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Transition to adulthood for persons with developmental disorders: A focus on mental health and social support

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Transition to adulthood for persons with developmental disorders:

A focus on mental health and social support

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Psychology

by

Christine Theresa Moody

2020

ABSTRACT OF THE DISSERTATION

Transition to adulthood for persons with developmental disorders:

A focus on mental health and social support

by

Christine Theresa Moody

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2020

Professor Bruce L. Baker, Chair

Prior research supports that the transition to adulthood marks a vulnerable developmental period, marked by pervasively poor outcomes, for individuals with developmental disorders (DD), such as intellectual disability or autism spectrum disorder (e.g., Shattuck et al., 2012; Eaves & Ho, 2008; Bouck, 2012; Young-Southward, Philo, & Cooper, 2017). However, psychosocial and contextual correlates of successful transitions have not yet been thoroughly examined. The current dissertation sought to address this gap in the literature, with a particular focus on mental health (Study I) and social support (Study II). Both studies utilized a singular participant sample (N=93) consisting of typically developing (TD) young adults, young adults with autism spectrum disorder (ASD) with or without cognitive impairments, and young adults with intellectual disability (ID), all of whom were part of a larger longitudinal study. Consistent with previous research, our results indicated that young adults with DD, and especially those

with ASD, reliably fared worse than young adults with TD across a variety of outcomes. Results indicated that both mental health and social support in young adulthood explain variability in concurrent functional transition outcomes (e.g., independence, professional involvement). Adolescent predictors of both young adult mental health and young adult social support were also identified, highlighting targets for intervention that may bolster successful transitions to adulthood for all.

The dissertation of Christine Theresa Moody is approved.

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2020

Table of Contents

List of Figures and Tables

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Moody, C.T., Rodas, N., Norona, A., Blacher, J., Crnic, K.A., & Baker, B.L. (2019). Early childhood predictors of global competence in adolescence for youth with typical development or intellectual disability. *Research in Developmental Disabilities, 94*, 1-13.

Moody, C.T., Baker, B.L., & Blacher, J. (2018). Contribution of parenting to complex syntax development in preschool children with developmental delays or typical development. *Journal of Intellectual Disability Research, 62*(7), 604-616.

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Introduction

The period between adolescence and adulthood, referred to as the transition to adulthood or emerging adulthood, is increasingly being recognized as a distinct and important developmental period (Buchmann & Kriesi, 2011; Schulenberg, Sameroff, & Cicchetti, 2004; Arnett, 2000). This transition time is normatively rife with changes, including residential moves, changes in affiliations (e.g., family, friend, and romantic relationships), exploration of careers, and increased independence. Recent societal trends in industrialized countries, such as delays in age of marriage and increased engagement in higher education, have extended the timeline to achievement of standardized adult milestones and increased heterogeneity in the demographic characteristics of this age cohort. Arnett (2000) argues that this unique period of transition is indeed characterized by demographic diversity and instability reflecting the exploratory nature of emerging adulthood, where the process of identity development is continued from adolescence through serious and enduring decisions with respect to work, love, and worldviews.

From a systems perspective (Cicchetti & Rogosch, 2002; Sameroff, 2000), developmental trajectories are influenced by innumerable person-context interactions, which contribute to continuity and discontinuity across the lifespan. Using this theoretical framework, it is clear that the transition to adulthood may be especially salient given its correspondence to multiple developmental shifts in both the individual (e.g., neurodevelopmental maturation, identity formation) and context (e.g., exit from high school, moving out of family home). These developmental shifts and subsequent impact on person-context interactions may help to explain the wide variability in life paths and trajectories toward the assumption of adult roles (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003; Arnett, 2000; Buchmann & Kriesi, 2011). The combination of rapid changes, reduced structure (e.g., exit from public school), and increased

1

independence creates a critical juncture that is apt to accentuate the impact of pre-existing individual differences (e.g., coping, stressors, resources) as well as initiate new patterns of behavior (Masten, Burt, Roