	Child was in legal trouble	Other
Reason endorsed	74.58	62.71	62.71	59.32	57.63	52.54	45.76	44.07	13.56	11.86	5.08	1.69	30.51
Most salient reason	25.00	5.00	13.33	11.67	8.33	0.00	13.33	0.00	5.00	0.00	0.00	5.00	13.33

Note. prof = professional; rec = recommendation

Parents in the homeschool group described the school environment as *highly structured* for 10.17% of participants, *somewhat structured* for 62.71%, *somewhat unstructured* for 20.34%, and *highly unstructured* for 6.78%. The school schedule was described as *highly structured* for 0.00% of participants, *somewhat structured* for 64.40%, *somewhat unstructured* for 11.86%, and *highly unstructured* for 23.73%. Expectations were presented before the behavior occurred *almost always* for 33.90% of individuals, *once in a while* for 6.78%, *frequently* for 59.32%, and *never* for 0.00% of the participants. Consequences for problem behavior were presented *immediately* for 74.57% of individuals, *within 5 to 10 minutes* for 20.34%, *within 30 min to 1 hour* for 5.08%, *after more than an hour* and *not at all* for 0.00% of the participants. Homeschool parents reported that data were collected *daily or almost daily* for 23.7% of children, *weekly* for 13.56%, *monthly* for 6.78%, *less than once a month* for 13.56%, and that *data were not collected* for 42.37%.

Of the 12 components of evidence-based practice for individuals with ASD, caregivers reported that the homeschool program included a mean of 5.48 characteristics (range: 1-12; *SD* = 3.43). Specifically, caregivers reported using the following: (a) short work intervals: 70.00%, (b) multiple opportunities to practice: 63.33%, (c) large tasks broken down into smaller components: 63.33%, (d) correction of incorrect responses: 61.67%, (e) positive consequences provided for correct responses: 61.67%, (f) models of correct responses: 38.33%, (g) visual schedules: 38.33%, (h) multiple different examples of target skills/behaviors: 35.00%, (i) visual learning supports: 35.00%, (j) self-monitoring of progress: 25.00%, (k) similar expectations and consequences across instructors/environments: 25.00%, and (l) data-based decision-making: 23.33%.

Characteristics of Homeschool Experience

In the homeschool group, 27.12% of caregivers reported that their child were always homeschooled. According to caregivers, homeschooled children received a mean of 18.88 hours of instruction per week (range: 4-40; $SD = 8.05$) and participated in a mean of 7.47 hours of activities with peers per week (range: 1-30; $SD = 5.93$). Instruction was provided, in part, by (a) the child's mother for 93.33% of individuals, (b) father of 20.00%, (c) co-op for 11.67%, (d) other relative for 8.33%, (e) online instructor for 8.33%, (f) unschool for 6.67%, (g) certified teacher (in-home) for 1.67%, (h) board certified behavior analyst for 1.67%, and (i) other for 13.33%. Other sources of homeschool instruction included a community college professor, online instructor, friend, tutor, enrichment teacher, and reading specialist.

The homeschool model followed by caregivers was (a) an eclectic approach (e.g., combination of academic instruction and child-directed learning) for 67.80% of participants; (b) school-at-home, following a curriculum for 18.64%; (c) unschool for 5.08%; (d) unit studies for 3.39%; and (e) other model for 5.08%. Other models specified by caregivers included distance learning, Charlotte Mason approach, and unschool plus reading specialist.

The top priority in the educational program included (a) academic instruction for 50.85% of participants, (b) functional skill development for 16.94%, (c) behavior management for 6.78%, (d) communication development for 3.39%, (e) social skill development for 3.39%, and (f) other priority for 18.64%. Other primary priorities included: decreasing anxiety, increasing happiness, increasing independence, improving health, regulating hypersensitivity to sensory input, providing a well-rounded education, and fostering a love of learning. No participants endorsed vocational skill development as their top priority. Parents reported that the instructional program included the following components: (a) academic instruction: 93.2%, (b)

functional skill development: 93.22%, (c) social skill development: 88.14%, (d) behavior management: 79.66%, (e) communication development: 64.41%, (f) vocational skill development: 30.51%, and (g) other: 15.25%. Other components of the instructional program specified by parents included: self-knowledge, mindfulness, self-regulation, community service, fine and gross motor skills, critical thinking skills, and research skills.

Parents reported that they obtained educational materials from (a) the public library: 55.74%; (b) secular curriculum (e.g., Zombie Math, Lexia Reading Core5, Writing A-Z, MindUp, Time4Learning): 52.46%; (c) educational materials store/catalogue: 45.90%; (d) religious-based curriculum (e.g., Rod and Staff, Alpha and Omega, Sonlight, Abeka, Timberdoodle): 26.23%; (e) homeschool groups: 26.23%; (f) homeschool co-ops: 18.03%; (g) homeschool association: 14.75%; (h) online school: 14.75%; (i) public school: 6.56%; (j) local unschool: 3.28; and (k) other sources: 19.67%. Other sources included college textbooks, community college coursework, homeschool classes in the community (e.g., museums, nature center), and homeschool friends. Parents indicated that they participated in homeschool groups (a) almost all the time for 6.78% of participants, (b) frequently for 27.12%, (c) once in a while for 38.98%, (d) almost never for 11.86%, and (e) never for 15.25/%.

With regard to changes since beginning to homeschool, for those participants who did not always homeschool, caregivers reported a drastic increase in motivation for 51.16% of participants, a slight increase in motivation for 30.23%, no change in motivation for 16.28%, a slight decrease in motivation for 2.33%, and a drastic decrease in motivation for none of the participants. Caregivers noted a drastic increase in active engagement for 53.49%, a slight increase in active engagement for 32.56%, no change in active engagement for 9.30%, a slight decrease in active engagement for 2.33%, and a drastic decrease in active engagement for 2.33%.

Caregivers reported a drastic decrease in problem behavior for 57.78% of participants, a slight decrease for 33.33%, no change for 6.67%, a slight increase for 31.11%, and a drastic increase for none of the participants. Caregivers noted a drastic increase in family functioning for 56.9% of participants, a slight increase for 22.4%, no change for 17.2%, a slight decrease for 3.4%, and a drastic decrease for none of the participants. Finally, caregivers reported a drastic decrease in stress since beginning to homeschool for 52.54% of participants, a slight decrease for 20.34%, no change for 15.25%, a slight increase for 10.17%, and a drastic increase for 1.69%.

Correlation between Demographic Variables and Current Homeschool Education

There was no significant correlation between SES, as measured by household income, and Domain 6 (Extracurricular and Social Activities), $r_s(55) = -.06$, $p = .65$ or SES and Domain 7 (Evidence-based Practice), $r_s(54) = -.03$, $p = .85$. There was no significant correlation between number of other children and Domain 6, $r(58) = .18$, $p = .35$, number of other children and Domain 7, $r(57) = -.16$, $p = .24$, number of other children with a disability and Domain 6, $r(57) = .01$, $p = .92$, and number of other children with a disability and Domain 7, $r(56) = .00$, $p = .99$.

In terms of caregiver background, there was no significant correlation between parent education level and Domain 6, $r_s(55) = .02$, $p = .86$, parent education level and Domain 7, $r_s(54) = -.02$, $p = .91$, parent training in education and Domain 6, $r_s(58) = .14$, $p = .30$, parent training in education and Domain 7, $r_s(57) = .01$, $p = .93$, parent training in ASD and Domain 6, $r_s(58) = .06$, $p = .64$, and parent training in ASD and Domain 7, $r_s(57) = -.19$, $p = .16$.

Difference between Homeschool and Traditional School Groups on Demographic Variables

Child age did not differ for homeschool ($M = 10.42$, $SD = 3.60$) and traditional school ($M = 10.31$, $SD = 3.67$) groups; $t(111) = .17$, $p = .87$. Groups did not significantly differ by gender, $\chi^2(1, N = 88) = 3.07$, $p = .08$ or race of child, $\chi^2(5, N = 114) = 10.56$, $p = .06$. In the

homeschool group, the racial breakdown was as follows: American Indian/Alaskan native: 1.64%, Asian: 1.64%, African American: 4.92%, Hispanic/Latino: 1.64%, Caucasian: 81.97%, and multiracial: 8.20%. For the traditional school group, the breakdown was as follows: American Indian/Alaskan native: 1.89%, Asian: 11.32%, African American: 9.43%, Hispanic/Latino: 9.43%, Caucasian: 64.15%, and multiracial: 3.77%.

The groups significantly differed in diagnosis, $\chi^2(6, N = 112) = 15.58, p = .02$. When groups were compared by diagnosis, percentages of children diagnosed with Asperger's Disorder significantly differed, $\chi^2(1, N = 112) = 7.33, p = .01$. In the homeschool group, 38.33% reported a diagnosis of Asperger's Disorder, compared to 15.38% with Asperger's Disorder in traditional school group. There was not a significant difference in Autistic Disorder: $\chi^2(1, N = 112) = 2.83, p = .09$ with 60.00% of the homeschool group and 75.00% of the traditional school group reporting a diagnosis of Autistic Disorder. There was also not a significant difference in PDD-NOS: $\chi^2(1, N = 112) = .278, p = .60$. In the homeschool group, 23.33% reported a diagnosis of PDD-NOS, compared to 19.23% of the traditional school group. No individuals in the homeschool group had a reported diagnosis of child disintegrative disorder (CDD) compared to one participant in the traditional school group (1.92%). This difference was not statistically significant: $\chi^2(1, N = 112) = 1.16, p = .28$. No individuals in either group had a reported diagnosis of Rett Syndrome.

In terms of the relationship of survey respondents, groups did not significantly differ: $\chi^2(1, N = 114) = .88, p = .35$. Specifically, 98.36% of surveys in the homeschool group and 100% in the traditional school group were completed by a parent. One survey in the homeschool group was completed by a grandparent. Groups did not differ in gender of survey respondent: $\chi^2(2, N = 114) = 4.87, p = .09$. In the homeschool group, 100% of respondents were female,

while in the traditional school group, 92.31% of respondents were female, 5.77% were male, and 1.92% identified as transgender. There was not a significant difference in age of survey respondent (Homeschool $M = 41.53$, $SD = 6.75$; Traditional school $M = 40.68$, SD = 7.48); $t(111) = .638$, $p = .53$. In the homeschool group, the age of the caregiver ranged from 29 to 56 and the traditional school group ranged from 27 to 64. Groups did not differ in marital status of survey respondent: $\chi^2(3, N = 114) = 3.19$, $p = .36$. Specifically, 86.89% of the homeschool group respondents were married, 8.20% were divorced/separated, 3.28% were single, and 1.64% reported other marital status. In the traditional school group, 83.02% were married, 3.77% were divorced/separated, 9.43% were single, and 3.77% reported other marital status.

Groups significantly differed in race of survey respondent: $\chi^2(5, N = 110) = 20.19$, $p = .001$. In the homeschool group, the racial breakdown was as follows: American Indian/Alaskan native = 1.67%, Asian = 0.00%, African American = 1.67%, Hispanic/Latino = 0.00%, Caucasian = 96.67%, and multiracial = 0.00%. For the traditional school group, the breakdown was as follows: American Indian/Alaskan native = 0.00%, Asian = 10.00%, African American = 10.00%, Hispanic/Latino = 8.00%, Caucasian = 68.00%, and multiracial = 4.00%.

Groups did not differ in reported household income: $\chi^2(8, N = 110) = 3.97$, $p = .86$ (see Table 2.5) or caregiver education level: $\chi^2(6, N = 110) = 5.30$, $p = .51$ (see Table 2.6). Groups did not differ in caregiver training in education: $\chi^2(1, N = 114) = 1.13$, $p = .29$. Specifically, 37.70% of the homeschool group and 28.30% of the traditional school group reported formal training related to education. Also, groups did not differ in caregiver training related to ASD: $\chi^2(1, N = 114) = 1.73$, $p = .19$. Specifically, 37.70% of the homeschool group and 50% of the traditional school group reported formal training related to education.

Table 2.5.

Percentage of Household Income Distribution

Educational Group	$0-$24,999	$25,000-$49,999	$50,000-$74,999	$75,000-$99,999	$100,000-$124,999	$125,000-$149,999	$150,000-$199,999	$200,000+
Homeschool	8.62	15.52	20.69	29.31	10.34	5.17	6.90	0
Traditional School	7.69	21.15	21.15	28.84	3.85	7.69	3.85	1.92

Table 2.6.

Percentage of Caregiver Education Level Distribution

Educational Group	High School	Bachelors	Masters	Ph.D.	M.D.	J.D.	Other
Homeschool	15.51	44.83	29.31	1.72	0	1.72	6.90
Traditional School	13.46	46.15	17.31	5.77	1.92	1.92	13.46

Note. Other included associates degree, nursing diploma, and college credits.

There was a statistically significant difference between groups in the frequency of problem behavior while in traditional school, $\chi^2(4, N = 97) = 15.51$, $p = .004$. In the homeschool group, caregivers reported that problem behavior occurred: (a) daily: 0.00%, (b) weekly: 38.64%, (c) monthly: 34.09%, (d) a few times a year: 9.10%, and (e) not at all: 18.18%. In the traditional school group, caregivers reported that problem behavior occurred: (a) daily: 13.21%, (b) weekly: 32.08%, (c) monthly: 9.43%, (d) a few times a year: 18.87%, and (e) not at all: 26.42%. The number of topographies of problem behavior was not significant between groups (Homeschool $M = 3.86$, $SD = 2.69$; Traditional school $M = 4.08$, $SD = 3.45$); $t(93) = -.34$, $p = .74$.

Between-Group Contrasts in Reported Educational Experiences

Caregivers completed SASDEE questions related to their experiences with the education system. Caregivers in the traditional school group reported on their current experiences and those in the homeschool group reported retrospectively on their experiences with the traditional school system prior to beginning to homeschool (e.g., child's educational placement in traditional school, interactions with education professionals while their child was in traditional school). There was a significant correlation between gender and Domain 4 (Child's Safety), $r_{pb}(85) = .33$, $p = .01$, diagnosis and Domain 1 (Satisfaction with Educational Placement), $r_{pb}(85) = -.28$, $p = .01$, diagnosis and Domain 3 (Child's Social Emotional Functioning), $r_{pb}(84) = -.27$, $p = .01$, and diagnosis and Domain 5 (Stress Placed on Family), $r_p(84) = .26$, $p = .02$. There were no significant correlations between age and Domain 1, $r(86) = -.06$, $p = .56$, age and Domain 2 (Interactions with Education Professionals), $r(79) = -.09$, $p = .45$, age and Domain 3, $r(85) = -.05$, $p = .66$, age and Domain 4, $r(85) = -.08$, $p = .48$, and age and Domain 5, $r(85) = .05$, $p = .68$. There were also no significant correlations between gender and Domain 1, $r_{pb}(86) = .13$,

$p = .35$, gender and Domain 2, $r_{pb}(78) = .11$, $p = .32$, gender and Domain 3, $r_{pb}(63) = .10$, $p =$

.46, and gender and Domain 5, $r_{pb}(63) = -.01$, $p = .33$. In addition, there were no significant

correlations between SES and Domain 1, $r_s(83) = .17$, $p = .13$, SES and Domain 2, $r_s(75) = .13$,

$p = .28$, SES and Domain 3, $r_s(83) = .05$, $p = .64$, SES and Domain 4, $r_s(83) = .06$, $p = .58$, and

SES and Domain 5, $r_s(82) = .02$, $p = .87$. Finally, there were no significant correlations

between diagnosis and Domain 2, $r_{pb}(77) = -.22$, $p = .05$ and diagnosis and Domain 4, $r_s(84) = -$

.10, $p = .37$. There was not a statistically significant correlation between gender and diagnosis,

$r(110) = -.09$, $p = .36$. As gender and diagnosis were the only demographic variables that had a

significant correlations with any domain scores, a MANCOVA was calculated between groups

on educational experiences, with gender and diagnosis included as covariates.

The MANCOVA resulted in a statistically significant main effect of educational group on

educational experiences, Wilks's $\Lambda = .40$, $F(5, 61) = 18.84$, $p < .001$, $\eta_p^2 = .60$. Educational

group had a statistically significant effect on Domain 1 ($F(1, 65) = 57.39$; $p < .001$; $\eta_p^2 = .47$),

Domain 2 ($F(1, 65) = 33.89$; $p < .0001$; $\eta_p^2 = .34$), Domain 3 ($F(1, 65) = 49.01$; $p < .001$; $\eta_p^2 =$

.43), Domain 4 ($F(1, 65) = 39.35$; $p < .001$; $\eta_p^2 = .33$), and Domain 5 ($F(1, 65) = 85.69$; $p < .001$;

$\eta_p^2 = .56$. The direction of the effect indicated greater satisfaction with educational experiences in

the traditional school group and higher levels of stress in the homeschool group. All domain

scores related to educational experiences were significantly correlated with Pearson's

correlations ranging from $r(72) = .88$, p $< .001$ (Domain 1/ Domain 2) to $r(80) = -.66$, p $< .05$

(Domain 4/ Domain 5; see Table 2.7 for complete correlational results).

Satisfaction with educational placement. Within Domain 1, each item was completed

on a 4-point Likert scale with higher scores indicating greater satisfaction. There was a

significant difference in (a) satisfaction with educational placement (Homeschool $M = 1.39$,

Table 2.7

Correlations between Domain Scores

	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5
Domain 1	---				
Domain 2	.88***	---			
Domain 3	.74***	.72***	---		
Domain 4	.72***	.73***	.74***	---	
Domain 5	-.77***	-.68***	-.73***	-.66***	---

*Note. *** = p < .001.*

SD = .63; Traditional school *M* = 3.11, *SD*=1.05) ; *t*(86)=.-9.15, *p* < .001; (b) satisfaction with educational program (Homeschool *M* = 1.41, *SD* = .67; Traditional school *M* = 2.85, *SD* = 1.04) groups; *t*(86) = -7.56, *p* < .001; (c) confidence educational program was implemented (Homeschool *M* = 1.27, *SD* = .45; Traditional school *M* = 2.68, *SD* = .98); *t*(86)= -8.48, *p* < .001; (d) satisfaction with support services (Homeschool *M* = 1.56, *SD* = .81; Traditional School *M* = 3.04, *SD* = 1.062); *t*(86) = -7.28, p < .001; (e) satisfaction with teachers (Homeschool *M* = 2.12, *SD* = .90; Traditional school *M* = 3.06, *SD* = 1.13); *t*(86) = -4.28, p < .001; (f) perception that teachers understood child's disability and his/her educational needs (Homeschool *M* = 1.73, *SD* = .71; Traditional school *M* = 2.98, *SD* = 1.09); *t*(86) = -6.25, *p* < .001; and (g) perception that administrators understood child's disability and his/her educational needs (Homeschool *M* =

1.32, *SD* = .61; Traditional school *M* = 2.40, *SD* = .71); *t*(86) = -7.63, *p* < .001. The mean

number of activities caregivers reported that the school did well out of seven options (i.e.,

academic instruction, communication development, social skill development, functional skill

development, vocational skill development, behavior management, and other) was statistically

significant between homeschool (*M* = 0.56, *SD* = .63) and traditional school (*M* = 2.75, *SD* =

1.95) groups; *t*(86) = -6.86, *p* < .001.

Interactions with education professionals. In Domain 2, higher scores indicate more

positive interactions with education professionals. The following components were statistically

significant: (a) interactions with education professionals (Homeschool *M* = 2.32, *SD* = .88;

Traditional school *M* = 3.33, *SD* = .90); *t*(78) = -5.12, *p* < .001; (b) need to fight for services

(Homeschool *M* = 1.61, *SD* = .13; Traditional school *M* = 2.64, *SD* = 1.09); *t*(78) = -4.84, *p* <

.001; (c) perception that education professionals listened to caregivers' opinions (Homeschool *M*

= 1.80, *SD* = .68; Traditional school *M* = 2.82, *SD* = .89); *t*(78) = -5.78, p < .001; (d) sense of

cooperation between family and education professionals (Homeschool *M* = 1.80, *SD* = .60;

Traditional school *M* = 3.05, *SD* = .86); *t*(78) = -7.56, *p* < .001; and (e) arguments with education

professionals (Homeschool *M* = 2.59, *SD* = 1.12; Traditional school *M* = 3.51, *SD* = .756); *t*(78)

= -4.33, *p* < .001.

Child's social-emotional functioning. In Domain 3, higher scores indicate better social-

emotional functioning. The following components were statistically significant: (a) symptoms of

anxiety related to attending school (Homeschool *M* = 2.33, *SD* = 1.16; Traditional school *M* =

3.33, *SD* = .80); *t*(85) = -4.71, *p* < .001; (b) symptoms of depression related to attending school

(Homeschool *M* = 2.00, *SD* = .96; Traditional school *M* = 3.27, *SD* = .78); *t*(85) = -6.76, *p* <

.001; (c) emotional outbursts related to school (Homeschool *M* = 1.98, *SD* = .78; Traditional

school $M = 3.22$, $SD = .74$); $t(85) = -7.67$, $p < .001$; (d) self-confidence related to school

(Homeschool $M = 1.40$, $SD = .77$; Traditional school $M = 2.38$, $SD = .78$; $t(85) = -5.87$, $p < .001$;

and (e) worry about child's health related to school (Homeschool $M = 2.26$, $SD = 1.08$;

Traditional school $M = 3.16$, $SD = 1.02$); $t(85) = -3.96$, $p < .001$. The perceived need for the

child to take medication to function at school was removed from this domain due to low inter-

item correlations. There was not a significant difference between groups on this item

(Homeschool $M = 2.48$, $SD = 1.31$; Traditional school $M = 2.73$, $SD = 1.30$); $t(85) = -.92$, $p =$

.36.

Child's safety. In Domain 4, higher scores indicate fewer safety concerns. The

following components were statistically significant: (b) worry about child's safety at school

(Homeschool $M = 2.26$, $SD = 1.07$; Traditional school $M = 3.27$, $SD = .90$); $t(85) = -4.80$, $p <$

.001; (c) confidence the school can manage child's behaviors (Homeschool $M = 1.84$, $SD = .97$;

Traditional school $M = 2.89$, $SD = .97$); $t(85) = -5.38$, $p < .001$; (d) confidence child is

supervised at school (Homeschool $M = 1.88$, $SD = .85$; Traditional school $M = 3.05$, $SD = .99$);

$t(85) = -5.87$, $p < .001$, (e) child reprimanded or punished for a mistaken intent of behavior,

(Homeschool $M = 2.47$, $SD = .91$; Traditional school $M = 3.55$, $SD = .82$); $t(85) = -5.82$, $p <$

.001; and (f) peer interactions (Homeschool $M = 2.44$, $SD = 1.22$; Traditional school $M = 3.20$,

$SD = .82$); $t(85) = -3.42$, $p < .001$.

Stress placed on family. In Domain 5, higher scores reflect higher levels of stress related

to school. Caregivers in the homeschool group reported retrospectively on stress levels when

their children was enrolled in traditional school. The following components were statistically

significant: (a) stress on family (Homeschool $M = 3.60$, $SD = .54$; Traditional school $M = 1.98$,

$SD = .94$); $t(85) = 9.72$, $p < .001$; (b) stress on child (Homeschool $M = 3.69$, $SD = .56$;

Traditional school $M = 1.93$, $SD = .92$); $t(85) = 10.70$, $p < .001$; (c) impact of having child in school on caregiver's personal relationships (Homeschool $M = 2.71$, $SD = 1.02$; Traditional school $M = 1.51$, $SD = .79$); $t(85) = 6.19$, $p < .001$; (d) sense of frustration (Homeschool $M = 3.48$, $SD = .71$; Traditional school $M = 2.00$, $SD = 1.09$); $t(85) = 7.45$, $p < .001$; and (e) disruption in family routine (Homeschool $M = 2.90$, $SD = 1.00$; Traditional school $M = 1.49$, $SD = .79$; $t(85) = 7.33$, $p < .001$.

Between-Group Contrasts in Current Education Provided

There was no significant correlation between age and Domain 6 (Extracurricular and Social Activities), $r(101) = .03$, $p = .78$ and age and Domain 7 (Evidence-based Practice), $r(107) = -.18$, $p = 06$. There was not a significant correlation between gender and Domain 6, $r_{pb}(102) = .13$, $p = .18$ and gender and Domain 7, $r_{pb}(108) = -.14$, $p = .13$. In addition, there was no significant correlation between SES and Domain 6, $r_s(98) = .14$, $p = .16$ and SES and Domain 7, $r_s(104) = -.13$, $p = .17$. Diagnosis was not significantly correlated with Domain 6, $r_s(100) = .06$, $p = .59$ and Domain 7, $r_s(106) = -.01$, $p = .97$.

There was not a significant correlation between caregiver education level and Domain 6, $r_s(98) = .31$, $p = .86$ and Domain 7, $r_s(104) = .23$, $p = .91$, between caregiver training in education and Domain 6, $r_s(102) = .05$, $p = .30$ and Domain 7, $r_s(108) = .02$, $p = .93$ and between caregiver training in ASD and Domain 6, $r_s(101) = .04$ $p = .64$ and Domain 7, $r_s(107) = .16$, $p = .16$.

The reliability of Domains 6 and 7 were examined for the purposes of conducting a MANOVA/MANCOVA. Results indicated that the items in both domains were not internally consistent; therefore, 13 separate comparisons were conducted (four items from Domain 6 and nine items from Domain 7) across groups. To correct for multiple comparisons, a conservative

alpha level was set (i.e., Bonferroni correction; .05/13 = .0038), meaning that a *p*-value less than .0038 would be considered significant.

Extracurricular and social activities. In Domain 6, higher scores indicate more extracurricular and social activities. The following two components were statistically significant: hours of social activities with peers per week (Homeschool *M* = 6.53, *SD* = 3.64; Traditional school *M* = 3.88, *SD* = 3.20); *t*(102) = 3.87, *p* < .001 and frequency child is around only adults (Homeschool *M* = 2.33, *SD* = 1.00; Traditional school *M* = 3.34, *SD* = 1.59); *t*(105) = -5.53, *p* < .001. There was not a statistically significant difference between groups on two components of extracurricular and social activities, using the adjusted *p*-value. These included: number of extracurricular activities (Homeschool *M* = 2.75, *SD* = 1.19; Traditional school *M* = 2.15, *SD* = 1.59); *t*(105) = 2.24, *p* = .03 and frequency of spontaneous interactions with peers (Homeschool *M* = 2.55, *SD* = 0.83; Traditional school *M* = 2.96, *SD* = 0.98); *t*(105) = -2.33, *p* = .02.

Evidence-based practice. In Domain 7, higher scores indicate a greater amount or degree of evidence-based practice. The following components were statistically significant: (a) amount of community-based instruction (Homeschool *M* = 3.12, *SD* = 1.02; Traditional school *M* = 2.22, *SD* = 1.06); *t*(108) = -4.54, *p* < .001; (b) structure of school environment (Homeschool *M* = 2.76, *SD* = .73; Traditional school *M* = 3.04, *SD* = 1.06); *t*(108) = -4.65, *p* < .001; (c) structure of school schedule (Homeschool *M* = 2.41, *SD* = .85; Traditional school *M* = 3.16, *SD* = .86); *t*(108) = -4.59, *p* < .001; and (d) consequences for problem behavior (Homeschool *M* = 3.69, *SD* = .57; Traditional school *M* = 4.29, *SD* = 1.27); *t*(108) = -3.27, *p* = .001.

Three components of evidence-based practice were not statistically significant between education groups, using the adjusted *p*-value. Specifically, there was no significant difference in

(a) frequency of one-on-one instruction (Homeschool M = 2.41, SD = .65; Traditional school M = 2.49, SD = 1.19), $t(108)$ = -.47, p = .64; (b) frequency of child-directed instruction (Homeschool M = 2.33, SD = .80; Traditional school M = 2.67, SD = 1.03); $t(107)$ = -1.93, p = .06; (c) behavioral expectations (Homeschool M = 3.27, SD = .58; Traditional school M = 3.00, SD = .87); $t(108)$ = 1.94, p = .06; and (d) data-based decision making (Homeschool M = 2.63, SD = 1.68; Traditional school M = 3.49, SD = 1.67); $t(108)$ = -2.70, p = .01.

Of the 12 evidence-based practice areas sampled in the survey (e.g., short work intervals, visual schedules, instructional decisions based on data), caregivers in the homeschool group endorsed a mean of 5.49 (range: 1-12; SD = 3.46) being implemented and the traditional school group reported that 6.61 (range: 1-12; SD = 3.62) were implemented. This difference was not statistically significant, $t(108)$ = -1.65, p = .10

Homeschool Resources

Caregivers homeschooling children with ASD reported experiencing a mean of 2.67 challenges of the 13 response options (range: 0-9; SD = 1.76). Challenges endorsed included: (a) financial burden: 38.33%, (b) difficulty providing opportunities to interact with peers: 31.67%, (c) child's need for constant supervision: 28.33%, (d) difficulty planning programming: 26.67%, (e) professionals' opposition: 21.67%, (f) lack of confidence in instructional ability: 20.00%, (g) family opposition: 20.00%, (h) difficulty controlling child's behaviors: 18.33%, (i) lack of educational materials: 13.33%, (j) inability to provide support services that child received at school: 13.33%, (k) friend's opposition: 10.00%, (l) child not making progress: 5.00%, (m) child's opposition: 5.00%, and (n) other challenges: 13.33%. Other reported challenges included balancing parent's work schedule, distance to therapy services, difficulty maintaining child's

interest in a subject until completion of the material, and stress from doctors reporting to child protective services that child was not in special education.

Caregivers indicated that a mean of 4.28 factors of 12 response options (range: 0-9; *SD* = 1.90) were helpful in their decision to homeschool. These included (a) online resources on homeschooling: 81.97%, (b) positive experiences of other parents: 67.21%, (c) books on homeschooling: 62.30%, (d) books on ASD: 47.54%, (e) participation in homeschool groups: 44.26%, (f) online resources on ASD: 42.62%, (g) review of homeschooling legislation: 32.79%, (h) review of state performance standards: 19.67%, (i) advocate recommendations: 13.11%, (j) visit to an unschool: 4.92%, (k) school personnel recommendations: 1.64%, and (l) other: 9.84%. Other supports in the decision to homeschool included insurance approval for applied behavior analytic services, family support, positive experiences homeschooling siblings and during summer breaks, recommendation of educational support team, and homeschooling being the only viable option. Respondents expressed that components that would help them to be more effective at homeschooling included (a) easily accessible social opportunities: 68.85%, (b) social skill development strategies: 60.66%, (c) access to educational materials: 59.02%, (d) functional skill development strategies: 49.18%, (e) behavior management strategies: 45.90%, (f) support in program planning: 42.62%, (g) homeschool co-ops/shared instructional responsibility: 40.98%, (h) communication development strategies: 39.34%, (i) access to augmentative communication devices: 21.31%, (j) use of video modeling: 21.31%, (k) knowledge of homeschool legislation: 8.20%, and (l) other supports: 9.84%. Other components parents suggested to increase effective homeschooling included more local support groups, more ASD-friendly resources in the community, greater variety of therapy options, and other parents to share homeschool experiences.

Eighty-two percent of parents indicated that they could benefit from a parent training program. The following components were endorsed as what caregivers would like to see incorporated into a parent training program: (a) strategies to develop social skills: 72.88%, (b) information on evidence-based interventions for children with ASD: 66.10%, (c) strategies to increase academic engaged time: 64.41%, (d) strategies to teach functional skills: 62.71%, (e) strategies to access free educational materials: 57.63%, (f) behavior management strategies: 57.63%, (g) instruction in program planning: 55.93%, (h) strategies to develop communication: 50.85%, (i) instruction on how to use video modeling: 28.81%, (j) summary of homeschool legislation: 23.73%, (k) instruction on how to use augmentative communication devices: 20.34%, and (l) other components: 6.78%. Parents identified other components that would be helpful in a training program, such as transition planning, information on interventions for comorbid concerns, and strategies for addressing asynchronous abilities (i.e., strengths and weaknesses across different content areas).

Homeschooling in the Traditional Education Sample

In the traditional education sample, 9.8% ($n = 5$) reported that they had at one time homeschooled their child with ASD. They indicated that the most significant factor for homeschooling was dissatisfaction with the educational program, child's negative feelings towards school, and desire for religious-based instruction. Parents started homeschooling when their child was a mean age of 7.75 years (range: 4-12; $SD = 3.86$) and homeschooled for a mean of 3.0 years (range: 1-4 years; $SD = 1.41$). Factors that contributed to the decision to homeschool included: (a) dissatisfaction with the educational program: 75.00%, (b) negative interactions with education professionals: 50.00%, (c) need to fight for services: 50.00%, (d) concern for child's safety: 25.00%, (e) child's negative feelings towards school: 25.00%, and (f)

desire for religious-based instruction: 25.00%. None of these parents endorsed the school's inability to manage behavior, confusion with the education system, disruption in family routine, child was in legal trouble, or recommendation of education professionals as reasons for homeschooling. These parents stopped homeschooling for the following reasons: (a) concern about social interaction: 75.00%, (b) difficulty controlling child's behavior: 50.00%, (c) concern about losing access to services: 50.00%, (d) finances: 25.00%, (e) time commitment: 25.00%, (f) lack of confidence in instructional ability: 25.00%, (g) lack of instructional materials: 25.00%, (h) family's opposition: 25.00%, (i) professional's opposition: 25.00%, and (j) other reasons: 25.00%. Friends' and child's opposition were not endorsed as reasons for discontinuing homeschooling.

In the traditional school sample, 45.65% reported that they had considered homeschooling. Reasons for not homeschooling included: (a) concern about social interaction: 82.69%, (b) lack of confidence in instructional ability: 53.85%, (c) time commitment: 51.92%, (d) finances: 42.31%, (e) concern about losing access to services: 34.62%, (f) lack of instructional materials: 21.16%, (g) difficulty controlling child's behavior: 19.23%, (h) child's opposition: 7.69%, and (i) family opposition: 5.77%. No parents reported friends' opposition as a deterrent from homeschooling.

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Discussion

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Despite an increase in the number of homeschooled children with ASD over the past decade, research with this population is lacking. This study provided an evaluation of reasons parents across the U.S. choose to homeschool children with ASD and the educational experiences they are providing. These data replicated the five reasons parents choose to homeschool children with ASD (i.e., dissatisfaction with educational placement, negative

interactions with education professionals, social-emotional responses of child to traditional

school, safety of child, and stress placed on the family) presented by Simmons (2014). As in

Simmons, the most salient reason for choosing to homeschool was dissatisfaction with the

educational placement/program. This study expanded upon those results from the state of

Georgia with a small sample size ($n = 9$) to include a larger group of homeschool parents from

across the U.S. ($n = 61$). The sample represented an economically and geographically diverse

group that was heterogeneous in terms of their age.

In addition to examining the reasons parents decide to homeschool, this study provides

quantifiable insight into the specific characteristics of homeschool programs for children with

ASD. The majority of homeschool instruction was provided by mothers, followed by fathers,

and homeschool co-ops. These results are inconsistent with the finding of Simmons (2014) that

instruction was most often provided by those outside of the home with a teaching background.

In contrast to the unschool model employed most frequently by parents in Simmons (2014),

parents in this study reported following an eclectic approach most often. One potential reason

for these differences is that participants in this study represent a range of states, whereas those in

the previous study were limited to the state of Georgia. It may be the case that homeschool

parents in specific states implement similar educational programming, based on homeschool

regulation, influence of homeschool groups, and availability of specific resources.

Despite endorsing multiple challenges related to homeschooling, homeschool parents

reported generally favorable homeschool experiences. Overall, they noted a positive increase in

their child's motivation to learn, active engagement, and family functioning and a favorable

decrease in problem behavior and stress since beginning to homeschool. These positive

experiences may be due to opportunities to access certain resources not available in the school

district or to focus predominately on particular areas that contribute to increases in motivation and engagement. For example, students in the homeschool group received significantly more community-based instruction than those in the traditional school system. Additionally, the decrease in stress with the onset of homeschooling may be the result of a decrease in the need to fight for services, communicate with education professionals, and address their child's problem behavior related to school, all of which were reported sources of stress for parents (Simmons, 2014).

In evaluating caregiver variables that may have contributed to current educational experiences, there was not a significant correlation between caregiver education level, training in education, or training related to ASD and the amount of evidence-based practice implemented. This finding seems counterintuitive and is particularly concerning given that practitioners might recommend increased training and awareness as a way to improve the evidence-based practice implemented. Parents reported that they mainly relied on resources found online and in books to guide their homeschooling practice; thus, they were likely to have had exposure to non-research supported interventions in popular media. Given these findings, it is imperative for interventions to directly target increasing caregivers' knowledge of evidence-based practice for children with ASD and explicitly practice these skills in any education program implemented.

In addition to categorizing homeschool experiences, this study was the first study to explore the difference in educational experiences between homeschool and traditional school groups with ASD and assess the characteristics that may differentiate groups. Homeschool and traditional school participants differed in child's diagnosis, but not in age or gender of the child or SES. Based on the observation that anecdotal reports mainly focus on homeschooling children with Asperger's Disorder and seven of the nine children described by Simmons (2014)

were reported to present with Asperger's Disorder, it is not surprising that significantly more homeschooled children in this study presented with this diagnosis compared to the traditional school group. Although this difference was significant, the majority of children in the homeschool group had a diagnosis of Autistic Disorder. These results are based on caregiver report and may not reflect the change in DSM-5 diagnostic definitions or a shift in the language used by caregivers to represent ASD. For example, if an individual received a diagnosis of ASD based on DSM-5 diagnostic criteria, caregivers may have endorsed Autistic Disorder on the SASDEE as the closest response option although their child may have received a diagnosis of Asperger's Disorder or PDD-NOS using DSM-IV criteria.

Beyond the significant difference in diagnosis between groups, the lack of group differences on several demographic variables is noteworthy. An interesting finding in this study is that household income did not differ between groups and participants in both groups represented all points along the income distribution. Thus, it appears that finances did not prevent some groups from homeschooling and financial stability was not a significant factor in the decision to homeschool. In addition, groups did not significantly differ in parent education level, parent training in education, and parent training in ASD, suggesting that an educational background did not increase the likelihood of parents homeschooling and that homeschool parents were no more likely to pursue such training than other parents of children with ASD.

When evaluating the correlation between these demographic variables and domain scores related to educational experiences, diagnosis was significantly correlated with Domain 1, Domain 3, and Domain 5. Specifically, parents of children with *other autism spectrum disorders* reported more dissatisfaction with the education system and greater concerns with their child's social-emotional functioning related to school and parents of children with Autistic Disorder

endorsed higher stress levels. If a diagnosis of Autistic Disorder corresponds with more severe autism symptomatology, these results would indicate that parents were more satisfied with the educational programming for those individuals with greater impairment. Children characterized as higher functioning may be more likely to receive education in the general education classroom where teachers lack adequate training and experience in working with children with ASD and in developing individualized programs for this population (Hendricks, 2011; Morrier et al., 2011; Myles & Simpson, 2002), potentially contributing to parents' greater dissatisfaction with the educational programming.

Greater concern with social-emotional functioning in those with other ASD diagnoses may correspond with more frequent comorbid social-emotional diagnoses (e.g., anxiety, depression) in higher-functioning individuals with ASD who are able to self-report internalizing symptoms (Ghaziuddin, Alessi, & Greden, 1995). Researchers have reported mixed results on differences in anxiety symptoms based on ASD diagnoses; some researchers report greater likelihood of anxiety in children with Asperger's Disorder, followed by PDD-NOS, and then Autistic Disorder (White, Oswald, Ollendick, & Scahill, 2009), whereas others report no differences when controlling for cognitive functioning (Kim, Szatmari, Bryson, Steiner, & Wilson, 2000). Similarly, with depressive symptoms, researchers have indicated that higher functioning individuals with autism may be more likely to have lower self-worth making them more predisposed to depression and depressive episodes (Capps, Sigman, & Yirmiya, 1995; Ghaziuddin, Ghaziuddin, & Greden, 2002). In this study, parents may have reported greater concern with social-emotional symptoms in those with diagnoses other than Autistic Disorder due to the potential ability of these children to articulate internalizing concerns related to school, rather than parents relying solely on the observable social-emotional symptoms.

Greater reported stress related to their child's education in parents of children with Autistic Disorder may be explained by greater educational needs requiring communication with the school or comorbid concerns, such as greater prevalence of some topographies of problem behavior in individuals with accompanying intellectual impairment (McClintock, Hall, & Oliver, 2003). Given higher reported stress in parents of children with Autistic Disorder, practitioners should direct efforts toward mitigating stress in those parents of children with more severe manifestations of ASD.

In addition to reported correlations with diagnosis, gender was significantly correlated with Domain 4, with parents of male children reporting higher levels of concerns regarding their child's safety at school. These results are interesting as research has shown no significant gender differences in the prevalence of injury-risk behaviors in individuals with ASD, such as self-injury (McClintock et al., 2003) and elopement (Anderson et al., 2003) and the mortality rate among school-aged females with ASD is higher than that of males, due to potential safety concerns (e.g., seizures, drowning, and suffocation; Shavelle, Strauss, & Pickett, 2001). The significant correlation in this study may be explained by differences in bullying and victimization by peers, with prevalence estimates slightly higher for males with ASD than females (Due et al., 2005) and males more likely to engage in direct, physical types of bullying than females (Rivers & Smith, 1994) which may contribute to increased safety concerns from parents.

The reported educational experiences significantly differed between homeschool and traditional school groups. Follow-up tests identified significant differences in each of the five domains. Across both groups, parents of children with ASD endorsed some items indicative of dissatisfaction with educational programming; however, the group of parents who homeschool

reported a significantly greater dissatisfaction with education provision than traditionally schooling parents. As prior research shows that parents' trust is contingent upon the school's ability to effectively meet the needs of children with ASD (Dominique et al., 2000), it is unsurprising that parents who homeschool reported a significantly greater dissatisfaction with education provision than traditionally schooling parents.

Prior research has shown that parents of children with ASD often have interactions with school professionals that are characterized by confusion, tension, frustration, and lack of cooperation that impair effective service delivery (Lake & Billingsley, 2000). Parents report hostile interactions and the need to battle for services, resulting in a lack of trust in the education system and increased trust in personal instincts (Stoner et al., 2005). Similar to prior research, parents of children with ASD in the current study, both who homeschool and whose children attend traditional school, endorsed items related to negative interactions. However, parents who chose to homeschool reported negative interactions with school personnel to a more marked degree than parents whose children attended traditional school (i.e., statistically significant difference between groups in domain score).

Given high rates of comorbidity between ASD and both anxiety and depression (Simonoff et al., 2008), it is not surprising that both groups endorsed concerns with children's social-emotional functioning in school. However, these concerns were more salient for homeschool families and thus reflected a statistically significant difference in domain scores.

Safety concerns have been documented for children with ASD, including bullying within traditional schools (Heinrichs, 2003) and ability to safely manage problem behavior. As such, it is unsurprising that both homeschool and traditional school parents of children with ASD reported concerns with their child's safety due to factors including concerns with managing

problem behavior and misinterpretations of behavior, with homeschool parents reporting statistically greater concerns with their child's safety.

As research has documented greater stress associated with parenting a child with ASD (Hastings & Johnson, 2001), it is interesting to note that groups endorsed different levels of stress related to the education system. Given that parents in the homeschool group endorsed more negative interactions with education professionals and greater worry about their child's safety and social-emotional functioning, these factors may have contributed to higher levels of stress while their child was enrolled in traditional school.

Current educational experiences also significantly differed between groups. Based on the results of Simmons (2014), indicating that homeschool parents are largely not implementing evidence-based practice and parent self-help books on homeschooling children with ASD espousing educational practices that contract evidence-based standards (e.g., unschooling), it is not surprising that several aspects of evidence-based practice were significantly lower for the homeschool group. In addition to differences in educational practices, several differences were noted in extracurricular and social activities. Results of this study indicated that homeschooled children spent significantly more time in social activities with peers than those in the traditional school group; however, the number of organized extracurricular activities and spontaneous social interactions did not significantly differ. Homeschooling affords parents the ability to structure the child's day such that more organized social activities can occur (e.g., field trips, community activities). Results also showed that homeschooled children spent significantly more time around only adults than those children in traditional school. Given that instruction was predominately provided by parents, it is unsurprising that children in this group spent more time around adults than their peers attending traditional school. Lack of social opportunities was a

reason for not homeschooling among parents of children in the traditional school sample and a reported concern of homeschool parents. These results suggest that parents are providing social opportunities for their homeschooled children; however, the amount of time that students have access to peer models of appropriate behaviors and opportunities to practice social skills should be investigated. In addition, these results extend the literature indicating limited social participation and reciprocal peer relationships among children and adolescents with ASD (Mazurek & Kanne, 2010; Shattuck, Orsmond, Wagner, & Cooper, 2011) to reveal that parents endorsed structured extracurricular activities and spontaneous social interaction by children in both groups.

This study holds important implications for improving the current educational experiences of children with ASD. Results provide insight into areas where intervention should be directed. For example, improving interactions with education professionals may be an area of focus that does not fall under the systemic and financial constraints in an educational environment. Specifically, educators may be unaware of caregivers' negative perception of the sense of collaboration with the education team and of educators understanding their child's disability. In addition, perhaps efforts should be directed at improving the safety of students with ASD in the education system and directly targeting educational programming at improving their social-emotional functioning. Additionally, as stress levels were high for both groups, education professionals could target programming for families to reduce stress and improve overall family functioning, especially for families with children with more severe ASD symptoms. Given that dissatisfaction with the education program was the most salient reason for homeschooling and is potentially the most difficult area in which to intervene, increasing the amount of evidence-based practice implemented and explicitly educating families on evidence-

based practice may service to increase caregivers' overall satisfaction with the educational program.

Limitations and Future Directions

Despite the important contribution of these findings, results should be interpreted in the context of several potential limitations. Due to the heterogeneity of the population, the fact that not all homeschooling families register with local governments or school boards, and the lack of ability to control participants recruiting others to complete the survey, a random sample is unlikely to have been obtained. Furthermore, because the primary study modality was an online survey and recruitment efforts were largely conducted online, the sample may not be representative of those with limited access to such resources. For example, the large majority of homeschool respondents were Caucasian with college degrees. Future studies may consider exploring whether the homeschool experiences differ by race, state, or geographic location.

In addition, all conclusions are based on caregiver report, with no direct assessment data to verify the information provided. Caregivers in the homeschool group may be more likely to report negative experiences with the traditional education system to validate their decision to homeschool, or may be responding based on a catalyst event that led to homeschooling rather than their overall experience. Future research may consider directly observing homeschool and traditional school environments to determine the amount of evidence-based practice implemented and to observe interactions between education professionals and caregivers. Parents reported high levels of stress across both groups; however, future studies may consider using standardized indirect assessment measures to quantify clinically significant levels of stress. Similarly, caregivers reported on their child's social-emotional functioning; additional studies may consider using indirect assessments to evaluate functioning in relation to same-aged peers.

The majority of homeschool parents indicated that they could benefit from a parent-training program on homeschooling children with ASD. Future research may consider incorporating areas in which caregivers felt they could benefit and areas of deficit into a training program and evaluating the impact on the amount of evidence-based practice implemented. Such a program should explicitly focus on increasing evidence-based practice. Finally, future researchers may consider developing programming within the traditional education system, measuring the effect of training on implementation of evidence-based practice, interactions with caregivers, perceived student safety and social-emotional functioning, and reported parental stress levels.

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CHAPTER 3

PARENT-IMPLEMENTED SELF-MANAGEMENT INTERVENTION TO INCREASE ON-TASK TIME FOR STUDENTS WITH ASD DURING INDEPENDENT HOME INSTRUCTION[2]

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[2]Simmons, C. A., Ardoin, S. P., and Ayres, K. M. To be submitted to *Journal of Applied Behavior Analysis.*

Abstract

This study evaluated the effect of a self-management intervention implemented by three parents of children with autism spectrum disorder in the home environment, including participant self-monitoring and self-evaluation, on on-task behavior during independent work completion. Results indicate that parents implemented intervention procedures with high fidelity ($M =$ 98.92%), intervention led to increased on-task behavior across participants (NAP = 1.0 for all participants, M increase from baseline = 60.67%; Cohen's $d =$ 3.46), results maintained post-intervention, parents and children rated procedures as high in social validity, and observation via live video technology resulted in high correspondence between parent and child ratings ($M =$ 90.03%). This study extends the use of live video technology for parents to collect data during intervention. Visual analysis methods were modified to control for Type I error (i.e., masked visual analysis) to increase the internal validity and scientific credibility of this single-case design study. The blind data analyst correctly identified baseline and treatment segments for each participant, thus results represented a significant intervention effect on on-task behavior ($p =$ .03). Masked visual analysis methods to control for Type I error in single-case research provide a summary statistic that is easily interpreted across fields.

INDEX WORDS: autism, homeschool, self-management, on-task, masked visual analysis

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impairments in the domains of social communication, as well as repetitive, restricted, and stereotyped behaviors and interests (American Psychiatric Association [APA], 2013). Children with ASD present with complex patterns of behavior that contribute to challenges within a traditional educational environment. Behavioral interventions are one means of addressing educational challenges within a school context.

Behavioral interventions within an educational context most frequently involve teacher-mediated contingencies, whereby teachers manipulate antecedents and consequences in an effort to increase appropriate classroom behaviors and decrease aberrant behavior, with strategies such as differential reinforcement, token economies, time-out, and response cost. Typically, such procedures are implemented by teachers and responsibility for collecting data, delivering reinforcement, and providing feedback is assumed by teachers themselves (Shapiro & Cole, 1994). Potential limitations of such externally-mediated strategies include (a) intensiveness of implementation, (b) low procedural fidelity, (c) teachers not noticing all target behaviors and providing intermittent reinforcement, and (d) teachers functioning as discriminative stimuli for appropriate behavior (Kazdin, 1975). Self-management (SM) procedures provide an alternative to externally-mediated approaches and address these limitations. Research supports the efficacy of SM procedures for increasing appropriate behaviors and decreasing inappropriate behaviors across school, home, and community settings for students, including those with ASD (Briesch & Chafouleas, 2009; Lee, Simpson, & Shogren, 2007; Mooney, Ryan, Uhing, Reid, & Epstein,

2005, Reid, Trout, & Schartz, 2005).

Self-management

Due to their ease of implementation, SM procedures have been applied across settings for

various topographies of behavior and tasks, ages of students, and cognitive abilities (Callahan,

Rademacher, & Hildreth, 1998; Dunlap, Dunlap, Koegel, & Koegel, 1991; Shapiro & Cole,

1994; Skinner & Smith, 1992). SM interventions evolved from Skinner (1953)'s initial

conceptualization of self-control and encompass a range of procedures that provide a viable

alternative to teacher-mediated approaches for changing behavior. These procedures were

designed to increase students' responsibility for their own behavior and facilitate greater

independence (Shapiro & Cole, 1994), which is considered the ultimate goal of education

(Dewey, 1939). In addition to facilitating independence, SM interventions can promote

generalization and maintenance of behavior change (Rhode, Morgan, & Young; 1983; Stokes,

Fowler, & Baer, 1978). In the majority of SM interventions, children are taught to correctly

label occurrences and nonoccurrences of target behavior(s) and then (a) children assess their own

behavior, (b) children compare their assessment with that of the instructor or in relation to a

specific standard, and (c) the instructor or the children themselves deliver reinforcement

contingent upon either accurate self-assessment or task performance (Rhode et al., 1983; Sainato,

Strain, Lefebvre, & Rapp, 1990; Shapiro & Cole, 1994).

SM interventions generally include one or more of the following procedures: self-

modeling, self-monitoring, self-evaluation, and self-reinforcement. *Self-modeling* includes

observing a model of oneself engaging in appropriate target behaviors in a natural environment.

Self-monitoring is the most frequently applied SM procedure and includes evaluating one's own

behavior at specific times. Typically a signal is used to cue the individual to self-monitor

behavior (e.g., auditory tone, vibration, teacher tap on desk). *Self-evaluation* encompasses comparing one's own behavior to a specific standard. *Self-reinforcement* involves delivering a consequence to oneself, that is presumed to function as a reinforcer, contingent upon meeting a specific criterion (Cooper, Heron, & Heward, 2007; Hume, Loftin, & Lantz, 2009; Shapiro & Cole, 2004).

Although it may be necessary to program reinforcement into the SM interventions developed for some students, for many students no externally programmed reinforcement is needed to affect change and sustain gains in target behavior (Shapiro & Cole, 1994). The actual act of recording one's own behavior can result in reactivity (i.e., the effect of measurement) that is responsible for behavior change in the absence of external reinforcers; however, it is difficult to isolate whether the recording procedure or other stimuli have stimulus control over target behavior (Cooper et al., 2007).

Rhode et al. (1983) provided a model for conducting SM research that many researchers (e.g., Smith, Young, Nelson, & West, 1992; Smith, Young, West, Morgan, & Rhode, 1988) have extended in the evaluation of SM practices. In this seminal SM study, six children with behavior disorders were taught to self-monitor and self-evaluate their behavior to increase appropriate classroom behavior. Following baseline, the teacher rated student behavior on a 5-point scale after each 15-min interval and ratings corresponded to the number of points students could exchange for backup reinforcers. The goal of this phase was to teach students to correctly identify occurrences and non-occurrences of on-task behavior. During the subsequent matching phase, students were taught to self-monitor their behavior at the end of 15-min intervals. Students then compared their ratings to the teacher's and if they were within one point, they received the points they had self-assessed. If they matched the teacher rating, they earned a

bonus point. In the event of more than a one-point discrepancy, no points were awarded. The reinforcement schedule was systematically thinned by decreasing the frequency of self-evaluation (i.e., after 30 min intervals) and the frequency of exchanging points for backup reinforcers. The initial token economy resulted in an increase in levels of appropriate behavior in the special education classroom that were sustained during the self-monitoring and self-evaluation phase and maintained when self-evaluation was eliminated. High rates of on-task behavior were observed when the intervention was introduced in the general education classroom and on-task behavior was maintained when the reinforcement schedule was thinned (i.e., after 60 min intervals), self-monitoring sheets were faded, and when no externally-mediated reinforcement was provided. Results indicate that students can accurately self-monitor their behavior, matching or coming within one point of teachers in 93% of sessions (Rhode et al., 1983).

These seminal procedures were extended by Smith et al. (1988) by eliminating the initial token economy phase with four adolescents with learning disabilities who exhibited high rates of off-task and disruptive behaviors. Results indicated that the students were able to accurately self-monitor their on-task behavior following brief training from their teachers, making SM procedures more efficient for classroom application. These results were replicated by Smith et al. (1992) with eight high school students to increase on-task behavior, with reported collateral increases in academic performance.

Like Rhode et al. (1983), increasing on-task behavior is a frequent target of SM studies conducted in classroom settings (Sheffield & Waller, 2010). Interventions including one or more of the SM procedures have resulted in immediate and significant improvements in on-task behavior, gains have been maintained once cues and self-monitoring recording sheets were

faded, and collateral gains in academic productivity have been observed (Harris, 1986; Hughes

& Boyle, 1991), rendering SM of on-task behavior appealing in a classroom setting.

Self-management and ASD

Salient characteristics associated with ASD include deficits in executive functioning,

including poor self-monitoring and organizational skills, and difficulty inhibiting, maintaining,

and generalizing behaviors without external supports (Happé, Booth, Charlton, & Highes, 2006;

MacDuff et al., 1993; Myles & Simpson, 2002; Ozonoff, Dawson, & McPartland, 2002). Given

these characteristics of ASD and the focus of SM interventions on teaching appropriate skills,

decreasing dependence on others, and increasing responsibility for managing one's own

behavior, SM procedures are an ideal intervention to employ with this population. Specifically,

SM may result in improved functioning for individuals with ASD in many areas, promote greater

independence, and facilitate education in the least restrictive environment (Lee, et al., 2007;

Southall & Gast, 2007; Stahmer & Schriebman, 1992).

Both the National Autism Center's National Standards Project (2009) and the National

Professional Development Center on ASD (Wong et al., 2014) denote SM as an evidence-based

practice for preschoolers to young adults with ASD. A meta-analysis of self-monitoring

interventions for increasing target behaviors provides evidence of its efficacy for individuals

with ASD with an overall percentage of non-overlapping data (PND) of 81.9% (Lee et al., 2007).

Southall and Gast (2011) reviewed the literature on SM interventions for both increasing and

decreasing target behaviors in individuals with ASD and reported that SM procedures resulted in

improvements in target behavior and maintenance of target skills across participants. These

literature reviews indicate that SM procedures with individuals with ASD are effective at

increasing and decreasing a wide range of behaviors across settings, age ranges, and cognitive abilities (Lee et al., 2007; Southall and Gast, 2011).

The majority of research on SM with individuals with ASD has focused on increasing social and communication skills (e.g., Koegel, Koegel, Hurley, & Frea, 1992; Loftin, Odom, & Lantz, 2008). Other studies show improvements in various domains, including academic skills (e.g., Delano, 2007; Newman, Buffington, O'Grady, Poulson, & Hemmes, 1995), vocational skills (Ganz & Sigafoos, 2005), and self-care skills (Lee, Poston, & Poston, 2007), and decreases in stereotypic and disruptive behavior (e.g., Koegel & Koegel, 1990; Mancina, Tankersley, Kamps, Kravits, & Parrett, 2000). Researchers have also examined the use of SM procedures with this population to increase on-task behavior and task engagement (Callahan & Rademacher, 1999; Cihak, Wright, & Ayres; Pierce & Schreibman, 1994). For a complete characterization of SM interventions with individuals with ASD, see Appendix D.

Callahan and Rademacher (1999) implemented a modification of the self-monitoring and self-evaluation procedures conducted by Rhode et al. (1983) to target on-task behavior with a high functioning 8-year-old boy with ASD in a general education classroom. In this study, a list of on-task behaviors with age-appropriate images of each on-task behavior was presented to the child and the list was then systematically faded in size until it was removed from his desk. Following an auditory cue from a recorder, the participant self-recorded if he was on-task for each interval (i.e., variable interval 1-min) for a total of 10-intervals, with a total session duration of 30 min. Child-recorded on-task behavior was compared with teacher recorded on-task behavior following each 10-min period and at the end of the session. Points were allocated for each interval on-task as well as matching the teacher-recording. Points could be exchanged for tangible items selected from a reinforcer menu (e.g., pencils, candy, small toys). Results

indicated that the SM intervention was effective at increasing rates of on-task beahvior across the 9-week intervention.

Sainato et al. (1990) implemented a self-monitoring and self-evaluation intervention to increase the on-task behavior of three preschool children with moderate to severe ASD in a preschool classroom. On-task behavior was divided into nine components (e.g., sit in chair with feet on floor, finish worksheets), each depicted with a photograph on a self-monitoring sheet. Students were taught to self-monitor each on-task behavior during independent seatwork time and then to compare their ratings with that of the teacher. When the children's self assessment matched that of the teacher on seven or more of the nine target behaviors, regardless of appropriate behavior, students received small tangible items. Results suggest that the intervention resulted in an immediate and substantial increase in appropriate on-task behavior.

The literature provides evidence that parents can implement various skill acquisition (Crockett, Fleming, Doepke, & Stevens, 2007; Ingersoll & Gergans, 2007) and behavioral management intervention methods (Derby et al., 1997; Wacker et al., 2005) with high procedural fidelity to effectively work with their children with ASD. Two studies demonstrate the effective implementation of SM procedures in the home setting to increase self-care skills and social communication, with parents serving as the interventionists (Lee et al., 2007; Strain et al., 1994). However, the majority of SM studies conducted with individuals with ASD were conducted in school and clinical settings and implemented by researchers or teachers. Despite a growing population of parents homeschooling their children with ASD, researchers have yet to evaluate the effects of a SM intervention for increasing students' on-task behavior in the home setting and with parents serving as interventionists.

Self-management and Homeschooled Children with ASD

Anecdotal accounts from the lay literature (e.g., Dowty & Cowlishaw, 2002; Harnett, 2004; Pyles, 2004; Schetter & Lighthall, 2009) suggest that the number of homeschooled children with ASD has increased over the past decade. Despite this trend, there is a dearth of studies that focus on homeschooling children with ASD. A comprehensive review of the research literature revealed only two studies involving homeschooling of children with ASD. Hurlbutt (2011) provided a qualitative description of the experiences and perceptions of nine families homeschooling children with ASD. According to Hurlbutt, these homeschool parents were knowledgeable about ASD and were implementing individualized programs for their children, but had different opinions regarding the ideal educational focus for their children as compared to that of public school teachers.

Simmons (2014) systematically analyzed interviews with nine parents homeschooling their children with ASD in the state of Georgia. The majority of parents interviewed were not implementing evidence-based practices or were employing methods, such as unschooling (i.e., self-directed learning with no formal instruction; Holt, 1964) that did not adhere to best practice standards for educating children with ASD. For instance, structure is well-established as necessary for individuals with ASD (Wong et al., 2014); however, the majority of homeschool programming was characterized as having low to moderate levels of structure (i.e., six of the nine participants; Simmons, 2014). Parents reported concern with increasing their child's on-task time and independent work completion and indicated that, due to their child's off-task behavior, they were unable to engage in their own tasks within the home. Although in a very different setting from that of the typical classroom, reports by these parents are consistent with school-based findings that children with ASD are often dependent on adults to remain on-task,

complete activities, and transition between activities (Bryan & Gast, 2000). SM procedures, for which there exists substantial evidence suggesting their effectiveness in addressing these issues (Callahan & Rademacher, 1999; Cihak, et al., 2010); Newman et al., 1995; Sainato et al., 1990), would seem to be an appropriate intervention to employ for homeschooled children with ASD.

Purpose of the Current Study

The current study extends the SM and ASD literature in multiple ways. First, currently there are no published intervention studies conducted in a homeschool setting with children with ASD as the participants. Given that interviews with parents homeschooling children with ASD revealed that they were largely not implementing evidence-based practice (Simmons, 2014), interventions that increase implementation of evidence-based practice are needed. Students may have the necessary skills to engage in appropriate behavior, but their behavior may not be under stimulus control of the environment (Gresham & Elliott, 1984). Students who are homeschooled may have difficulty differentiating when home is an academic versus leisure environment and when their parent is serving the role of caregiver versus educator. For instance, when watching a video for leisure, remaining oriented toward the television is not required of the child and the child's commentary may be reinforced with sibling or parent attention; however, when watching instructional videos, students are generally required to remain on-task and silent. SM procedures may be a suitable a way to teach students the appropriate behaviors that are required during times of homeschool instruction.

Second, this study extends the SM research with individuals with ASD to the home setting and introduces parents into intervention. No published study has applied a SM intervention for on-task behavior with individuals with ASD in a home setting nor included parents as interventionists. In addition to targeting on-task behavior during independent work

completion in a homeschool program, these procedures may be extended to other forms of independent work (e.g., homework completion or independent study) of traditionally educated children. Many interventions for increasing on-task behavior in individuals with ASD require intensive therapist involvement and are not applicable for individuals engaging in independent work completion. The current study evaluated the effect of a SM intervention implemented by parents in the home, including self-monitoring and self-evaluation, to increase children's on-task time during independent work completion for two homeschooled participants and independent homework completion for one participant. The intervention specifically addresses an established difficulty for individuals with ASD and an identified challenge to homeschooling children with ASD (Simmons, 2014).

In addition, this study extends the use of live video technology for parents to observe and collect data during intervention. Conducting a SM intervention in a home setting introduces the challenge of the parent observing the child and collecting data with which to compare the child's self-recording. Of those SM studies with individuals with ASD that incorporate a self-evaluation component, the observer was typically present in the room with the child self-monitoring in order to simultaneously record data on the target behavior (e.g., Barry & Singer, 2001; Stahmer & Schreibman, 1992). In one study, the researcher observed from behind a two-way mirror in a clinical setting and entered the room to compare ratings with the child self-monitoring (Shabani et al., 2001). No self-evaluation study has used real time video observations. Observation of individuals via video is one method of addressing the challenges of collecting direct observation data while students complete independent work in a homeschool setting.

Finally, this study extends the single-case design research by employing masked visual analysis procedures recently discussed in the field but never before applied in published research

(Ferron & Jones, 2006; Ferron & Levin, 2014). Incorporating a means of controlling for false identification of an intervention effect (i.e., Type I error), increases the interval validity of single-case design research. In addition, these procedures provide further support of an intervention effect to those outside of the single-case design field by combining randomization with response-guided measurement techniques to summarize the data with a test statistic

Method

Participants

Participants included three children with ASD. Two participants were homeschooled and one participant attended a traditional public school. All three participants were ambulatory and communicated in full sentences. No visual, auditory, or physical limitations were endorsed by caregivers. Parent-child dyads were recruited through homeschool and educational organizations in a southeastern state. The author administered characterization measures for all participants prior to their inclusion in the study.

Study procedures were reviewed and subsequently approved by the University of Georgia Institutional Review Board prior to beginning the study. Consent was obtained from each parent and assent from each child prior to beginning the study. Parents received a tangible incentive of approximately a $20 value each week for their participation, consisting of school supplies and household materials (e.g., flash drive, electric pencil sharpener, label maker, easel paper). Each child participant received an educational board game of approximately a $20 value for their participation.

Dustin was a 14-year-old Caucasian male diagnosed with ASD, attention-deficit/hyperactivity disorder (ADHD), Combined Type, and Generalized Anxiety Disorder. Dustin was homeschooled for one year prior to the start of the study. His mother provided all

homeschool instruction, following an online curriculum. She had no formal training in education or in working with individuals with ASD. Dustin received no intervention services at the time of this study. On the Stanford Binet, Fifth Edition (SB-5; Roid, 2003), Dustin achieved a full scale IQ (FSIQ) of 96 (39th percentile), indicating that his overall intellectual ability fell in the average range compared to same-age peers. His Vineland Adaptive Behavior Scales, Second Edition (Vineland-II; Sparrow, Cicchetti, & Ball, 2005) Adaptive Behavior Composite standard score (SS) of 57 (<1st percentile) indicated that his adaptive skills fell significantly below what would be expected for his age. His score on Module 3 of the Autism Diagnostic Observation Schedule, Second Edition (ADOS-2; Lord et al., 2012) met the cutoff for autism. This score corresponded to a comparison score of 9, indicating a high level of autism spectrum-related symptoms. His mother completed the Gilliam Autism Rating Scale, Third Edition (GARS-3; Gilliam, 2014) rating scale. Her responses corresponded to an Autism Index SS of 124 (95th percentile), confirming the likelihood of Dustin having ASD. This score corresponded with a DSM-5 severity level indicating that Dustin likely required very substantial support.

Hank was a 13-year-old biracial male with ASD, ADHD, Combined Type, Generalized Anxiety Disorder, and Major Depressive Disorder. Hank was homeschooled for 6 months before participation in the study. His mother conducted all homeschool instruction following a manualized curriculum. She possessed a bachelor's degree in general education teaching; however, she had no formal training in educating individuals with disabilities nor had she practiced as a general education teacher. Hank received no external support services. He earned an FSIQ of 82 (12th percentile) on the SB-5, meaning that his intellectual ability fell in the low average range compared to same-age peers. His Vineland-II Adaptive Behavior Composite SS of 67 (1st percentile) indicated that his adaptive skills fell significantly below what would be

expected for his age. His score on Module 3 of the ADOS-2 met the cutoff for autism. This score corresponded to a comparison score of 6, indicating a moderate level of autism spectrum-related symptoms. His GARS-3 Autism Index SS of 114 (82nd percentile) corresponded to a DSM-5 severity level of requiring very substantial support.

Garrett was a 12-year-old Caucasian male with ASD and ADHD, Combined Type. He attended a public middle school where he was enrolled in mainstream classes. He received no ancillary services at school or privately. On the SB-5, Garrett obtained an FSIQ of 121 (92nd percentile), meaning that his cognitive ability fell in the superior range compared to same-age peers. His Vineland-II Adaptive Behavior Composite SS of 74 (4th percentile) indicated that his adaptive skills fell significantly below what would be expected for his age and level of cognitive functioning. His score on Module 3 of the ADOS-2 met the cutoff for autism. This score corresponded to a comparison score of 9, indicating a high level of autism spectrum-related symptoms. His GARS-3 Autism Index SS of 93 (32nd percentile) yielded a DSM-5 severity level of ASD corresponding with requiring substantial support.

Settings and Arrangements

Instructional sessions and maintenance probes were conducted in the private instructional space available in each participant's home. Each instructional space was equipped with, at minimum, a desk/table, chair, laptop with a camera, and computer/tablet. Access to leisure items was restricted during intervention sessions. Prior to the start of each session, the laptop camera was activated to record the session and the child was seated within view of the camera. For Dustin, instruction took place at a desk with a desktop computer in the family room. For Hank, instruction took place either at a table in the kitchen or at a table in an instructional room. For

Garret, instruction took place in the living room where he either sat in a recliner chair or couch with a tray table and a laptop computer.

Materials

  Intervention materials. Parents supplied the computer or tablet with internet access and camera, as well as the portable device with internet and camera (e.g., cell phone, tablet, laptop) that were used by the child, if needed to complete assignments, and parent respectively. Independent instructional materials were supplied by parents, consistent with the child's current homeschool curriculum (Dustin and Hank) or supplied by the school, consistent with currently assigned homework (Garrett). The intervention was implemented in one subject area for which parents reported their child was most frequently off-task: social studies instruction for Dustin, math instruction for Hank, and English homework for Garret.

  The researcher provided the following materials: (a) stand-alone recording device (i.e., small laptop computer); (b) list of on-task behaviors (Appendix F); (c) paper for writing questions; (d) writing utensil; (e) random interval timer (i.e., MotivAider®); (f) on-task self-monitoring sheets for child (Appendix G); and (g) on-task recording sheets for parent (Appendix H). In addition, the data collectors had a procedural fidelity checklist (Appendix I) and on-task data sheet (Appendix J).

  Preferred items. Preferred items used as potential reinforcers were discussed with parents prior to intervention implementation to determine what was most feasible for each family (e.g., number of items for preference assessment, types of items, restricted access throughout the day, length of reinforcement interval). Parents were asked to nominate three to five preferred items or activities that were likely to serve as reinforcers. Efforts were made to control access to preferred items outside of intervention sessions to increase the effectiveness of each stimulus as a

reinforcer. Laminated picture cards representing the items selected by the parent were developed by the researcher to maintain consistency of stimulus presentations across items. Parents employed these pictures cards when conducting the preference assessment prior to each intervention session. Preference assessments have been described as a proxy measure for reinforcer efficacy in applied contexts (DeLeon, Frank, Gregory, & Allman, 2009).

For Dustin, preferred items and activities included his tablet, video game console, watching a movie, playing in the backyard, or building in his workshop. Hank's preferred items included his skateboard, cars with ramp, playing cards, art supplies, and going for a walk in the neighborhood. For Garrett, preferred materials included his tablet, handheld video game system, video game console, playing in the backyard, and crossword puzzles.

Response Definitions and Recording Procedures

On-task behavior was recorded by the researcher from the video-recordings using 10 s momentary time sampling. Data were collected each time instruction was provided in the target content area. For each interval, the researcher marked whether the child was engaging in each on-task behavior (+) or not engaging in the on-task behavior (-) on a data sheet. Percent of intervals with on-task behavior for each session was calculated by dividing the number of intervals in which the participant appropriately engaged in that behavior by the total number of intervals. An overall percentage of intervals on-task was calculated by dividing the number of intervals in which the participant appropriately engaged in all of the on-task behaviors by the total number of intervals.

The on-task behavior definition was adapted from Callahan and Rademacher (1999) and Legge, DeBar, and Alber-Morgan (2010). This operational definition served as a template that was modified for each participant following initial discussion with parents on appropriate

behaviors desired for independent work completion. The on-task definition was summarized using age-appropriate language and printed for each participant. For Dustin, on-task was defined as: (a) sitting in seat; (b) eyes oriented toward instructional materials (e.g., computer, worksheet); and (c) manipulating appropriate instructional materials, as designed (e.g., typing with keyboard, writing in notebook) without engaging in disruptive behavior (e.g., cursing, vocalizations above conversational volume, hitting materials). His student on-task sheet read, "ON-TASK MEANS: (1) I'm sitting in my seat, (2) I'm looking at my materials, (3) I'm only touching things related to my work, and (4) I'm doing my work without cursing, yelling, or hitting anything." For Hank, on-task was defined as: (a) eyes oriented toward instructional materials (e.g., computer, textbook, worksheet); (b) manipulating appropriate instructional materials, as designed (e.g., typing with keyboard, writing in notebook); and (c) working without engaging in disruptive behaviors (i.e., cursing, vocalizations above a conversational volume, destroying materials, self-injurious behavior). His student on-task sheet read, "ON-TASK MEANS: (1) I'm looking at my materials, (2) I'm only touching my work, (3) I'm doing my work without cursing or yelling, and (4) I'm doing my work without hitting any object or myself." For Garret, on-task was defined as: (a) sitting in seat; (b) eyes oriented toward instructional materials (e.g., computer, textbook, worksheet); and (c) manipulating appropriate instructional materials, as designed (e.g., typing with keyboard, writing in notebook). His student on-task sheet read, "ON-TASK MEANS: (1) I'm sitting in my seat, (2) I'm looking at my materials, and (3) I'm doing my work."

Experimental Design

A single case A-B-A-B withdrawal design was employed across three participants to evaluate the effectiveness of the intervention on percentage of intervals scored as on-task.

Visual analysis methods were modified to incorporate a mechanism to control for Type I error when analyzing data from response-guided procedures (Ferron & Jones, 2006) in order to increase both the internal validity and scientific credibility of this single-case design study (Kratochwill & Levin, 2010).

Prior to the start of data collection, a specific data analyst and interventionist were designated. The primary investigator served as the interventionist who was responsible for participant recruitment, intervention planning and implementation, data collection during baseline and treatment phases, and graphing data. The designated data analyst was a doctoral level board certified behavior analysist with over 20 years of experience implementing behavior analytic interventions and analyzing data. The data analyst was responsible for determining after each observation whether data were stable and sufficiently clear for a phase change to occur. When randomization occurred, the data analyst was blind to whether data points corresponded to baseline or treatment. The data analyst was asked to determine whether the randomly determined sections of the graphed data corresponded to baseline or treatment phases. The probability of determining correct baseline and treatment assignments if the intervention had no effect was computed and Type I error controlled. If there was a large treatment effect, the data analyst should have been able to correctly identify baseline and treatment assignments. In the event that there was a moderate effect of treatment, the data analyst had the opportunity to extend phases until the data pattern became more clear, thereby increasing the likelihood of correctly identifying baseline and treatment assignments (Ferron & Jones, 2006; Ferron & Levin, 2014).

Procedures

An A-B-A-B design was used to evaluate the effect of an intervention package that included self-monitoring and self-evaluation components of on-task behavior during home instruction (Callahan & Rademacher, 1999; Rhode et al., 1983; Sainato et al., 1990). Following the first baseline condition and prior to the first session of intervention, self-evaluation training was conducted with participants and parent training was conducted with participants' parents. Across both baseline and intervention sessions, parents were asked to provide the equivalent of more than 15 min of independent instructional materials consistent with their child's academic level.

Baseline. Baseline data of each of the on-task behaviors were collected while each child completed independent home instruction in the target subject during 15-min work sessions. Length of sessions was determined following discussions with parents and observations of independent work sessions prior to the commencement of baseline. The video camera was activated prior to the start of each baseline session. For Dustin and Hank, each parent was asked to respond as they typically would during independent instruction. Garrett's caregiver was asked to have him complete homework provided by his school and to respond as she typically would during homework completion.

Self-evaluation training. For each participant, the author reviewed baseline videotapes and created clips of examples and non-examples of on-task behavior that could be used in instruction. All baseline videos contained several examples and non-examples of each on-task behavior, such that recording additional clips of a model child engaging in these behaviors was not necessary. Following the completion of baseline data collection, instructional sessions were conducted with each child with the parent present to observe training sessions. First, the author

introduced each on-task behavior, providing descriptive examples and non-examples of each behavior and explained how to differentiate between meeting the criterion and not meeting the criterion. Next, the primary investigator explained the purpose of self-monitoring, introduced the self-monitoring recording sheet, and explained how the student would complete the sheet. The interventionist then showed the child a brief video segment of himself that represented examples and non-examples of each on-task behavior. The interventionist asked the child to identify whether he was on-task in that segment. Correct responses resulted in specific verbal praise (e.g., "That's right; you did a great job staying in your seat"). Incorrect responses resulted in specific feedback on why he did or did not meet the on-task criterion in the segment (e.g., "You were looking at the ceiling instead of at the instructional video on your screen, so you wouldn't be scored as looking at your materials"). Instructional sessions, consisting of three examples and three non-examples of each on-task behavior, continued until the child responded correctly to 90% of trials across two consecutive sessions (Shogren, Lang, Machalicek, Rispoli, & O'Reilly, 2010).

Parent training. Following the completion of baseline, the author trained each parent in the intervention procedures. The author explained intervention and data collection procedures to the parent and modeled implementation of the procedures. The importance of self-monitoring was discussed and examples and non-examples of each on-task behavior were presented. Parents practiced implementing intervention procedures with the researcher until they reached 100% correct implementation across two consecutive practice sessions. Specific feedback was provided after each practice session. Each parent also practiced scoring their child's target on-task behaviors from video clips of their child during baseline until they achieved 80% interobserver agreement across two sessions prior to implementing the intervention.

SM Intervention. Prior to the start of each intervention session, the parent initiated a live video call (i.e., Google hangout) between the portable device with internet and the child's computer or tablet. The camera was visible on the parent's device, but only audio was available to the child. Parents were instructed to crease a quiet workspace with restricted access to leisure items. The child was seated at a table and rules for on-task behavior were displayed. Paper for writing questions was made available to provide an alternative behavior to calling out to caregivers with questions (i.e., an off-task behavior). After initiating the video call, the parent conducted a preference assessment by presenting the laminated picture cards to the child and asking the child, "What do you want to work for?" The child signaled a choice by either touching the card, picking up the card, pointing to the card, or stating the name of the item/activity on the card. If the child did not make a selection within 10 s, the parent cleared the field and represented the array and task direction. If no selection was made after an additional 10 s, the caregiver randomly selected a preferred item/activity for the child. Not making a selection only occurred for Dustin prior to two sessions.

After the preference assessment, the parent reminded the child of the intervention procedures using terminology similar to the following:

> "Now it's time to do some work by yourself. I'm going to watch you from the camera on my [phone, ipad, etc]. I'll be able to see you and talk to you, but you won't be able to see me. At certain times, I'm going to check whether you're "on task" which means (a) sitting in your seat, (b) looking at your work, and (c) doing your work. In case you forget, those rules are written here [*Point to rules*]. When you're finished working, I will ask you to mark on your sheet whether you were on-task, just like you practiced. I'm also going to rate whether you were on-task. For each of the on-task rules you follow, you'll get [preferred activity/item] for [number of minutes] when you're finished working. If you follow the rules and your rating matches mine, you'll get [preferred activity/item] for an extra [number of minutes]. If you have questions that can wait, you can write them down on this paper [*Point to question paper*] and I'll answer them when you're finished. If you get stuck, you can ask me to come in to help you. Do you have any questions now?"

After delivering the instructions, the parent left the room and set the interval timer (i.e.,

MotivAider®) to vibrate on a variable interval (VI) 3 min schedule (i.e., 5 times per 15 minute

session). When the timer vibrated, the parent looked at the camera on the portable device and

momentarily observed the child. The parent did not provide any feedback or record any

information following each observation. When not conducting a brief observation, the parent

was able to engage in tasks of their choice.

If the child did not finish the task within the allotted time period (i.e., 15 min), the session

was terminated and self-monitoring and self-evaluation procedures followed. The task was then

continued during the next interval. If the child completed the task prior to the elapsed interval,

the parent vocally prompted the child to continue working on a specific assignment.

At the end of the work interval, the parent returned to the room in which the child was

working and asked the child to complete the self-monitoring data sheet. This data sheet included

each of the on-task rules on a separate line (e.g., one line for sitting in seat, one for looking at

materials, and one for doing work). For each behavior, a 4-point Likert scale was listed with a

number on a number line, visual depiction of time, and written description (e.g., "1 = None of the

time to just a little of the time"). The parent also completed an on-task rating sheet with the

same criteria based on observations of the child. Then, the parent and child compared their on-

task ratings to evaluate whether they agreed and the parent briefly explained any discrepancies in

rating. For each on-task rule followed, per the parent's evaluation, the child earned access to the

preferred item/activity for a predetermined length of time (e.g., each criterion met = 5 minutes of

tablet time). If the child's self-monitoring sheet matched that of the parent, he earned an

additional predetermined number of minutes with the preferred item/activity (e.g., 5 minutes of

tablet time). If the child did not meet any of the contingencies, but the data sheet matched that of

the parent, the parent delivered verbal praise for accurate self-monitoring. If none of the

contingencies were met, the child received a break of a predetermined length, but none of the

preferred items/activities were made available. After completing the evaluation form, the parent

answered any questions the child wrote down.

Maintenance. Maintenance probes were collected three weeks post-intervention to

determine durability of intervention effects. Probes were conducted by parents in an identical

manner to intervention implementation.

Masked visual analysis. After five data points were collected in each phase, the data

analyst visually analyzed the data for level, trend, and variability in the data. In baseline, the

data analyst determined whether there was a stable level or contratherapeutic trend in the data

and informed the interventionist whether intervention could be implemented. Data points

collected up to this point were demarcated as having occurred during baseline. The

interventionist then flipped a coin as a means of determining randomly whether to collect another

baseline data point or to begin implementing intervention. The data analyst was not informed of

whether the data point was collected in baseline or intervention, but rather was asked to visually

analyze the data point(s) to determine whether they were collected under the baseline or

intervention condition. If the data analyst could not determine whether the data corresponded to

baseline or treatment, the interventionist collected another blind data point under the same

condition. This process was repeated until the data analyst could determine whether the data

points represented observations that were a continuation of baseline or the start of intervention.

If the data were collected in the baseline condition, the data analyst instructed the interventionist

to implement intervention and a minimum of five intervention sessions were conducted. If the

data were collected in the intervention condition, the interventionist collected the remaining number of data points needed to ensure five intervention sessions (Ferron & Levin, 2014).

In treatment, if the data analyst concluded that there was an intervention effect, the interventionist flipped a coin to determine whether the next session would be in baseline or treatment and did not reveal whether the next session would be baseline or treatment to the data analyst. Intervention was labeled and additional data points were demarcated with a question mark. Observations were collected until the data analyst could clearly identify whether the additional data points corresponded to baseline or treatment. If the data analyst concluded that data were a continuation of treatment, he instructed the interventionist to return to baseline and collect five data points. If the data analyst concluded that the data points corresponded to a return to baseline, the data analyst instructed the interventionist to continue collecting data until five data points were collected in baseline. The randomization and decision making procedures continued in the same manner (Ferron & Levin, 2014).

At no point did the interventionist determine that on-task behavior did not improve when intervention was introduced. As such, no decisions to alter the intervention procedures were made and masked visual analysis procedures were continued throughout the study.

Measurement and Reliability

Procedural fidelity. The researcher was present in the home for a minimum of 36% of sessions to assess parents' procedural fidelity and provide immediate and specific feedback. Percentage of steps correctly implemented was calculated as a measure of procedural fidelity. The researcher was present for 38.71% of Dustin's baseline and intervention sessions, with a mean percentage of steps implemented correctly of 98.92% (range: 84.21-100%). The parent completed the procedural fidelity checklist following each session, with a mean percent

agreement with the researcher of 99.52% (range: 95.65-100%). For Hank, the researcher was present for 90.90% of baseline and intervention sessions with a mean percentage of steps implemented correctly of 97.52% (range: 89.47-100%). The mean percent agreement was 99.35% (94.12-100%). For Garrett, the researcher was present for 93.33% of baseline and intervention sessions with a mean percentage of steps implemented correctly of 96.04% (range: 88.89-100%). Percent agreement with the caregiver was 100%.

Interobserver agreement. An undergraduate majoring in psychology was trained by the researcher in the data collection system to 90% accuracy across three sessions, using practice videotapes. The second observer independently scored on-task behavior during no fewer than 40% of sessions, across all phases, to determine interobserver agreement (IOA). IOA data were collected during 42.42% of sessions for Dustin, 45.16% of sessions for Hank, and 50.00% of sessions for Garrett. IOA was calculated on an interval-by-interval basis by dividing the number of agreements (occurrences and nonoccurrences) by the total number of intervals and multiplying by 100%. IOA was 93.43% (range: 92.72 to 94.20%) for Dustin, 98.16% (range: 95.19 to 100%) for Hank, and 96.56% (range: 95.65 to 98.19%) for Garrett.

Social Validity

To assess acceptability of the intervention, parents who were involved in intervention implementation completed a modified version of the Intervention Rating Profile (IRP-15; Martens & Witt, 1983) both immediately prior to intervention and after the final day of intervention (Noell et al., 2005). The IRP-15 is a 15-item, one-factor Likert scale that measures teacher perception of the appropriateness of intervention procedures, acceptability, fairness, and potential intervention effects. Research indicates that the IRP-15 has satisfactory internal consistency ($\alpha = .98$) and teachers' scores adequately discriminate between intervention

procedures (Martens, Witt, Elliott, & Darveaux, 1985; Witt & Martens, 1983). Items were modified so that semantics of teacher and classroom were applicable to a homeschool environment or for homework completion. See Appendix K for pre-intervention social validity questionnaire.

Additional researcher-developed social validity questions pertaining to outcomes of this intervention were included in the post-intervention survey. Although not a direct outcome measure in this study, other studies with individuals with ASD indicate an increase in productivity, as measured by more efficient task completion, with an increase in on-task behavior (e.g., Watanabe & Sturmey, 2003) and collateral increase in academic accuracy (e.g., Holifield et al., 2010). As such, parents' perception of change in productivity and academic accuracy were assessed on the social validity questionnaire. The post-intervention social validity measures appear in Appendix L.

To assess student acceptability of the intervention, students completed a modified version of the Children's Intervention Rating Profile (CIRP; Witt & Elliot, 1985) after the last intervention session. The researcher read each item of the CIRP to the students for them to complete. The CIRP is a seven-item, one-factor Likert scale at a fifth-grade readability level, with items related to the child's perception of fairness, acceptability, and potential effects of an intervention. Research indicates that the CIRP demonstrates adequate internal consistency and discriminates between intervention procedures (Elliott, Turco, & Gresham, 1987; Elliott, Witt, Galvin, & Moe, 1986). The item assessing whether the intervention may cause problems with the child's friends was omitted from the questionnaire as it is not applicable to independent home instruction. Use of the word "school" was modified to apply to homeschooling or homework completion. The child social validity measure appears in Appendix M.

Data Analysis

  Intervention effect. Visual analysis was conducted to compare the level, trend, and stability of data points between phases, following guidelines established by the U.S. Department of Education, What Works Clearinghouse (Kratochwill et al., 2010). Percent increase and a Nonoverlap of All Pairs (NAP) score of on-task behavior were calculated between the first baseline and the final treatment phase. Percent increase was calculated for each participant by (a) subtracting the mean of the first baseline from the mean of the final treatment phase, (b) dividing by the mean of the first baseline phase, and (c) multiplying by 100. Next, a percent increase was calculated across all three participants as a means of quantifying intervention effect. For participants who had more than five data points in the final treatment phase, percent increase was also calculated based on the last five treatment data points.

  In order to calculate a NAP score for each participant, a graph displaying the first baseline phase (A) and final treatment phase (B) was created. The number of nonoverlapping pairs was determined by counting each overlapping pair as one overlap and each pair of data points with equal percentage of time on-task, as one half of an overlap. A NAP score was calculated by dividing the number of nonoverlapping pairs by the total number of pairs (i.e., number of data points in A multiplied by the number of data points in B).

$$\text{NAP score} = \text{nonoverlap} / \text{total pairs}$$

  An average NAP score was calculated across participants and converted to a Cohen's *d* effect size, which provided a standardized measure of the magnitude of the relationship between baseline and treatment (Parker & Vannest, 2009). The equation used to convert NAP to Cohen's *d* is presented below:

$$Cohen's\ d = 3.464 * (1-\sqrt{(1-NAP)}/.5)$$

Type I error control. The data analyst was asked to observe each participant's graphed data with no phase changes depicted and five unmarked sections and to assign each segment to baseline or treatment. Because each segment has two possible assignments, five assignments were needed to ensure the possibility of a *p*-value < .05 (i.e., $2^5 = 32$, such that if the data analyst was correct, the *p*-value was 1/32 = .03125). If assignments were made randomly, each of the 32 assignments had an equal chance of being made and the probability that the correct assignment was made was 1/32 or a 1 in 32 chance of incorrectly concluding that there was an intervention effect. Therefore, if the data analyst correctly identified baseline and treatment segments for one participant, the inference could be made that the treatment had an effect (Ferron & Jones, 2006). Due to the need for five segments, it was possible for the final phase to be randomized to baseline. When this occurred, the interventionist instructed the caregiver to conduct a final intervention session to ensure that intervention effects reemerged with the reinstatement of intervention contingencies, prior to completing participation in the study.

Accuracy of SM. Child self-monitoring of each on-task component on the SM data sheet was compared to parent evaluation of each on-task component per session to determine the child's accuracy of self-monitoring. Parent-child agreement was calculated by dividing the number of agreements (i.e., same rating) by the total number of on-task components on the SM data sheet and multiplying by 100%. Agreement was also calculated by dividing the number of agreements (i.e., exact or within one point) by the total number of on-task components rated and multiplying by 100%.

Results

On-Task

Dustin was on-task a mean of 47.23% (range: 40%-56.88%) of intervals in baseline. In the final treatment phase, he was on-task for a mean 68.28% of intervals (range: 66.33%-71.11%), corresponding to a 30.84% increase in on-task behavior from baseline. No data points overlapped between phases, yielding a NAP score of 1.00. During the first intervention phase, Dustin was on-task an average of 74.77% of intervals (range: 54.44%-85.56%), representing a 36.83% increase from baseline. When the intervention was subsequently withdrawn, he was on-task for a mean of 51.34% (36.11%-62.12%) of intervals. The change in percentage of intervals on-task from the second baseline to the treatment phase immediately following represented a 24.81% increase. The final baseline phase, implemented for the purposes of masked visual analysis, resulted in a 51.20% decrease in on-task behavior from the final treatment phase. Data are presented in Figure 3.1 in masked visual analysis and traditional visual analysis format. The data analyst correctly identified all five unlabeled segments as corresponding to baseline or treatment, signifying a clear intervention effect ($p = .03$) which is significant at the $\alpha = .05$ level determined *a priori*.

Hank was on-task a mean of 22.12% (range: 10%-43.14%) of intervals in baseline. In the final treatment phase, he was on-task for a mean 76.60% of intervals (range: 72.22%-82.61%), corresponding to a 71.14% increase in on-task behavior from baseline. No data points overlapped between phases, for a NAP score of 1.00. In the first intervention phase, Hank was on-task for a mean of 61.39% of intervals (range: 46.74%-76.34%), representing a 63.99% increase from baseline. During the return to baseline, he was on-task for a mean of 7.73% of intervals (range: 2.22%-11.11%). Between the second baseline and treatment phase immediately

Figure 3.1.

Masked Visual Analysis Data (top panel) and Traditional Visual Analysis Data (bottom panel)

for Dustin.
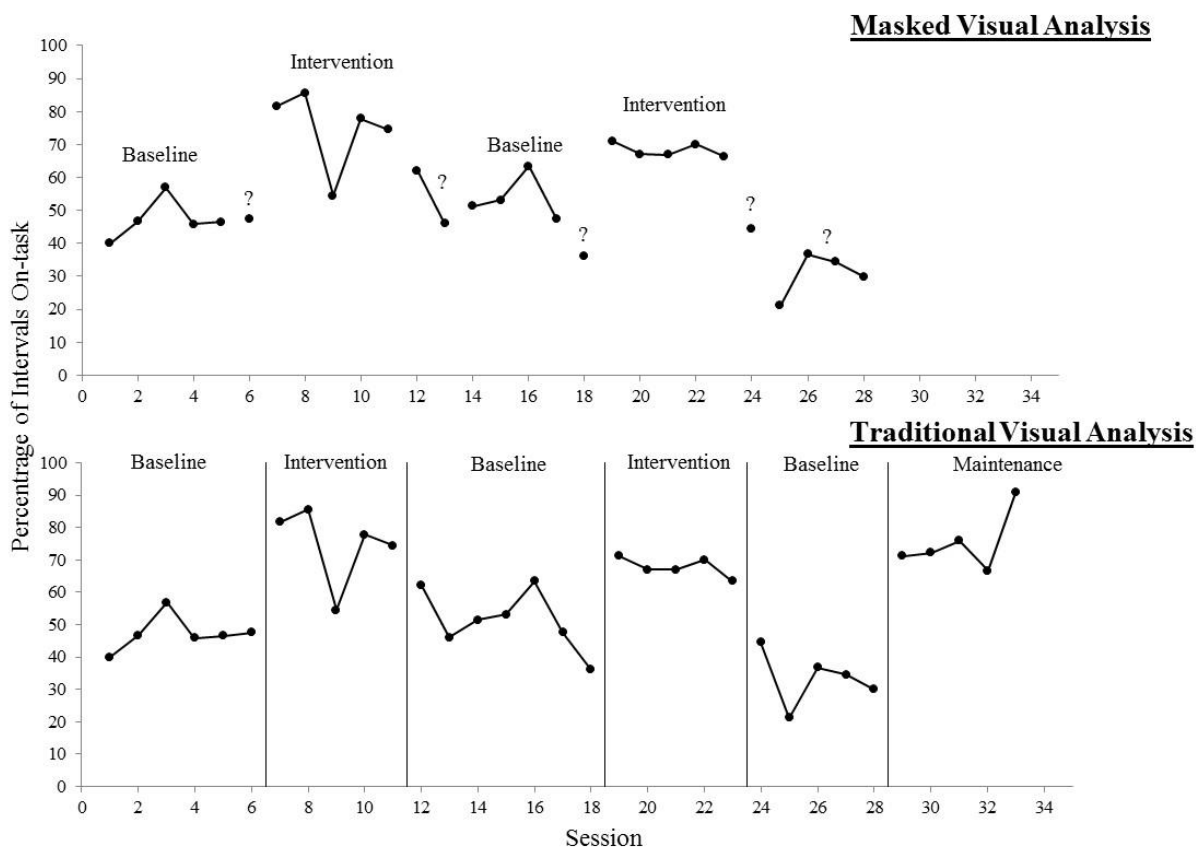
Note. Question marks denote sessions where randomization was introduced (i.e., data analyst was blind to condition) and where the data analyst was required to identify whether data points correspond to baseline or treatment.

following, there was an 89.91% increase in on-task behavior. The final baseline phase, implemented for the purposes of masked visual analysis resulted in a 96.78% decrease from the final treatment phase. See Figure 3.2 for masked visual analysis data and traditional visual analysis data. The data analyst correctly identified whether all five unlabeled segments corresponded to baseline or treatment, indicating a clear intervention effect ($p = .03$)

Garrett was on-task a mean of 18.15% (range: 6.6%-43.75%) of intervals in baseline. In the final treatment phase, he was on-task for a mean 87.75% of intervals (range: 75.56%-97.8%), corresponding to a 79.32% increase in on-task behavior from baseline. When comparing the last five data points in baseline and the final five data points in treatment, the baseline mean was 13.02% and final treatment was 92.76%, corresponding to an 85.96% increase in on-task behavior. No data points overlapped between phases, for a NAP score of 1.00. In the first treatment phase, Garrett was on-task for 80.80% of intervals (range: 69.23%-90.11%), equaling a 77.54% increase in intervals on-task. During the return to baseline, he was on-task for a mean of 14.39% of intervals (range: 9.89%-18.68%). The difference between the second baseline and treatment phase immediately following, represented an 83.60% increase. See Figure 3.3 for masked visual analysis data and traditional visual analysis data. The data analyst accurately identified each of the five unlabeled segments as corresponding to baseline or treatment, signifying a clear intervention effect ($p = .03$). Percent increase in on-task behavior across all three participants was 60.67%. When analyzing only the last five data points in the final treatment phase, the mean percent increase was 62.25%. The NAP score across all three participants was 1.00, which yields a Cohen's d value of 3.46. Summary data for all participants are presented in Table 3.1.

Figure 3.2.

Masked Visual Analysis Data (top panel) and Traditional Visual Analysis Data (bottom panel)

for Hank.
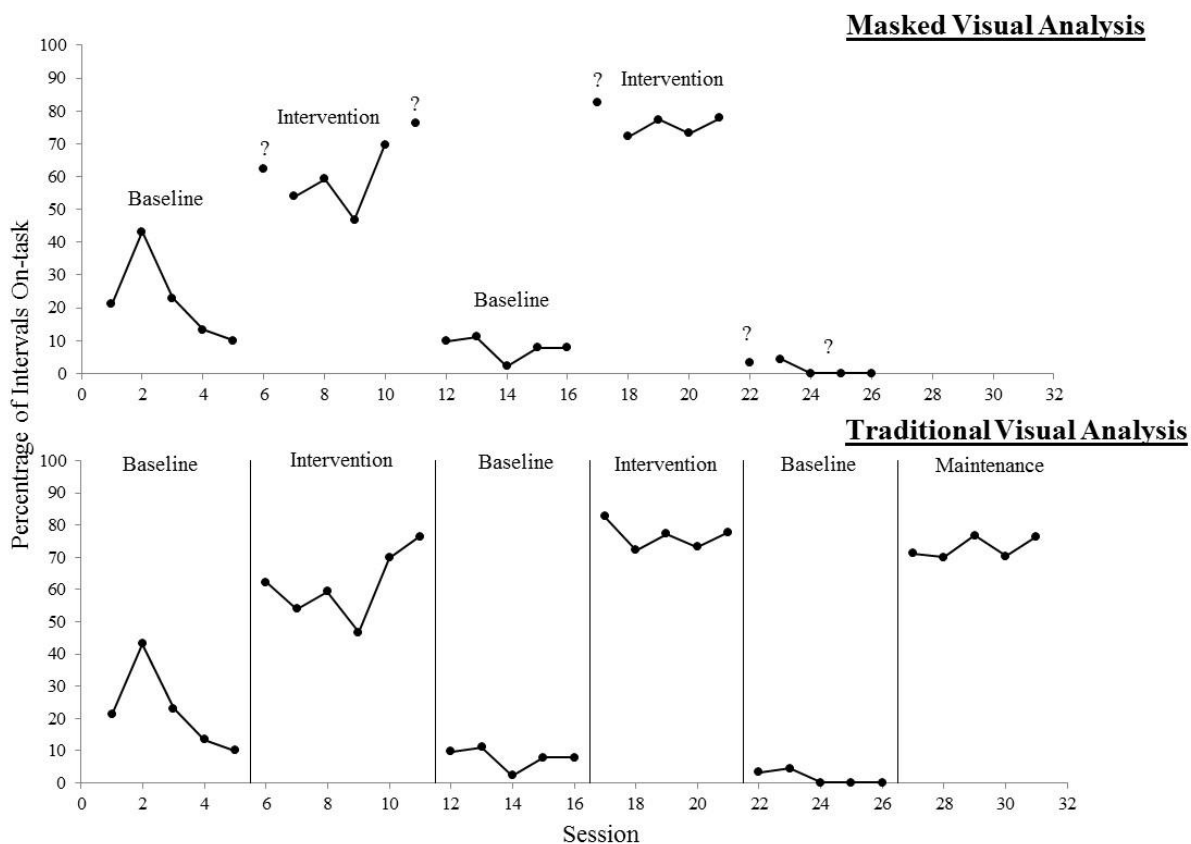
Note. Question marks denote sessions where randomization was introduced (i.e., data analyst was blind to condition) and where the data analyst was required to identify whether data points correspond to baseline or treatment.

Figure 3.3.

Masked Visual Analysis Data (top panel) and Traditional Visual Analysis Data (bottom panel)

for Garrett.
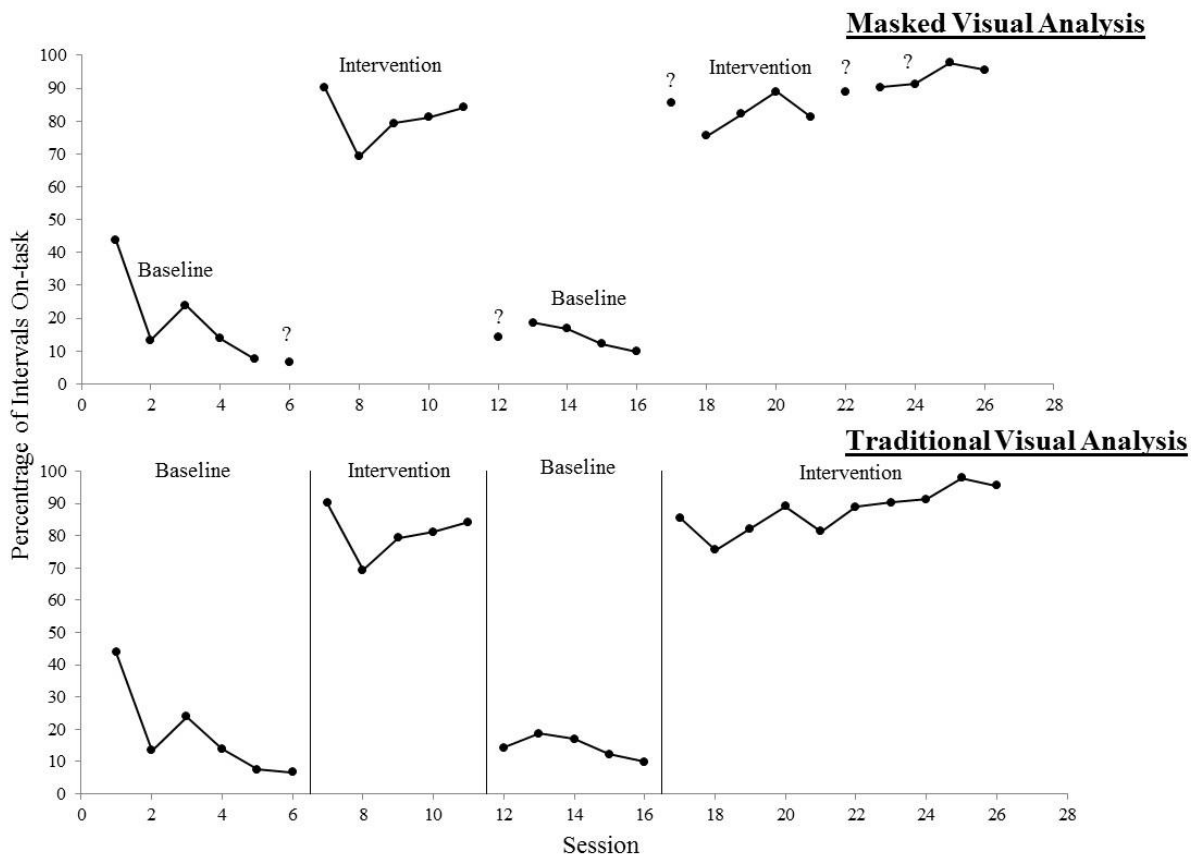
Note. Question marks denote sessions where randomization was introduced (i.e., data analyst was blind to condition) and where the data analyst was required to identify whether data points correspond to baseline or treatment.

Table 3.1.

Percentage of Intervals On-task across Participants

Participant	BL Mean	Final Tx Mean	Final Tx Mean (Last 5 sessions)	% Increase	% Increase (Last 5 sessions)	NAP
Dustin	47.23	68.28	68.28	30.84	30.84	1.00
Hank	22.12	76.60	76.60	71.14	71.14	1.00
Garrett	18.15	87.75	92.76	79.32	85.96	1.00
			Mean	60.67	62.25	1.00
			Cohen's *d*			3.46

Note. BL = baseline; Tx = Treatment; NAP = Nonoverlap of all pairs

Parent-Child Agreement

For Dustin, agreement between his self-ratings in each of the five on-task areas with his mother's rating ranged from 40% to 100% (*M* = 94.40%). His rating either agreed or came within one point of his caregiver's 96.80% of the time. Hank's agreement ranged from 25% to 100% (*M* = 77.78%). Hank agreed or was within one point of his caregiver on 91.67% of SM ratings. Garrett's self-evaluation correspondence ranged from 75% to 100% (*M* = 97.92%). The one instance that Garret's rating did not correspond, he rated himself within one point of the observer, thus agreeing or coming within one point of the caregiver's rating 100% of the time. The mean exact agreement across participants equaled 90.03%. The mean agreement within one point of the caregiver was 96.16%.

Maintenance

Intervention effects maintained following intervention for the two participants for whom maintenance data were available. During the maintenance phase, Dustin was on-task a mean of 75.34% of intervals (range: 66.67%-90.80%), representing a 37.31% increase from the initial baseline. These data represent a 10.16% increase in on-task behavior from the final treatment phase. Hank was on-task a mean of 72.89% of intervals (range: 70% - 76.67%) during the maintenance phase, which corresponds to a 69.67% increase from the first baseline phase. Maintenance data were collected for Garrett; however, they were unavailable to the researcher for inclusion in this analysis.

Social Validity

Prior to implementing the intervention, all parents rated the intervention as high in acceptability. Across the 15 items, Dustin's mother provided an average score of 5.73 of 6 across the 15 items. She rated all items as Strongly Agree, Agree, or Somewhat Agree. The

items not rated as Strongly Agree included: "This intervention should prove effective in changing my child's problem behavior" (Agree), "This intervention is consistent with those I have used in a homeschool setting" (Agree), and "This intervention would be appropriate for a variety of children" (Slightly Agree). Hanks's mother provided an average score of 5.13 across the 15 items. All items were rated as Strongly Agree, Agree, or Slightly Agree. Items rated as Slightly Agree included: "Most homeschool teachers would find this intervention appropriate for behavior problems in addition to the one described," "This intervention would not result in negative side effects for my child," and "This intervention is consistent with those I have used in a homeschool setting." Garrett's caregiver provided an average score of 5.33. She endorsed Strongly Agree, Agree, and Slightly Agree on all items. The only items rated as Slightly Agree were: "This intervention is consistent with those I have used during homework completion" and "This intervention would be appropriate for a variety of children."

After implementing the intervention, Dustin's mother rated all items as a 6, indicating Strongly Agree. She rated all additional items as Strongly Agree, indicating that Dustin was more on-task as a result of the intervention in the target area and in other content areas, completed independent work quicker, was more accurate, and that she was able to engage in other tasks while he completed independent work. Hank's mother provided a rating of 5.67. She either agreed or strongly agreed that the intervention had increased on-task time, efficiency, accuracy, and allowed her to complete tasks while Hank worked independently. Post-intervention, Garrett's caregiver endorsed an overall rating of 5.53. She strongly agreed that the intervention had increased Garrett's on-task behavior, academic efficiency, and accuracy. She also endorsed that she was able to complete other tasks while Garrett completed his homework.

On the CIRP, Dustin's average rating across the six items was 3.92 on a six-item Likert Scale. Hank's average rating was 3.83, and Garrett's average rating was 4.67. All three participants rated all items as a 3 or higher on the 6-point Likert scale, indicating that they generally thought the intervention was fair, liked the intervention, thought it would help them to do better in their schoolwork, and thought that it would be good to use with other children. All three noted that they did not think that the caregiver was too harsh during the intervention.

Discussion

Despite an increase in the number of homeschooled children with ASD over the past decade and a reported lack of evidence-based practices implemented, research with this population is lacking. Parents of homeschooled children with ASD report that they have difficulty getting their children to maintain attention to assigned work, thus requiring them to constantly attend to their child and preventing them from conducting work of their own and/or attending to the needs of their other children (Simmons, 2014). The current study was the first to address this concern as well as the first to examine the effects of an intervention targeting the behavior of homeschooled children with ASD. Findings from this study also extend upon the self-management literature as it is the first self-evaluation study conducted with children with ASD in the home setting and implemented by their parents. Results are promising, as visual analyses of the three participants' data indicate that the parent-implemented self-evaluation intervention was an effective strategy for increasing the children's on-task behavior during their homeschool instruction and/or homework completion time. Visual analyses are supported by NAP scores of 1.00 for each participant and an overall Cohen's d value of 3.46 which exceeds the 2.5 value signifying a large effect for single-case designs (Harrington & Velicer, 2015). Finally, evidence of the effectiveness of the intervention for the three participants is supported by

the fact that when masked visual analysis was applied to five unlabled graph segments for each participant, the blind visual analyst correctly assigned the data points to the corresponding condition. Of note, for Dustin, the data analyst requested an additional data point in the second baseline in order to correctly identify whether the data points corresponded to baseline or treatment, indicating that baseline rates of problem behavior were not immediately observed when the intervention was withdrawn. Dustin may have acquired new skills during treatment that he continued to apply when the contingencies were withdrawn. Alternatively, his responding in the first session following treatment may have persisted until he contacted extinction for on-task behavior following the session, leading to resurgence of off-task behavior in subsequent sessions.

A number of factors likely contribute to the effectiveness of the intervention package implemented with the three participants in this study. For example, parents were encouraged to create a specific workspace where only instruction occurred in order to minimize distractions inherent in the home environment and to assist their children in discrimination of work contingencies. Furthermore, the intervention involved: (a) a clear set of contingencies, (b) rules for on-task behavior continuously displayed, (c) examples and nonexamples of the various on-task behaviors, and (d) explicit instructions regarding how on-task and self-monitoring behaviors could access reinforcement. These components were incorporated into the intervention as research suggest that individuals with developmental disabilities may be unaware of the topographies or frequency of their own behaviors (Witt, Elliott, & Gresham, 1988). Thus the intention of the intervention components was to increase participants' awareness of the reinforcement available for on-task behavior and of their own off-task behavior. Another intervention component which likely contributed to successful outcomes was having parents

nominate preferred activities and then allowing students to choose their incentive from those preferred items, thus increasing the probability that the items functioned as reinforcers for on-task behavior and accurate self-monitoring.

In addition to extending the SM and homeschool literature, this study demonstrated the potential usefulness of video technology in the implementation of behavioral interventions. The portable audio-video devices employed allowed the parents to leave their child's workspace so that they could engage in other tasks, while still maintaining the ability to observe their child. Thus, the technology helped to address a primary challenge of providing home education to individuals with ASD, which was the inability to accomplish other work in the home (Simmons, 2014). An additional advantage of the live video technology was that it enabled parents to leave the child's work setting so that their presence did not serve as a discriminative stimulus for on-task behavior, such that children were only on-task when the parent was in the room. The video also served the purpose of enabling the researcher to code child behavior, without having to be in the home during intervention implementation.

Another important finding of the current study was that fidelity of implementation data provide evidence of the feasibility of the SM intervention for homeschool parents as each parent implemented the intervention with high procedural fidelity ($M = 99.62\%$). High procedural fidelity was likely the result of employing tactics known to increase treatment integrity including: (a) socially valid intervention goals, (b) procedures that approximate and/or employ existing practices, (c) minimal time and effort requirement from the parent, and (d) the provision of performance feedback to assist the parent in recognizing errors in implementation (Dietrich, 1999; Noell et al., 2005, Witt, Martens, & Elliott, 1984). In line with these recommendations, the intervention package was developed to address a parent-identified behavior of importance

(i.e., on-task time), while subsequently increasing the amount of time parents were able to complete other tasks. Second, the intervention incorporated instructional materials that were already being used in the home environment and the researcher provided the necessary measurement tools. Finally, ongoing performance feedback was provided to parents as the researcher was present in the home for a majority of sessions to provide in vivo performance feedback. The researcher also checked in with the parent throughout each week.

Not only did parents implement the intervention with high fidelity, but they indicated satisfaction with the intervention procedures. Specifically, parents endorsed items on the social validity checklist indicating satisfaction with the intervention procedures and outcomes. In addition, children endorsed checklist items pertaining to satisfaction with intervention procedures.

An additional finding was that child and parent ratings of child on-task behavior were generally in high agreement. High concordance in rating is consistent with prior research suggesting accurate self-monitoring following behavioral skills training (Callahn & Rademacher, 1999, Rhode et al., 1983; Sainato et al., 1990). However, unlike prior research in which students' accuracy was compared to the accuracy of an observer who monitored student behavior continuously, parents in the current study only observed behavior on a variable interval schedule. The high correspondence in ratings suggest that the VI-3 min schedule of observation was sufficient for parents and children to produce similar ratings of child behavior.

Masked Visual Analysis

In addition to extending the SM and homeschooling literature, the current study extends the single-case design literature as a whole by providing evidence of the utility of using masked visual analysis procedures to assess the effects of intervention and to control for Type I error.

The use of masked visual analysis procedures in an applied research study provides a means by which researchers may increase the evidence supporting the robustness of treatment effects in single-case design research. In response-guided designs, researchers extend particular phases until the desired pattern is observed (e.g., stability in baseline). Researchers collect additional data following variable data, outliers, gradual, or delayed treatment effects (Ferron & Jones, 2006) rather than randomly assigning participants to conditions and determining when intervention should occur a priori (i.e., non-response guided design) as is common practice in group-design research. Research suggests that those analyzing non-response-guided data using visual analysis are overly likely to conclude that treatment effects were observed under certain conditions (Fisher, Kelly, & Lomas, 2003). Furthermore, even within response-guided designs, researchers may be biased in concluding whether an intervention effect was observed and different data analysts may render different conclusions following visual analysis of intervention data (Ferron & Jones, 2006). The author is unaware of any prior published research studies that have incorporated methods of controlling for Type I error for response-guided designs. The masked visual analysis procedures described in this study provide a bridge between the visual analysis perspective and the randomization test tradition that allows for both visual inspection of data and incorporation of randomization. In addition to extending visual analysis methodology, these procedures provide a summary statistic based on the probability of a blind data analyst correctly identifying treatment had there been no treatment effect. Overall, this methodology allowed the researchers to use response-guided procedures, control for Type I error rates, and avoid limitations of only reporting data as a summary statistic.

Limitations and Future Directions

Despite the need for evaluating implementation of interventions for homeschooled children with ASD, results should be interpreted in the context of potential limitations. Conducting research in a home environment poses a number of challenges. For the two homeschooled participants, parents provided the content of home instruction and, for the final participant, homework materials were provided by the school. The researcher requested that instructional materials be in the same content area and the same level of difficulty across sessions; however, no measures were taken to assess whether there was consistency in the content or difficulty across tasks. Both homeschool parents followed a grade level curriculum; thus, assignments were presumably targeted for a particular academic level as would be expected for the homework provided. It may be the case that particular assignments or modalities (e.g., reading content, answering multiple choice questions, or open-ended responses) were more preferred and corresponded to an increase in on-task behavior or that more difficult tasks corresponded to a decrease in on-task behavior. A further challenge of implementing the intervention during independent instruction was ensuring that the child had an adequate amount of work to last for the entirety of each session (15 min). Fortunately, students finished their work prior to the end of the 15-min session on only three occasions and parents immediately prompted completion of another task.

An additional limitation was that the researcher was present in the home for the majority of Hank's and Garrett's intervention sessions. The purpose of this study was not to assess the fidelity with which the parents could implement the intervention, but rather to evaluate the effects of the intervention package on on-task behavior when implemented by parents. As such, the researcher was often present in the home to ensure that the intervention was implemented so

as to facilitate completion of the study prior to the end of the school year. The researcher's presence may have served as a discriminative stimulus for implementation of the intervention by the parent. Thus, it is unclear if the same levels of fidelity of intervention implementation would have occurred and thus the same level of intervention effects had the caregivers implemented the intervention on their own accord. Dustin's caregiver was able to implement the intervention consistently and with high procedural fidelity despite the researcher being present for only 36% of sessions, suggesting that at least some caregivers can independently implement the SM intervention with minimal support. Furthermore, both Dustin and Hank's parents were able to implement the intervention without researcher support during the maintenance phase which occurred three weeks following the completion of intervention.

Despite the benefits of employing video technology for collecting data, the videos did not always capture the computer screen or the content of the paper on which students were working. As a result, observers could not always be certain of whether students were actually engaged in work. The parents did, however, check their child's work at the completion of each session and would likely have noted their child's failure to complete expected levels of work. Future studies might employ formal measures of work completion or possibly screen sharing technology so as to measure rate of work completion. Another challenge of using video technology was that, in scoring participants' orientation toward materials from videotapes, the researcher could not directly see the participants' eyes and the size of the instructional material could be relatively large (e.g., entire computer screen). This limitation is inherent in any on-task definition including orientation; however, additional measures such as work productivity may provide data to further support on-task behavior.

In summary, results of this study are important given the need for homeschooling parents to maintain appropriate child behavior during instructional time so as to ensure maximum benefits from homeschool instruction. Although it is likely that many of the interventions found to be effective in the school environment would also be effective within a homeschooling context, it is important that research validate their effectiveness. Teaching a child within the home presents a number of distractions specific to that setting (e.g., presence of family members and pets, free access to preferred items). Moreover, individuals who are homeschooled are likely to have a long history of reinforcement for off-task behavior outside of instructional time, which is likely to generalize to academic instruction considering the only discriminable difference between instructional vs. non-instructional time is the presence of instructional materials and the majority of children's time at home is spent outside of instruction. In contrast, in the school environment students are ideally spending more time within instruction and thus the reinforcement history should be greater for on-task behavior. Results of this study suggest that the self-evaluation intervention package employed allowed the children's behavior to discriminate between instructional and non-instructional time and at the same time provided parents with increased time for completing tasks of their own. Given the growing population of homeschooled children with ASD, the unique challenges associated with homeschooling, and the unique challenges associated with managing the behavior of children with ASD, it is critical that researchers continue to explore interventions to ensure that these children are receiving maximum benefit from homeschool instruction.

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CHAPTER 4

GENERAL DISCUSSION

Although there has seemingly been an increase in parents homeschooling children with

ASD in the past decade, to date, only Simmons (2014) systematically addressed reasons parents

choose to homeschool children with ASD and quantified the homeschooling experiences of this

group; however the study was limited by a small sample size in the state of Georgia. No study to

date has evaluated interventions for homeschooled children with ASD. These studies added to

the scant body of literature on homeschooling children with ASD by (a) extending the results of

Simmons (2014) with a larger sample from across the U.S.; (b) comparing the educational

experiences of homeschooled children and those children currently attending traditional school;

and (c) evaluating the effects of a parent-implemented intervention to address an identified

challenge to homeschooling children with ASD (i.e., on-task time during independent work

completion).

Study 1 collected data from parents of children with ASD from across the U.S. to further

evaluate the reasons parents choose to homeschool children with ASD and the amount of

evidence-based practice parents are implementing. Participants included 114 parents of children

with ASD, 61 parents who homeschool and 53 whose children attend traditional school from

across the U.S. (homeschool group = 24 states; traditional school group = 20 states).

Results from this nationally disseminated survey measure replicated the five reasons

parents choose to homeschool children with ASD (i.e., dissatisfaction with educational

placement, negative interactions with education professionals, social-emotional responses of

child to traditional school, safety of child, and stress placed on the family) presented by

Simmons (2014). Groups did not significantly differ in parent education level, parent training in

education, and parent training in ASD, suggesting that educational background and training do not increase the likelihood of parents homeschooling and that homeschool parents are no more likely to pursue such training than other parents of children with ASD. Furthermore, there was not a significant correlation between caregiver education level, training in education, or training related to ASD and the amount of evidence-based practice implemented. This finding seems counterintuitive and is particularly concerning given that practitioners might recommend increased training and awareness as a way to improve the evidence-based practice implemented. The majority of homeschool parents indicated that they could benefit from a parent training program. As such, it is imperative for educators to directly target increasing caregivers' knowledge of evidence-based practice for children with ASD and explicitly practice these skills in any education program implemented.

The reported educational experiences significantly differed between homeschool and traditional school groups. Follow-up tests identified significant differences in each of the five domains, with the traditional school group reporting greater satisfaction, more positive interactions, and fewer concerns regarding their child's safety and social-emotional functioning at school and the homeschool group reporting higher levels of stress related to the traditional education system. Overall, current homeschool programming was described as having significantly fewer components of evidence-based practice (e.g., structure of the educational environment, immediacy of consequences for problem behavior) than traditional school programming with minimal differences between groups in the extracurricular/social activities provided.

Study 2 built upon findings from Study 1 that evidence-based practice was lacking in homeschool environments for children with ASD, parents expressed that they could benefit from

parent training, and parent training needed to directly target increasing evidence-based practices. This study evaluated the effects of a parent-implemented self-management intervention with three children with ASD to increase on-task time during independent homeschool work and homework completion. The intervention was designed to address the socially valid concern raised by parents of increasing student on-task time during independent work completion (Simmons, 2014).

Results indicated that parents implemented intervention procedures with high fidelity (M = 98.92%), intervention led to increased on-task behavior across participants (NAP = 1.00 for all participants, M increase from baseline = 60.67%; Cohen's d = 3.46), results maintained post-intervention, parents and children rated procedures as high in social validity, and observation via live video technology resulted in high correspondence between parent and child ratings (M = 90.03%). This study extended the use of live video technology in the implementation of behavioral interventions and enabled parents to leave their child's work space, while maintaining the ability to observe their child and engage in other tasks.

Finally, in addition to extending the self-management and homeschooling literature, this study extends the single-case design literature as a whole by providing evidence of the utility of using masked visual analysis procedures to assess the effects of intervention and to control for false identification of an intervention effect (i.e., Type I error; Ferron & Jones, 2006; Ferron & Levin, 2014). The blind data analyst in this study correctly identified randomized baseline and treatment segments for each participant, yielding a significant probability (p = .03) of an intervention effect. The masked visual analysis procedures described in this study provide a bridge between the visual analysis perspective and the randomization test tradition that allows

for both visual inspection of data and incorporation of randomization to increase the internal validity and scientific credibility of this single-case study.

Together, the studies provide valuable information regarding the education of children with ASD. The outcomes of the studies have important implications for parents, teachers, and practitioners regarding the education of children with ASD, both within the traditional education system and within homeschool environments.

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APPENDIX A

Educational Experiences of Homeschooled Children with Autism Spectrum Disorder – Survey Measure

Note: Arrows denote question routing in the online version of the survey measure. Routing information (e.g., "If ≠ 0,"; "If Yes,") will not appear to the participant.

When answering these questions, please consider your child's *current* educational experience, unless otherwise specified.

Your answers will not be linked to you or your child. As such, please be as honest as possible - there are no right or wrong answers.

Because different children often have different experiences, even in the same school, please complete this survey for <u>one child</u>.

DEMOGRAPHIC INFORMATION

Please answer the following questions about your child:

- **What is your child's current age?** _____

- **What is your child's gender?**
    o Male
    o Female
    o Transgender

- **What race/ethnicity best describes your child?** *Please choose only one.*
    o American Indian or Alaskan Native
    o Asian/Pacific Islander
    o Black or African American
    o Hispanic American
    o White/Caucasian
    o Multiple ethnicity/Other (please specify) _____

- **Please check the diagnoses your child has received and fill in the age he/she was when diagnosed. If he/she has any additional diagnoses, please list those as well.**
    o Autistic Disorder   ____
    o Pervasive Developmental Disorder-Not Otherwise Specified   ____
    o Asperger's Disorder   ____
    o Childhood Disintegrative Disorder   ____

    o Rett Syndrome   ____

    o _____   ____

    o _____   ____

- **Who presented initial concern about an autism spectrum disorder (ASD)?** *Select all that apply.*
  - o Parent(s)
  - o Child's pediatrician
  - o Child's teacher(s)
  - o Extended family
  - o Friends
  - o Other _____

Please answer the following questions about yourself:

- **What is your relationship to your child?**
  - o Parent
  - o Foster parent
  - o Relative: _____
  - o Other: _____

- **What is your age?** _____

- **What is your gender?**
  - o Male
  - o Female
  - o Transgender

- **What race/ethnicity best describes you?** *Please choose only one.*
  - o American Indian or Alaskan Native
  - o Asian/Pacific Islander
  - o Black or African American
  - o Hispanic American
  - o White/Caucasian
  - o Multiple ethnicity/Other (please specify) _____

- **What is your marital status?**
  - o Divorced/Separated
  - o Married
  - o Single
  - o Other _____

- **In what state do you currently reside?** _____

- **Please select your highest level of education** (*For degrees not completed, please indicate the number of years completed in the blank provided*):
    - High school _____
    - Bachelors _____
    - Masters _____
    - PhD _____
    - MD _____
    - JD _____
    - Other _____

- **What is your approximate average yearly household income?**
    - $0 - $24,999
    - $25,000 - $49,999
    - $50,000 - $74,999
    - $75,000 - $99,999
    - $100,000 - $124,999
    - $125,000 - $149,999
    - $150,000 - $174,999
    - $175,000 - $199,999
    - $200,000 and up

- **How many other children do you have?** _____

- **How many of your other children currently live at home?** _____

- **How many other children do you have who are diagnosed with a disability?** _____

    - ➢ **If ≠ 0, What disabilities do your *other children* present with?** *Please list each child's age and diagnoses.*

    Age   Diagnoses
    ____   _____
    ____   _____
    ____   _____
    ____   _____
    ____   _____
    ____   _____

- **Do you have any formal training in education?**
    - Yes
    - No

> **If Yes, Please select <u>all</u> types of educational training you have received.** *Select all that apply.*
> - o Certified general education teacher
> - o Certified special education teacher
> - o Some university level education coursework
> - o Education workshop(s)/conference(s)
> - o Other _____

- **Have you received any training on working with children with ASD?**
  - o Yes
  - o No

> **If Yes, Please select all types of training you have received.** *Select all that apply*
> - o Formal degree
> - o Certification
> - o University level coursework
> - o Workshop(s)/Conference(s)
> - o Other _____

EDUCATIONAL BACKGROUND

- **Please select <u>all</u> of the factors that contributed to your decision to homeschool.** *Select all that apply.*
  - o Dissatisfaction with your child's educational program
  - o School's inability to manage your child's behavior
  - o Concern for your child's safety
  - o Concern for your child's health
  - o Your child's negative feelings towards school
  - o Confusion with the educational system
  - o Need to fight for services
  - o Negative interactions with education professionals
  - o Disruption in family routine
  - o Child was in legal trouble
  - o Recommendation of education professionals
  - o Desire for religious based instruction
  - o Other _____

- **What was the most significant factor in your decision to homeschool?**
  - o Dissatisfaction with your child's educational program
  - o School's inability to manage your child's behavior
  - o Concern for your child's safety
  - o Concern for your child's health
  - o Your child's negative feelings towards school
  - o Confusion with the educational system
  - o Need to fight for services
  - o Negative interactions with education professionals

- o Disruption in family routine
- o Child was in legal trouble
- o Recommendation of education professionals
- o Desire for religious based instruction
- o Other _____

- **Prior to being homeschooled, what was the last type of school your child attended?**
  - o Public school
  - o Charter school
  - o Magnet school
  - o Alternative school (due to behavior concerns)
  - o Private school
  - o Parochial school
  - o Residential school
  - o Montessori school
  - o Hospital homebound
  - o Other _____
  - o My child was always homeschooled

  - ➢ **If not always homeschooled, continue with educational background questions.**

- **Prior to being homeschooled, what was the last type of placement your child was in?**
  - o Mainstream classroom
  - o Mainstream classroom with collaborative (in-class) special education services
  - o Mainstream classroom with pull-out special education services
  - o Self-contained autism classroom
  - o Self-contained emotional or behavioral disorders (EBD) classroom
  - o Other self-contained special education classroom
  - o Hospital homebound
  - o Other _____

- **Please select all of the services your child received through the school while enrolled.**
  Select all that apply.
  - o Speech therapy
  - o Occupational therapy
  - o Physical therapy
  - o Social skills training
  - o Applied behavior analysis therapy
  - o Vocational rehabilitation
  - o Community-based instruction
  - o Other _____

- **Please select <u>all</u> areas the school focused on in educating your child.** *Select all that apply.*
  - o Academic instruction
  - o Communication development (e.g., speech, sign language, picture exchange, social language use)
  - o Social skill development
  - o Functional skill development (practical daily living skills)
  - o Vocational skill development (skills related to a particular job or trade)
  - o Behavior management
  - o Other _____

- **How long was your child enrolled in traditional school (grades K-12) before you started homeschooling?** _____

- **How often did your child have behavior problems while in school?**
  - o Daily
  - o Weekly
  - o Monthly
  - o Several times a year
  - o Not at all

  - ➢ **If Not "Not at all," Please select <u>all</u> of the behavior problems your child had while at school.** *Select all that apply.*
    - o Physical aggression toward others
    - o Self-injurious behavior
    - o Screaming
    - o Spitting
    - o Dropping (body touching ground at inappropriate times)
    - o Inappropriate talking out
    - o Elopement (running away)
    - o Property disruption/destruction (throwing, ripping, defacing, or breaking objects at inappropriate times)
    - o Pica (eating inedible objects)
    - o Stereotypy (repetitive stereotyped movements)
    - o Inattention
    - o Noncompliance
    - o Inappropriate sexual behavior
    - o Other_____

EXPERIENCES WITH TRADITIONAL SCHOOL

- **Overall, how satisfied were you with your child's classroom placement in traditional school?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisfied were you with your child's educational program in traditional school?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how confident were you that your child's educational program was being implemented in traditional school?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident

- **Overall, how satisfied were you with the support your child received in the classroom in traditional school?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisffied were you with the additional services your child received?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisfied were you with your child's teachers?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **How often did you feel that teachers understood your child's disability and his/her educational needs?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **How often did you feel that administrators understood your child's disability and his/her educational needs?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **Across subjects, how much of the material that was taught in traditional school, did you feel your child was grasping?**
  - Almost all the material
  - Most of the material
  - Some of the material
  - Almost none of the material

- **On average, how long did your child spend on homework a night when in traditional school? _____**

- **How often did you reteach material that your child learned in traditional school in order to complete homework?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **Did you feel confident that the school could provide an adequate education for your child?**
  - Not confident at all
  - Somewhat confident
  - Quite confident
  - Extremely confident

- **Do you feel more confident in your ability to provide an adequate education for your child at home?**
  - Not confident at all
  - Slightly confident
  - Quite confident
  - Extremely confident

- **Please select <u>all</u> of the following that you think the school system did well in educating your child.** *Select all that apply.*
    - o Academic instruction
    - o Communication development (e.g., speech, sign language, picture exchange, social language use)
    - o Social skill development
    - o Functional skill development (practical daily living skills)
    - o Vocational skill development (skills related to a particular job or trade)
    - o Behavior management
    - o Other _____
    - o I do not think the school did anything well.

INTERACTIONS WITH EDUCATION PROFESSIONALS

- **On average, how often did you communicate with your child's teacher(s)?**
    - o Never
    - o A few times a year
    - o Monthly
    - o Weekly
    - o Daily or almost daily (Monday-Friday)
    - o More than once a day

- **On average, how often did you communicate with the school psychologist?**
    - o Never
    - o A few times a year
    - o Monthly
    - o Weekly
    - o Daily or almost daily (Monday-Friday)
    - o More than once a day

- **On average, how often did you communicate with school personnel other than the teacher or school psychologist?**
    - o Never
    - o A few times a year
    - o Monthly
    - o Weekly
    - o Daily or almost daily (Monday-Friday)
    - o More than once a day

- **Overall, how would you describe your interactions with education professionals?**
    - o Mostly negative
    - o Somewhat negative
    - o Somewhat positive
    - o Mostly positive
    - o Not applicable (My child was always homeschooled)

- **To what extent did you feel the need to fight for services within the school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often did you feel that education professionals listened to your opinion about your child's education?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Did your child have an Individualized Education Program (IEP)?**
  - o Yes
  - o No

  - ➢ **If Yes, About how many IEP meetings did you attend for your child?**
    _____

  - ➢ **If Yes, How often did you feel confused by terminology used during an IEP meeting?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time
    - o I have not attended an IEP meeting

- **Did you ever bring an advocate to a school meeting?**
  - o Yes
  - o No

  - ➢ **If Yes, how did the advocate's presence change the dynamic of the meeting?**
    - o Significantly decreased responsiveness
    - o Somewhat decreased responsiveness
    - o No change
    - o Somewhat improved responsiveness
    - o Significantly improved responsiveness

- **How often did you feel a sense of cooperation between your family and the education professionals?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often did you have arguments with education professionals regarding your child?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

CHILD'S EXPERIENCES WITH TRADITIONAL SCHOOL

- **Prior to homeschooling, how often would you interpret your child's words or behaviors as conveying fear of attending school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
  - o Not applicable (My child was always homeschooled)

- **Prior to homeschooling, how often would to interpret your child's words or behaviors as conveying sadness related to school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
  - o Not applicable (My child was always homeschooled)

- **How often did your child have emotional outbursts related to school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
  - o Not applicable (My child was always homeschooled)

- **Prior to homeschooling, how would you describe your child's self-confidence related to school?**
  - o Not confident at all
  - o Somewhat confident
  - o Quite confident
  - o Extremely confident
  - o Not applicable (My child was always homeschooled)

- **How often did you worry about your child's health related to school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
  - o Not applicable (My child was always homeschooled)

- **To what extent did you feel that your child needed to take medication to be able to function at school?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time
    - o Not applicable (My child was always homeschooled)

- **How often did you worry about your child's safety while he/she was at school?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time
    - o Not applicable (My child was always homeschooled)

- **How confident were you that school staff could safely manage your child's behavior?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident
    - o Not applicable (My child was always homeschooled)

- **How confident were you that your child was appropriately supervised while at school?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident
    - o Not applicable (My child was always homeschooled)

- **Has your child ever been reprimanded or punished <u>by school staff </u>because of a mistaken intent of his/her behavior**?
    - o Yes
    - o No

- **Did having your child in a traditional school result in added stress on your family?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

- **Did having your child in traditional school result in added stress on your child?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Did having your child in traditional school negatively affect your personal relationships?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Did you feel a sense of frustration as a result of your child being in traditional school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
- **Did having your child in traditional school result in disruption in your family's routine?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

PEER INTERACTIONS

- **How would you describe your child's interactions with his/her peers <u>while at traditional school</u>?**
  - o Mostly negative
  - o Somewhat negative
  - o Somewhat positive
  - o Mostly positive

- **Have you seen a change in interactions with peers since homeschooling began?**
  - o Yes
  - o No

  - ➢ **If Yes, How did peer interactions change since homeschooling began?**
    - o Significant decline in appropriate interactions
    - o Some decline in appropriate interactions
    - o No change
    - o Some improvement in appropriate interactions
    - o Significant improvement in appropriate interactions

- **Please select <u>all</u> types of peer-interactive extracurricular social activities your child participates in.** *Select all that apply.*
    o Team sports
    o Group music classes
    o Group art classes
    o Group dance classes
    o Scouts
    o Religious activities
    o Play dates
    o Online interactive gaming
    o Other _____

- **On average, how many hours per week does your child spend in social activities with peers?** _____

- **How often does your child spontaneously interact with peers?**
    o Almost never
    o Once in a while
    o Frequently
    o Almost all the time

- **How often during the school day is your child around <u>only</u> adults?**
    o Almost never
    o Once in a while
    o Frequently
    o Almost all the time

ADDITIONAL SERVICES

- **Please select <u>all</u> types of support services your child *currently* receives <u>outside of school</u>.** *Select all that apply*
    o Speech therapy
    o Occupational therapy
    o Physical therapy
    o Social skills training
    o Applied behavior analysis therapy
    o Vocational rehabilitation
    o Other _____

- **Are there any additional services that you think your child would benefit from?**
    o Yes
    o No
    ➢ **If Yes, Please select <u>all</u> services you think your child could benefit from.** *Select all that apply.*
        o Speech therapy
        o Occupational therapy

- o Physical therapy
- o Social skills training
- o Applied behavior analysis therapy
- o Vocational rehabilitation
- o Other _____

- **Are there services your child received while in traditional school that you wish he/she were receiving now?**
  - o Yes
  - o No

- **If Yes, Please select __all__ services you wish your child continued to receive?** *Select all that apply.*
  - o Speech therapy
  - o Occupational therapy
  - o Physical therapy
  - o Social skills training
  - o Applied behavior analysis therapy
  - o Vocational rehabilitation
  - o Other _____

HOMESCHOOLING EXPERIENCES

- **Who provides homeschooling instruction to your child?** *Check all that apply.*
  - o Child's mother
  - o Child's father
  - o Other relative
  - o Certified teacher (in home)
  - o Board certified behavior analyst (BCBA)
  - o On-line instructor
  - o Members of a parent co-opp
  - o Child attends an unschool
  - o Other _____

- **When you started homeschooling, how prepared did you feel to teach your child?**
  - o Mostly unprepared
  - o Somewhat unprepared
  - o Somewhat prepared
  - o Mostly prepared

- **What homeschooling model do you most closely follow?**
  - o School-at-home (entirely following a curriculum)
  - o Unschooling (all child-led)
  - o Eclectic approach (combination of academic structure and child directed learning)
  - o Unit studies
  - o Other _____

- **Please select <u>all</u> areas you focus on in educating your child.** *Select all that apply.*
  - o Academic instruction
  - o Communication development (e.g., speech, sign language, picture exchange, social language use)
  - o Social skill development
  - o Functional skill development (practical daily living skills)
  - o Vocational skill development (skills related to a particular job or trade)
  - o Behavior management
  - o Other _____

- **What is your top priority in educating your child?**
  - o Academic instruction
  - o Communication development (e.g., speech, sign language, picture exchange, social language use)
  - o Social skill development
  - o Functional skill development (practical daily living skills)
  - o Vocational skill development (skills related to a particular job or trade)
  - o Behavior management
  - o Other _____

- **How often does your child receive one-to-one instruction?**
  - o Most of the day
  - o Part of the day
  - o Occasionally
  - o Not at all

- **How often does your child's instruction occur in the community?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often is your instruction child-directed?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Overall, how would you describe your child's homeschool environment?**
  - o Highly unstructured
  - o Somewhat unstructured
  - o Somewhat structured
  - o Highly structured

- **How would you describe your child's homeschool schedule?**
  - o Highly unpredictable
  - o Somewhat unpredictable
  - o Somewhat predictable
  - o Highly predictable

- **Please select which of the following best characterizes expectations and consequences of your child's behavior.**
  - o Almost always clearly presented before behavior occurs
  - o Frequently clearly presented before behavior occurs
  - o Once in a while clearly presented before behavior occurs
  - o Never clearly presented before behavior occurs

- **Please select which of the following best characterizes when consequences of problem behavior are typically delivered.**
  - o Immediately
  - o Within 5 – 30 minutes
  - o Within 30 minutes – 1 hour
  - o After more than 1 hour
  - o There are typically no consequences for problem behavior

- **How often are data collected on your child's instructional targets/behaviors?**
  - o Data are not collected
  - o Less than once a month
  - o Monthly
  - o Weekly
  - o Daily or almost daily (Monday-Friday)

- **Please select all of the following components that typically characterize your child's instruction.** *Select all that apply.*
  - o Short work intervals
  - o Models of correct responses
  - o Multiple opportunities to practice
  - o Large tasks broken down into smaller components
  - o Correction of incorrect responses
  - o Positive consequences provided for correct responses
  - o Self-monitoring of progress
  - o Multiple different examples of target skills/behaviors
  - o Visual schedule of the order of activities
  - o Visual learning supports
  - o Instructional decisions are based on data
  - o Similar expectations and consequences across instructors and environments

- **How many hours a week does your child receive instruction? _____**

- **Where do you get your teaching materials/resources?** *Select all that apply.*
    - o Secular curriculum _____
    - o Religious-based curriculum _____
    - o Homeschool Association
    - o Public school
    - o Online school
    - o At a local unschool
    - o Educational materials store/catalogue
    - o Public library
    - o Homeschool groups
    - o Homeschool co-ops
    - o Other _____

- **Do you/your child participate in homeschooling groups?**
    - o Never
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

- **How did your child's motivation to learn change when you began homeschooling?**
    - o Drastic decrease in motivation
    - o Slight decrease in motivation
    - o Motivation stayed the same
    - o Slight increase in motivation
    - o Drastic increase in motivation
    - o Not applicable (My child was always homeschooled)

- **How did your child's active engagement in instruction change when you began homeschooling?**
    - o Drastic decrease in engagement
    - o Slight decrease in engagement
    - o Engagement stayed the same
    - o Slight increase in engagement
    - o Drastic increase in engagement
    - o Not applicable (My child was always homeschooled)

- **How have problem behaviors changed since you began homeschooling?**
    - o Drastic decrease in problem behaviors
    - o Slight decrease in problem behaviors
    - o Problem behaviors stayed the same
    - o Slight increase in problem behaviors
    - o Drastic increase in problem behaviors
    - o Not applicable (My child never had problem behaviors)

- **How has homeschooling changed overall family functioning?**
  - o Drastically declined
  - o Slightly declined
  - o Stayed the same
  - o Slightly improved
  - o Drastically improved

- **How has stress on your family changed since you began homeschooling?**
  - o Drastic decrease in stress
  - o Slight decrease in stress
  - o Stress stayed the same
  - o Slight increase in stress
  - o Drastic increase in stress

- **Please select all of the challenges you have faced in homeschooling your child with ASD.** *Select all that apply.*
  - o Difficulty planning programming
  - o Lack of confidence in my ability to provide instruction
  - o Lack of educational materials
  - o Difficulty controlling my child's behaviors
  - o Child not making progress
  - o Inability to provide support services that my child received at school
  - o Difficulty providing opportunities to interact with peers
  - o Child's need for constant supervision
  - o Financial burden
  - o Family opposition
  - o My friends' opposition
  - o Professionals' opposition
  - o Child's opposition
  - o Other _____

- **Do you think your child enjoys being homeschooled?**
  - o Not at all
  - o Somewhat dislikes
  - o Somewhat enjoys
  - o Very much enjoys

- **Please select all of the resources you found helpful in making the decision to homeschool.** *Select all that apply.*
  - o Positive experiences of other parents
  - o School personnel recommendations
  - o Advocate recommendations
  - o Review of state performance standards
  - o Participation in homeschool groups
  - o Books on homeschooling
  - o Online resources on homeschooling

- o Review of homeschooling legislation
- o Books on ASD
- o Online resources on ASD
- o Visit to an unschool
- o Other _____

- **Please indicate all information/resources that would have been helpful to have had when making your decision.** *Select all that apply.*
  - o Positive experiences of other parents
  - o School personnel recommendations
  - o Advocate recommendations
  - o State performance standards
  - o Participation in homeschool groups
  - o Books on homeschooling
  - o Online resources on homeschooling
  - o Homeschooling legislation
  - o Books on ASD
  - o Online resources on ASD
  - o Visit to an unschool
  - o Other _____

- **Please select all resources that would help you to be more effective at homeschooling your child with ASD.** *Select all that appl.y*
  - o Support in program planning
  - o Access to educational materials
  - o Behavior management strategies
  - o Social skill development strategies
  - o Communication development strategies
  - o Functional skill development strategies
  - o Easily accessible social opportunities
  - o Homeschool co-ops/shared instructional responsibility
  - o Access to augmentative communication devices
  - o Use of video modeling
  - o Knowledge of homeschool legislation
  - o Other _____

- **Do you think you would benefit from a parent-training program on homeschooling children with ASD?**
  - o Yes
  - o No

- ➢ **Please select all resources you would you like to see incorporated into a parent-training program?** *Select all that apply.*
  - o Instruction in program planning
  - o Evidence-based interventions for children with ASD
  - o Strategies to access free educational materials

- o Behavior management strategies
- o Strategies to increase academic engaged time
- o Strategies develop social skills
- o Strategies to develop communication
- o Strategies to teach functional skills
- o Instruction in how to use augmentative communication devices
- o Instruction in how to use video modeling
- o Summary of homeschool legislation
- o Other _____

- **Any other comments you'd like to share about your homeschooling experience?**

  _____
  _____
  _____

- **The following information will create a unique survey code that only you will know. Please enter the first two letters of your mother's maiden name, the first two numbers of your area code, and the first two letters of the street you grew up on.** (e.g., Kr97Or)

  _____

APPENDIX B

Educational Experiences of Traditionally Schooled Children with Autism Spectrum Disorder – Survey Measure

*Note: Arrows denote question routing in the online version of the survey measure. Routing information (e.g., "If ≠ 0,"; "If Yes,") will not appear to the participant.

When answering these questions, please consider your child's overall educational experience across <u>all</u> years of school, unless otherwise specified.

Your answers will not be linked to you or your child. As such, please be as honest as possible - there are no right or wrong answers.

Because different children often have different experiences, even in the same school, please complete this survey for <u>one child</u>.

PARTICIPANT INFORMATION

Please answer the following questions about your child:

- **What is your child's current age?** _____

- **What is your child's gender?**
    - Male
    - Female
    - Transgender

- **What race/ethnicity best describes your child?** *Please choose only one*
    - American Indian or Alaskan Native
    - Asian/Pacific Islander
    - Black or African American
    - Hispanic American
    - White/Caucasian
    - Multiple ethnicity/Other (please specify) _____

- **Please check the diagnoses your child has received and fill in the age he/she was when diagnosed. If he/she has any additional diagnoses, please list those as well.**
    - Autistic Disorder   ____
    - Pervasive Developmental Disorder-Not Otherwise Specified   ____
    - Asperger's Disorder   ____
    - Childhood Disintegrative Disorder   ____

- o   Rett Syndrome ____
- o   _____ ____
- o   _____ ____

- **Who presented initial concern about an autism spectrum disorder (ASD)?** *Select all that apply*
    - o   Parent(s)
    - o   Child's pediatrician
    - o   Child's teacher(s)
    - o   Extended family
    - o   Friends
    - o   Other _____

Please answer the following questions about yourself:

- **What is your relationship to your child?**
    - o   Parent
    - o   Foster parent
    - o   Relative: _____
    - o   Other: _____

- **What is your age?** _____

- **What is your gender?**
    - o   Male
    - o   Female
    - o   Transgender

- **What race/ethnicity best describes you?** *Please choose only one*
    - o   American Indian or Alaskan Native
    - o   Asian/Pacific Islander
    - o   Black or African American
    - o   Hispanic American
    - o   White/Caucasian
    - o   Multiple ethnicity/Other (please specify) _____

- **What is your marital status?**
    - o   Divorced/Separated
    - o   Married
    - o   Single
    - o   Other _____

- **In what state do you currently reside?** _____

- **Please select your highest level of education** (*For degrees not completed, please indicate the number of years completed in the blank provided*):
    o High school _____
    o Bachelors _____
    o Masters _____
    o PhD _____
    o MD _____
    o JD _____
    o Other _____

- **What is your approximate average yearly household income?**
    o $0 - $24,999
    o $25,000 - $49,999
    o $50,000 - $74,999
    o $75,000 - $99,999
    o $100,000 - $124,999
    o $125,000 - $149,999
    o $150,000 - $174,999
    o $175,000 - $199,999
    o $200,000 and up

- **How many other children do you have?** _____

- **How many of your other children currently live at home?** _____

- **How many other children do you have who are diagnosed with a disability?** _____

    ➢ **What disabilities do your *other children* present with?** *Please list each child's age and diagnoses.*

    Age   Diagnoses
    ____   _____
    ____   _____
    ____   _____
    ____   _____
    ____   _____

- **Do you have any formal training in education?**
    o Yes
    o No

    ➢ **If Yes, Please select all types of educational training you have received.** *Select all that apply*
        o Certified general education teacher
        o Certified special education teacher

- o   Some university level education coursework
- o   Education workshop(s)/conference(s)
- o   Other _____

- **Have you received any training on working with children with ASD?**
    - o   Yes
    - o   No

    - ➢ **If Yes, Please select all types of training you have received.** *Select all that apply*
        - o   Formal degree
        - o   Certification
        - o   University level coursework
        - o   Workshop(s)/Conference(s)
        - o   Other _____

EDUCATIONAL BACKGROUND

- **What type of school does your child *currently* attend?**
    - o   Public school
    - o   Charter school
    - o   Magnet school
    - o   Alternative school (due to behavior concerns)
    - o   Private school
    - o   Parochial school
    - o   Residential school
    - o   Montessori school
    - o   Hospital homebound
    - o   Other _____

- **What type of placement is your child *currently* in?**
    - o   Mainstream classroom
    - o   Mainstream classroom with collaborative (in-class) special education services
    - o   Mainstream classroom with pull-out special education services
    - o   Self-contained autism classroom
    - o   Self-contained emotional or behavioral disorders (EBD) classroom
    - o   Other self-contained special education classroom
    - o   Hospital homebound
    - o   Other _____

- **How often does your child *currently* receive one-to-one instruction while at school?**
    - o   Most of the day
    - o   Part of the day
    - o   Occasionally
    - o   Not at all
    - o   I do not know

- **Please select <u>all</u> services your child has received <u>through the school</u> *at any time* in his/her education.** *Select all that apply.*
  - o Speech therapy
  - o Occupational therapy
  - o Physical therapy
  - o Social skills training
  - o Applied behavior analysis therapy
  - o Vocational rehabilitation
  - o Community-based instruction
  - o Other _____

- **How often has your child had behavior problems while in school?**
  - o Daily
  - o Weekly
  - o Monthly
  - o Several times a year
  - o Not at all

- ➢ **Please select <u>all of</u> the behavior problems your child has had while at school.** *Select all that apply.*
  - o Physical aggression toward others
  - o Self-injurious behavior
  - o Screaming
  - o Spitting
  - o Dropping (body touching ground at inappropriate times)
  - o Inappropriate talking out
  - o Elopement (running away)
  - o Property disruption/destruction (throwing, ripping, defacing, or breaking objects at inappropriate times)
  - o Pica (eating inedible objects)
  - o Stereotypy (repetitive stereotyped movements)
  - o Inattention
  - o Noncompliance
  - o Inappropriate sexual behavior
  - o Other_____

- **How often does your child's instruction occur in the community?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often is your child's instruction child-directed?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

- **Overall, how would you describe your child's school environment?**
    - o Highly unstructured
    - o Somewhat unstructured
    - o Somewhat structured
    - o Highly structured

- **How would you describe your child's school schedule?**
    - o Highly unpredictable
    - o Somewhat unpredictable
    - o Somewhat predictable
    - o Highly predictable

- **Please select which of the following best characterizes expectations and consequences of your child's behavior <u>at school</u>.**
    - o Almost always clearly presented before behavior occurs
    - o Frequently clearly presented before behavior occurs
    - o Once in a while clearly presented before behavior occurs
    - o Never clearly presented before behavior occurs

- **Please select which of the following best characterizes when consequences of problem behavior <u>at school</u> are typically delivered.**
    - o Immediately
    - o Within 5 – 30 minutes
    - o Within 30 minutes – 1 hour
    - o After more than 1 hour
    - o There are typically no consequences for problem behavior

- **How often are data collected <u>at school</u> on your child's instructional targets/behaviors?**
    - o Data are not collected
    - o Less Than Once a Month
    - o Monthly
    - o Weekly
    - o Daily or almost daily (Monday-Friday)

- **Please select <u>all</u> of the following components that typically characterize your child's instruction.** *Select all that apply.*
    - o Short work intervals
    - o Models of correct responses
    - o Multiple opportunities to practice

- o Large tasks broken down into smaller components
- o Correction of incorrect responses
- o Positive consequences provided for correct responses
- o Self-monitoring of progress
- o Multiple different examples of target skills/behaviors
- o Visual schedule of the order of activities
- o Visual learning supports
- o Instructional decisions are based on data
- o Similar expectations and consequences across instructors and environments

How many hours a week does your child receive instruction? _____

EDUCATIONAL EXPERIENCES

- **Overall, how satisfied are you with your child's classroom placement?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisfied are you with your child's educational program?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how confident are you that your child's educational program is being implemented?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident

- **Overall, how satisfied are you with the support your child receives (received) in the classroom?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisfied are you with the additional services your child receives?**
    - o Mostly dissatisfied
    - o Somewhat dissatisfied
    - o Somewhat satisfied
    - o Mostly satisfied

- **Overall, how satisfied have you been with your child's teachers?**
  - Mostly dissatisfied
  - Somewhat dissatisfied
  - Somewhat satisfied
  - Mostly satisfied

- **How often have you felt that teachers understood your child's disability and his/her educational needs?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **How often have you felt that administrators understood your child's disability and his/her educational needs?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **Across subjects, how much of the material that is taught in school, do you feel your child is grasping?**
  - Almost all the material
  - Most of the material
  - Some of the material
  - Almost none of the material

- **On average, how long does your child spend on homework a night? _____**

- **How often do you reteach material that your child learned in school in order to complete homework?**
  - Almost never
  - Once in a while
  - Frequently
  - Almost all the time

- **Do you feel confident that the school can provide an adequate education for your child?**
  - Not confident at all
  - Somewhat confident
  - Quite confident
  - Extremely confident

- **Please select <u>all</u> of the following that you think the school system has done well in educating your child?** *Select all that apply.*
  - o Academic instruction
  - o Communication development (e.g., speech, sign language, picture exchange, social language use)
  - o Social skill development
  - o Functional skill development (practical daily living skills)
  - o Vocational skill development (skills related to a particular job or trade)
  - o Behavior management
  - o Other _____
  - o I do not think the school does anything well.

INTERACTIONS WITH EDUCATION PROFESSIONALS

- **On average, how often do you communicate with your child's teacher(s)?**
  - o Never
  - o A few times a year
  - o Monthly
  - o Weekly
  - o Daily or almost daily (Monday-Friday)
  - o More than once a day

- **On average, how often do you communicate with the school psychologist?**
  - o Never
  - o A few times a year
  - o Monthly
  - o Weekly
  - o Daily or almost daily (Monday-Friday)
  - o More than once a day

- **On average, how often do you communicate with school personnel other than the teacher or school psychologist?**
  - o Never
  - o A few times a year
  - o Monthly
  - o Weekly
  - o Daily or almost daily (Monday-Friday)
  - o More than once a day

- **Overall, how would you describe your interactions with education professionals?**
  - o Mostly negative
  - o Somewhat negative
  - o Somewhat positive
  - o Mostly positive

- **To what extent have you felt the need to fight for services within the school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often have you felt that education professionals listened to your opinion about your child's education?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Has your child had an Individualized Education Program (IEP)?**
  - o Yes
  - o No

  - ➢ **If Yes, About how many IEP meetings have you attended for your child?**
    _____

  - ➢ **If Yes, How often have you felt confused by terminology used during an IEP meeting?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time
    - o I have not attended an IEP meeting

- **Have you brought an advocate to any school meetings?**
  - o Yes
  - o No

  - ➢ **If Yes, how did the advocate's presence change the dynamic of the meeting?**
    - o Significantly decreased responsiveness
    - o Somewhat decreased responsiveness
    - o No change
    - o Somewhat improved responsiveness
    - o Significant improved responsiveness

- **How often do you feel a sense of cooperation between your family and the education professionals?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often do you have arguments with education professionals regarding your child?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time
- **Could you provide an adequate education for your child at home?**
  - o Not confident at all
  - o Slightly confident
  - o Somewhat confident
  - o Extremely confident

CHILD'S EXPERIENCES

- **How often would you interpret your child's words or behaviors as conveying fear of attending school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often would you interpret your child's words or behaviors as conveying sadness related to school?**
  - o Almost never
  - o One in a while
  - o Frequently
  - o Almost all the time

- **How often does your child have emotional outbursts related to school?**
  - o Almost never
  - o One in a while
  - o Frequently
  - o Almost all the time

- **How would you describe your child's self-confidence related to school?**
  - o Not confident at all
  - o Somewhat confident
  - o Quite confident
  - o Extremely confident

- **How often do you worry about your child's health related to school?**
  - o Almost never
  - o One in a while
  - o Frequently
  - o Almost all the time

- **To what extent do you feel that your child needs to take medication to be able to function at school?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

- **How often do worry about your child's safety while he/she is at school?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

- **How confident are you that school staff can safely manage your child's behavior?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident

- **How confident are you that your child is appropriately supervised while at school?**
    - o Not confident at all
    - o Somewhat confident
    - o Quite confident
    - o Extremely confident

- **How often is your child reprimanded or punished <u>by school staff </u>because of a mistaken intent of his/her behavior**?
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

PEER INTERACTIONS

- **How would you describe your child's interactions with his/her peers <u>while at school</u>?**
    - o Mostly negative
    - o Somewhat negative
    - o Somewhat positive
    - o Mostly positive

- **Please select <u>all</u> types of peer-interactive extracurricular activities your child *currently* participates in.** *Select all that apply.*
    - o Team sports
    - o Group music classes
    - o Group art classes

- o Group dance classes
- o Scouts
- o Religious activities
- o Play dates
- o Online interactive gaming
- o Other _____

- **On average, how many hours per week does your child *currently* spend in social activities with peers? _____**

- **How often does your child spontaneously interact with peers?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **How often during the school day is your child around <u>only</u> adults?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

ADDITIONAL SERVICES

- **Please select <u>all</u> types of support services your child *currently* receives <u>outside of school</u>.** *Select all that apply.*
  - o Speech therapy
  - o Occupational therapy
  - o Physical therapy
  - o Social skills training
  - o Applied behavior analysis therapy
  - o Vocational rehabilitation
  - o Other _____

- **On average, how many hours per week does your child *currently* receive additional services? _____**

- **Are there any additional services that you think your child would benefit from?**
  - o Yes
  - o No

- ➢ **If Yes, Please select <u>all</u> services you think your child could benefit from.** *Select all that apply.*
  - o Speech therapy
  - o Occupational therapy
  - o Physical therapy

- o Social skills training
- o Applied behavior analysis therapy
- o Vocational rehabilitation
- o Other _____

- **Are there services your child received from the school in the past that you wish he/she were receiving now?**
  - o Yes
  - o No

  - ➢ **If Yes, Please select <u>all</u> services you wish your child continued to receive.** *Select all that apply.*
    - o Speech therapy
    - o Occupational therapy
    - o Physical therapy
    - o Social skills training
    - o Applied behavior analysis therapy
    - o Vocational rehabilitation
    - o Other _____

- **Does having your child in traditional school result in added stress on your family?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Does having your child in traditional school result in added stress on your child?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Does having your child in traditional school negatively affect your personal relationships?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Do you feel a sense of frustration as a result of your child being in traditional school?**
  - o Almost never
  - o Once in a while
  - o Frequently
  - o Almost all the time

- **Does having your child in traditional school result in disruption in your family's routine?**
    - o Almost never
    - o Once in a while
    - o Frequently
    - o Almost all the time

HOME EDUCATION

- **Do you work on teaching your child any content or skills at home?**
    - o Yes
    - o No

- ➢ **If Yes, Please select <u>all</u> content or skills that you teach your child at home.** *Select all that apply.*
    - o Academic instruction
    - o Communication development (e.g., speech, sign language, picture exchange, social language use)
    - o Social skill development
    - o Functional skill development (practical daily living skills)
    - o Vocational skill development (skills related to a particular job or trade)
    - o Behavior management
    - o Other _____

- ➢ **If Yes, What is your top priority in educating your child at home?**
    - o Academic instruction
    - o Communication development (e.g., speech, sign language, picture exchange, social language use)
    - o Social skill development
    - o Functional skill development (practical daily living skills)
    - o Vocational skill development (skills related to a particular job or trade)
    - o Behavior management
    - o Other _____

- **Do you think your child enjoys school?**
    - o Very much dislikes school
    - o Somewhat dislikes school
    - o Somewhat enjoys school
    - o Very much enjoys school

- **Has your child ever been homeschooled?**
    - o Yes
    - o No

- ➢ **If Yes, What age was your child when you began homeschooling?**
    - _____

➢ **If Yes, How long was your child homeschooled for?** _____

➢ **If Yes, Please select <u>all</u> factors that contributed to your decision to homeschool.**
Select all that apply.
  o Dissatisfaction with your child's educational program
  o School's inability to manage your child's behavior
  o Concern for your child's safety
  o Concerns for your child's health
  o Your child's negative feelings towards school
  o Confusion with the educational system
  o Need to fight for services
  o Negative interactions with education professionals
  o Disruption in family routine
  o Child was in legal trouble
  o Desire for religious based instruction
  o Other _____

➢ **If Yes, What was the most significant factor in your decision to homeschool?**
  o Dissatisfaction with your child's educational program
  o School's inability to manage your child's behavior
  o Concern for your child's safety
  o Concern for your child's health
  o Your child's negative feelings towards school
  o Confusion with the educational system
  o Need to fight for services
  o Negative interactions with education professionals
  o Disruption in family routine
  o Child was in legal trouble
  o Recommendation of education professionals
  o Desire for religious based instruction
  o Other _____

➢ **If Yes, Please select <u>all</u> factors that contributed to you not continuing to homeschool.** *Select all that apply*
  o Finances
  o Time commitment
  o Lack of confidence in my instructional ability
  o Lack of instructional materials
  o Difficulty controlling my child's behaviors
  o Concern about social interaction
  o Concern about losing access to the services my child received through the school
  o Family opposition
  o My friends' opposition
  o Professionals' opposition
  o Child's opposition

- o Child qualified to attend a different school
- o Other _____

> **If No, Have you ever considered homeschooling?**
  - o Yes
  - o No

- **Please select all factors that would deter you from homeschooling now.** *Select all that apply.*
  - o Finances
  - o Time commitment
  - o Lack of confidence in my instructional ability
  - o Lack of instructional materials
  - o Difficulty controlling child's behaviors
  - o Concern about social interaction
  - o Concern about losing access to the services my child is receiving through the school
  - o Family opposition
  - o Friends' opposition
  - o Professionals' opposition
  - o Child's opposition
  - o Other _____

- **Do you know any parents who homeschool their children with ASD?**
  - o Yes
  - o No

> **If so, how do they describe their experience?**
  - o Mostly negative
  - o Somewhat negative
  - o Somewhat positive
  - o Mostly positive
  - o I do not know.

- **What do you feel would improve your child's education?**
  _____
  _____

- **Any other comments you'd like to share about your child's educational experience?**
  _____
  _____

- **The following information will create a unique survey code that only you will know. Please enter the first two letters of your mother's maiden name, the first two numbers of your area code, and the first two letters of the street you grew up on.** (e.g., Kr97Or) _____

APPENDIX C

Educational Experiences of Children with Autism Spectrum Disorder

*Point values for each response option are included in parentheses
*Domains 1-5 correspond to experiences with the traditional education system; Domains 6 & 7 correspond to current experiences

DOMAIN 1: SATISFACTION WITH EDUCATIONAL PLACEMENT

*Higher score reflects greater satisfaction.

- **Did (do) you feel confident that the school could (can) provide an adequate education for your child?**
  - o Not confident at all (1)
  - o Somewhat confident (2)
  - o Quite confident (3)
  - o Extremely confident (4)

- **Overall, how satisfied were (are) you with your child's classroom placement?**
  - o Mostly dissatisfied (1)
  - o Somewhat dissatisfied (2)
  - o Somewhat satisfied (3)
  - o Mostly satisfied (4)

- **Overall, how satisfied were (are) you with your child's educational program?**
  - o Mostly dissatisfied (1)
  - o Somewhat dissatisfied (2)
  - o Somewhat satisfied (3)
  - o Mostly satisfied (4)

- **Overall, how confident were (are) you that your child's educational program is being implemented?**
  - o Not confident at all (1)
  - o Somewhat confident (2)
  - o Quite confident (3)
  - o Extremely confident (4)

- **Overall, how satisfied were (are) you with your child's teachers?**
  - Mostly dissatisfied (1)
  - Somewhat dissatisfied (2)
  - Somewhat satisfied (3)
  - Mostly satisfied (4)

- **How often did (do) you feel that teachers understood (understand) your child's disability and his/her educational needs?**
  - Almost never (1)
  - Once in a while (2)
  - Frequently (3)
  - Almost all the time (4)

- **How often did (do) you feel that administrators understood (understand) your child's disability and his/her educational needs?**
  - Almost never (1)
  - Once in a while (2)
  - Frequently (3)
  - Almost all the time (4)

- **Overall, how satisfied were (are) you with the support your child receives (received) in the classroom?**
  - Mostly dissatisfied (1)
  - Somewhat dissatisfied (2)
  - Somewhat satisfied (3)
  - Mostly satisfied (4)

1 point for each endorsed
- **Please select <u>all</u> of the following that you think the school system did (does) well in educating your child.** *Select all that apply.*
  - Academic instruction
  - Communication development (e.g., speech, sign language, picture exchange, social language use)
  - Social skill development
  - Functional skill development (practical daily living skills)
  - Vocational skill development (skills related to a particular job or trade)
  - Behavior management
  - Other _____
  - I do not think the school did anything well *(0 points)*

DOMAIN 2: INTERACTIONS WITH EDUCATION PROFESSIONALS

*Higher score reflects more positive interactions.

- **Overall, how would you describe your interactions with education professionals?**
  - o Mostly negative (1)
  - o Somewhat negative (2)
  - o Somewhat positive (3)
  - o Mostly positive (4)
  - o Not applicable (My child was always homeschooled) → *Do not include in analyses for this domain*

- **To what extent did (do) you feel the need to fight for services within the school?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)
  - o Not applicable (My child was always homeschooled) → *Do not include in analyses for this domain*

- **How often did (do) you feel that education professionals listened (listen) to your opinion about your child's education?**
  - o Almost never (1)
  - o Once in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)
  - o Not applicable (My child was always homeschooled) → *Do not include in analyses for this domain*

- **How often did (do) you feel a sense of cooperation between your family and the education professionals?**
  - o Almost never (1)
  - o Once in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)
  - o Not applicable (My child was always homeschooled) → *Do not include in analyses for this domain*

- **How often did (do) you have arguments with education professionals regarding your child?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)
  - o Not applicable (My child was always homeschooled) → *Do not include in analyses for this domain*

If *all* participants say yes to "**Did your child have an Individualized Education Program (IEP)?**" can include the following items in the domain score:

> ➢ **If Yes, How often did you feel confused by terminology used during an IEP meeting?**
>   - o Almost never (4)
>   - o Once in a while (3)
>   - o Frequently (2)
>   - o Almost all the time (1)

DOMAIN 3: CHILD'S SOCIAL EMOTIONAL FUNCTIONING

*Higher scores reflect better social-emotional functioning.

- **(Prior to homeschooling), how often would you interpret your child's words or behaviors as conveying fear of attending school?**
  - o Almost never (4)
  - o One in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **(Prior to homeschooling), how often would to interpret your child's words or behaviors as conveying sadness related to school?**
  - o Almost never (4)
  - o One in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **How often did (does) your child have emotional outbursts related to school?**
  - o Almost never (4)
  - o One in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **(Prior to homeschooling), how would you describe your child's self-confidence related to school?**
  - o Not confident at all (4)
  - o Somewhat confident (3)
  - o Quite confident (2)
  - o Extremely confident (1)

- **How often did (do) you worry about your child's health related to school?**
  - o Almost never (4)
  - o One in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **To what extent did (do) you feel that your child needed (needs) to take medication to be able to function at school?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

DOMAIN 4: CHILD'S SAFETY

*Higher score corresponds with fewer safety concerns.

- **How would you describe your child's interactions with his/her peers <u>while at traditional school</u>?**
  - o Mostly negative (1)
  - o Somewhat negative (2)
  - o Somewhat positive (3)
  - o Mostly positive (4)

- **How often did (do) you worry about your child's safety while he/she was (is) at school?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **How confident were (are) you that school staff could (can) safely manage your child's behavior?**
  - o Not confident at all (1)
  - o Somewhat confident (2)
  - o Quite confident (3)
  - o Extremely confident (4)

- **How confident were (are) you that your child was (is) appropriately supervised while at school?**
  - o Not confident at all (1)
  - o Somewhat confident (2)
  - o Quite confident (3)
  - o Extremely confident (4)

- **How often was (is) your child reprimanded or punished <u>by school staff</u> because of a mistaken intent of his/her behavior**?
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

DOMAIN 5: STRESS PLACED ON FAMILY

*Higher scores reflect higher levels of stress.

- **Did (Does) having your child in traditional school result in added stress on your family?**
  - o Almost never (1)
  - o Once in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **Did (Does) having your child in traditional school result in added stress on your child?**
  - o Almost never (1)
  - o One in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **Did (Does) having your child in traditional school negatively affect your personal relationships?**
  - o Almost never (1)
  - o One in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **Did (Do) you feel a sense of frustration as a result of your child being in traditional school?**
  - o Almost never (1)
  - o One in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **Did (Does) having your child in traditional school result in disruption in your family's routine?**
  - o Almost never (1)
  - o One in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

DOMAIN 6: EXTRACURRICULAR AND SOCIAL ACTIVITIES

*Higher score, reflects greater participation in extracurricular and social activities.

1 point for each item endorsed:
Please select <u>all</u> types of peer-interactive extracurricular social activities your child participates in. *Select all that apply.*
- o Team sports
- o Group music classes
- o Group art classes
- o Group dance classes
- o Scouts
- o Religious activities
- o Play dates
- o Online interactive gaming
- o Other _____

- **How often does your child spontaneously interact with peers?**
  - o Almost never (1)
  - o Once in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **How often during the school day is your child around <u>only</u> adults?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)

- **On average, how many hours per week does your child spend in social activities with peers?** _____

DOMAIN 7: EVIDENCE-BASED PRACTICE

*Higher score indicates greater amount of evidence-based practice being implemented.

- **How often does your child receive one-to-one instruction (while at school)?**
  - o Most of the day (4)
  - o Part of the day (3)
  - o Occasionally (2)
  - o Not at all (1)

- **How often does your child's instruction occur in the community?**
  - o Almost never (1)
  - o Once in a while (2)
  - o Frequently (3)
  - o Almost all the time (4)

- **How often is your child's instruction child-directed?**
  - o Almost never (4)
  - o Once in a while (3)
  - o Frequently (2)
  - o Almost all the time (1)
- **Overall, how would you describe your child's homeschool (school) environment?**
  - o Highly unstructured (1)
  - o Somewhat unstructured (2)
  - o Somewhat structured (3)
  - o Highly structured (4)

- **How would you describe your child's homeschool (school) schedule?**
  - o Highly unpredictable (1)
  - o Somewhat predictable (2)
  - o Somewhat unpredictable (3)
  - o Highly unpredictable (4)

- **Please select which of the following best characterizes expectations and consequences of your child's behavior (at school).**
  - o Almost always clearly presented before behavior occurs (4)
  - o Frequently clearly presented before behavior occurs (3)
  - o Once in a while clearly presented before behavior occurs (2)
  - o Never clearly presented before behavior occurs (1)

- **Please select which of the following best characterizes when consequences of problem behavior (at school) are typically delivered.**
  - o Immediately (5)
  - o Within 5 – 30 minutes (4)
  - o Within 30 minutes – 1 hour (3)
  - o After more than 1 hour (2)
  - o There are typically no consequences for problem behavior (1)

- **How often is data collected (at school) on your child's instructional targets/behaviors?**
  - o Data are not collected (1)
  - o Less than once a month (2)
  - o Monthly (3)
  - o Weekly (4)
  - o Daily or almost daily (Monday-Friday) (5)

1 point for each item endorsed

- **Please select <u>all</u> of the following components that typically characterize your child's instruction.** *Select all that apply.*
  - o Short work intervals
  - o Models of correct responses
  - o Multiple opportunities to practice
  - o Large tasks broken down into smaller components
  - o Correction of incorrect responses
  - o Positive consequences provided for correct responses
  - o Self-monitoring of progress
  - o Multiple different examples of target skills/behaviors
  - o Visual schedule of the order of activities
  - o Visual learning supports
  - o Instructional decisions are based on data
  - o Similar expectations and consequences across instructors and environments

APPENDIX D

Self-Management Interventions for Individuals with ASD

Author(s)	# ASD	Dx/Fx	Age	Target bx category	Collateral Bx	SM	Research design	Setting	Implementer
Agran et al. (2005)	3	Autism; AD	13-15	Academic	None	Smo	MBL across participants	School	Researcher
Apple et al. (2005)	3	Autism (HF); AD	4-5	Social communication	None	Smo	MBL across participants	School	Teacher
Barry & Singer (2001)	1	Autism (HF)	10	Social communication/ problem bx	None	Smo, SE, SR	NCMBL across bxs	Home	Researcher
Callahan & Rademacher (1999)	1	Autism (HF)	8	On-task bx	None	Smo, SE	MBL across subject areas	School	Teacher
Cihak et al. (2010)	3	Autism (HF)	11-13	Task engagement	Prompts	Smodel, Smo	Mprobe across settings + withdrawal	School	Researcher
Coyle & Cole (2004)	3	Autism (ID)	9-11	Off-task bx	None	Smo, SR	Withdrawal	School	Researcher
Delano (2007)	3	AD	13-17	Academic skill	None	Smodel, Smo, SE	MBL across bxs	Research lab	Researcher
Embregts (2002)	1	Autism (ID)	16	Social communication	Inappropriate bx	Smo, SE	Withdrawal	Residential school	Staff
Ganz & Sigafoos (2005)	2	Autism (ID)	19-20	Vocational	None	Smo, SR	Changing criterion	School	Researcher
Holifield et al. (2010)	2	Autism (LF)	9-10	On-task bx	Academic accuracy	Smo	MBL across participants	School	Teacher
Hughes et al. (2002)	1	Autism (ID)	19	Social communication	None	Smo	MBL across participants	School	Researcher

Study	N	Diagnosis	Age	Target behavior	Collateral behavior	Measures	Design	Setting	Implementer
Kern et al. (1997)	1	Autism (LF)	14	Disruptive bx	None	Smo, SE	MBL across settings + withdrawal	Rehabilitation hospital	Clinician
Koegel & Frea (1993)	2	Autism (HF)	14-16	Social communication	Stereotypy, Voice volume	Smo, SR	MBL across bxs across participants	Community	Clinician
Koegel, et al (1999)	2	Autism (LF)	5-6	Task engagement	Disruptive bx, Time in time-out	Smo, SE, SR	MBL across participants	School	Researcher
Koegel & Koegel (1990)	4	Autism (LF)	9-14	Stereotypic bx	None	Smo	MBL across participants + withdrawal	Clinic, Community	Clinician
Koegel et al (1992)	4	Autism	6-11	Social communication	Disruptive bx	Smo, SR	MBL across settings + withdrawal	Clinic, Community, Home	Researcher
Koegel et al (2014)	3	Autism (HF)	4-14	Social communication	None	Smo, SE	MBL across participants	Home	Researcher
Lee et al. (2007)	1	Autism (HF)	17	Self-care	Prompts, Inappropriate bx	Smo	Withdrawal	Home	Mom
Legge et al. (2010	2	Autism	11-13	On-task bx	None	Smo	MBL across participants	School	Researcher
Loftin et al. (2008)	3	Autism (HF)	9-10	Social communication	Social interaction, Stereotypic bx	Smo, SE	MBL across participants	School	Researcher
Mancina et al (2000)	1	Autism (ID)	12	Disruptive bx	Stereotypic bx	Smo	MBL across tasks	School	Researcher
Moore (2009)	1	PDD-NOS (LF)	18	Stereotypic bx	None	Smo, SR	Mprobe across settings + withdrawal	Residential school	Teacher
Morrison et al. (2001)	4	AD; Autism (HF)	10-11	Social communication	None	Smo	MBL across skills + withdrawal	School	Researcher
Mruzek et al (2007)	2	AD; Autism (HF)	9-10	Academic	None	Smo, SE	Changing criterion	School	Teacher

Study	N	Diagnosis	Age	Target bx	Secondary bx	Measure	Design	Setting	Implementer
Newman et al. (1995)	3	Autism (ID)	14-17	Academic	None	Smo, SE	MBL across participants	School	Teacher
Newman et al. (1996)	3	Autism	Adolescents	Social communication	None	Smo, SR	MBL across participants	School	Researcher
Newman et al. (1997)	3	Autism (ID)	4-12	Disruptive bx; stereotypic bx	None	Smo	MBL across participants	School	Researcher
Newman et al. (2000)	3	Autism	6	Stereotypic bx	None	Smo	MBL across participants	School, Home	Researcher
Pierce & Schreibman (1994)	3	Autism (LF)	6-9	On-task bx	Stereotypic bx	SR	Mprobe across bxs	Home	Clinician
Reinecke et al. (1999)	3	Autism (ID)	Preschool	Social communication	None	Smo, SR	Withdrawal	Home, School	Clinician
Rock (2005)	1	AD	11	On-task bx; productivity	Accuracy; inappropriate bx	Smo, SE	Withdrawal	School	Researcher
Rock & Thead (2007)	1	Autism (ID)	14	On-task bx; productivity	Accuracy	Smo	Withdrawal	School	Researcher
Sainato et al. (1990)	3	Autism	Preschool	On-task bx	Prompts	Smodel, Smo, SE	Withdrawal	School	Teacher
Shabani et al. (2001)	1	Autism (ID)	12	Stereotypic bx	None	Smo, SE	MBL across bxs	Clinic	Researcher
Stahmer & Schreibman (1992)	3	Autism (ID)	7-13	Play	Stereotypic bx	Smo, SE, SR	MBL across participants	Clinic, Home	Researcher
Shearer et al. (1996)	3	Autism	5	Social communication	None	Smo, SE	Alt tx/MBL across participants	School	Researcher
Shogren et al. (2011)	2	AD	5	Academic	None	Smo, SE	Alt tx + withdrawal	School	Teacher, Researcher
Strain et al. (1994)	3	Autism (LF)	3-5	Social communication	None	Smo	MBL across settings (across participants)	School, Home	Teacher, Mom

Todd & Reid (2006)	3	Autism (LF)	15-20	Leisure	None	Smo	Alt tx	School	Researcher
Wehmeyer et al. (2003)	3	Autism (ID)	13-14	Problem bx/Social communication	None	Smo	MBL across participants	School	Researcher
Wilkinson (2005)	1	AD	9	On-task bx	None	Smo, SE	Case study	School	Teacher

Note. ASD = autism spectrum disorder; Dx = diagnosis; Fx = Functioning (as reported by article authors); Bx = behavior; SM = self-management; AD = Asperger's Disorder; HF = high functioning (as reported by article authors); ID = intellectual disability (as reported by article authors); LF = low functioning (as reported by article authors); Smo = self-monitoring; SE = self-evaluation; SR = self-reinforcement; Smodel = self-modeling; MBL = multiple baseline; NCMBL = non-concurrent multiple baseline; Mprobe = multiple probe; alt tx = alternating treatments

APPENDIX E

Demographic Questionnaire

Please answer the following questions about your child:

What is your child's date of birth? _____

What is your child's gender? *Check one*
_____ Male
_____ Female
_____ Transgender

What race/ethnicity best describes your child? *Please check only one*
_____ American Indian or Alaskan Native
_____ Asian/Pacific Islander
_____ Black or African American
_____ Hispanic American
_____ White/Caucasian
_____ Multiple ethnicity/Other (please specify) _____

Please check the diagnoses your child has received and fill in the age he/she was when diagnosed. If he/she has any additional diagnoses, please list those as well.

Diagnosis	Age
_____ Autism Spectrum Disorder	____
_____ Autistic Disorder	____
_____ Pervasive Developmental Disorder-Not Otherwise Specified	____
_____ Asperger's Disorder	____
_____ Childhood Disintegrative Disorder	____
_____ Rett Syndrome	____
_____	____
_____	____
_____	____

Please answer the following questions about yourself:

What is your relationship to your child?
_____ Parent
_____ Foster parent
_____ Relative
_____ Other

What is your age? _____

What race/ethnicity best describes you? *Please check only one*
　　　　_____ American Indian or Alaskan Native
　　　　_____ Asian/Pacific Islander
　　　　_____ Black or African American
　　　　_____ Hispanic American
　　　　_____ White/Caucasian
　　　　_____ Multiple ethnicity/Other (please specify) _____

What is your marital status?
　　　　_____ Divorced/Separated
　　　　_____ Married
　　　　_____ Single
　　　　_____ Other _____

Please select your highest level of education (*For degrees not completed, please indicate the number of years completed in the blank provided*):
　　　　_____ High school _____
　　　　_____ Bachelors _____
　　　　_____ Masters _____
　　　　_____ PhD _____
　　　　_____ MD _____
　　　　_____ JD _____
　　　　_____ Other _____

How many other children do you have? _____

How many of your other children currently live at home? _____

How many of your other children are you currently homeschooling? _____

How many other children do you have who are diagnosed with a disability?
_____

> ➢ **What disabilities do your *other children* present with?** *Please list each child's age and diagnoses and circle whether they are currently homeschooled.*

Age	Diagnoses	Homeschooled (circle)
____	_____	Yes/ No
____	_____	Yes/ No
____	_____	Yes/ No
____	_____	Yes/ No
____	_____	Yes/ No

Please select all types of formal educational training you have received.
Select all that apply

_____ Certified general education teacher
_____ Certified special education teacher
_____ Some university level education coursework
_____ Education workshop(s)/conference(s)
_____ Other _____
_____ None

Please select all types of formal training you have received related to working with children with ASD. *Select all that apply*

_____ Formal degree
_____ Certification
_____ University level coursework
_____ Workshop(s)/Conference(s)
_____ Other _____
_____ None

APPENDIX F

On-task Behaviors Child List

ON-TASK MEANS:

(1) I'm sitting in my seat.

(2) I'm looking at my materials.

(3) I'm only touching my work.

(4) I'm doing my work.

APPENDIX G

Student On-task Self-Monitoring Sheet

Date: _____   **Session:** _____

1. How much of the time were you sitting in your seat?

I-----------------------------I-----------------------------I-----------------------------I
1   2   3   4

◯−◑   ◑−◐   ◐−●   ●−●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

2. How much of the time were you looking at your work (not looking around the room, not looking outside)?

I-----------------------------I-----------------------------I-----------------------------I
1   2   3   4

◯−◑   ◑−◐   ◐−●   ●−●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

3. How much of the time were you touching things that have to do with your work?

I-----------------------------I-----------------------------I-----------------------------I
1   2   3   4

◯−◑   ◑−◐   ◐−●   ●−●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

4. How much of the time were you doing your work (writing on your paper, reading from your paper or computer)?

I-----------------------------I-----------------------------I-----------------------------I
1   2   3   4

◯−◑   ◑−◐   ◐−●   ●−●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

APPENDIX H

Parent On-Task Recording Sheet

Date: _____   **Session:** _____   **Assignment:** _____

1. How much of the time was the student sitting in his seat?

I-----------------------------I----------------------------I-----------------------------I
1   2   3   4

○－◐   ◐－◑   ◑－◕   ◕－●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

2. How much of the time was the student looking at his work (not looking around the room, not looking outside)?

I-----------------------------I----------------------------I-----------------------------I
1   2   3   4

○－◐   ◐－◑   ◑－◕   ◕－●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

3. How much of the time was the student touching things that have to do with his work?

I-----------------------------I----------------------------I-----------------------------I
1   2   3   4

○－◐   ◐－◑   ◑－◕   ◕－●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

4. How much of the time was the student doing his work (writing on his paper, reading from his paper or computer)?

I-----------------------------I----------------------------I-----------------------------I
1   2   3   4

○－◐   ◐－◑   ◑－◕   ◕－●

None of the   Less than   More than   Almost the
time - to just a   half the time-   half the time-   whole time -
little of the time   to half the time   to most of the time   to the whole time

Total # of child matches:	Total min of reinforcement awarded:

APPENDIX I

Procedural Fidelity Checklist

Date: _____
Session #: _____

	Steps in Intervention	Step completed (circle)		
1	Turned on camera	+	-	
2	Selected 3-5 options for available reinforcers	+	-	
3	Started Google hangout	+	-	
4	Made sure child was seated	+	-	
5	Restricted access to leisure items	+	-	
6	Displayed rules for on-task behavior	+	-	
7	Made sure child had paper for writing questions	+	-	
8	Conducted preference assessment	+	-	
9	Stated the rules	+	-	
10	Set 15-minute timer	+	-	
11	Set MotivAider®	+	-	
12	Looked at camera when MotivAider® vibrated	+	-	
13	Provided enough work to last session length (15 min)	+	-	
14	If child finished before session time had elapsed (15 min), prompted child to continue working	+	-	N/A
15	Returned to room after session length (15 min)	+	-	
16	Asked child to complete self-monitoring datasheet	+	-	
17	Completed on-task rating sheet	+	-	
18	Answered any questions child wrote down	+	-	N/A
19	Made sure child compared rating with parent's	+	-	
20	Explained any discrepancies in rating	+	-	N/A
21	If child met contingencies, provided child with [amount of reinforcement] per each on-task behavior met	+	-	N/A
22	If child did not meet contingencies, but datasheet matched parent's, delivered verbal praise	+	-	N/A
23	If child did not meet contingencies, provided break with no preferred item/activity available	+	-	N/A
	# of steps correct =			
		÷		
	Total steps implemented =			
		=		
	% of steps implemented correctly			

APPENDIX J

Data Collector On-Task Data Sheet

Student Name: _____ **Observer:** _____ **Current date:** _____
Session Date: _____**Session number:** _____ **Session length:** _____
Target behavior: *On-task*: (a) sitting in seat; (b) eyes oriented toward instructional materials (e.g., computer, textbook, worksheet); and (c) manipulating appropriate instructional materials, as designed (e.g., typing with keyboard, writing in notebook).

		\multicolumn{15}{c}{Interval #}	Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
+ or -	In seat																
	Look																
	Work																
		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
+ or -	In seat																
	Look																
	Work																
		31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	
+ or -	In seat																
	Look																
	Work																
		46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
+ or -	In seat																
	Look																
	Work																
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	
+ or -	In seat																
	Look																
	Work																
		76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	
+ or -	In seat																
	Look																
	Work																
												Total # of Intervals In-seat:					
												Total # of Intervals Looking:					
												Total # of Intervals Working:					
												Total # Intervals On-task:					
												% Intervals On-task:					

APPENDIX K

Modified Intervention Rating Profile (IRP-15) – Pre-Intervention

The purpose of this questionnaire is to obtain information that will aid in the selection of classroom interventions. These interventions will be used by teachers of children with behavior problems. Please circle the number which best describes your agreement or disagreement with each statement.

1. This is an acceptable intervention for my child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

2. Most homeschool teachers would find this intervention appropriate for behavior problems in addition to the one described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

3. This intervention should prove effective in changing my child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

4. I would suggest the use of this intervention to other homeschool teachers.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

5. My child's behavior problem is severe enough to warrant use of this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

6. Most homeschool teachers would find this intervention suitable for the behavior problem described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

7. I would be willing to use this intervention in the homeschool setting.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

8. This intervention would *not* result in negative side-effects for my child.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

9. This intervention would be appropriate for a variety of children.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

10. This intervention is consistent with those I have used in homeschool setting.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

11. The intervention is a fair way to handle my child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

12. This intervention is reasonable for the behavior problem described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

13. I like the procedures used in this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

14. This intervention is a good way to handle my child's behavior problem.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

15. Overall this intervention would be beneficial for my child.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

APPENDIX L

Modified Intervention Rating Profile (IRP-15) – Post-Intervention

The purpose of this questionnaire is to obtain information that will aid in the selection of classroom interventions. These interventions will be used by teachers of children with behavior problems. Please circle the number which best describes your agreement or disagreement with each statement.

1. This was an acceptable intervention for my child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

2. Most homeschool teachers would find this intervention appropriate for behavior problems in addition to the one described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

3. This intervention proved effective in changing my child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

4. I would suggest the use of this intervention to other homeschool teachers.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

5. My child's behavior problem was severe enough to warrant use of this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

6. Most homeschool teachers would find this intervention suitable for the behavior problem described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

7. I would be willing to use this intervention in the homeschool setting.

I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

8. This intervention did *not* result in negative side-effects for my child.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

9. This intervention would be appropriate for a variety of children.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

10. This intervention is consistent with those I have used in the homeschool setting.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

11. The intervention was a fair way to handle the child's problem behavior.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

12. This intervention is reasonable for the behavior problem described.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

13. I liked the procedures used in this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

14. This intervention was a good way to handle my child's behavior problem.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

15. Overall this intervention was beneficial for my child.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

Additional Items:
16. My child is more on-task in the target content area(s) as a result of this intervention.

I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

17. My child is more on-task across all content areas as a result of this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

18. My child completes independent work quicker as a result of this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

19. My child is more accurate in his/her academic work as a result of this intervention.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

20. I am able to engage in other tasks while my child is completing independent instruction.
I------------------I------------------I------------------I------------------I------------------I
Slightly   Disagree   Slightly   Slightly   Agree   Strongly
Disagree   Disagree   Agree   Agree

APPENDIX M

Modified Children's Intervention Rating Profile (CIRP)

1. The method used to deal with my off-task behavior was fair.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree

2. My homeschool teacher was too harsh on me.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree

3. There are better ways to handle my off-task behavior than the one described here.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree

4. The method used by my homeschool teacher would be a good one to use with other
    children.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree

5. I like the method used for my off-task behavior.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree

6. I think that the method used for off-task behavior would help me to do better in my
    schoolwork.
I------------------I------------------I------------------I------------------I------------------I
I agree   I do not
                                                                                       agree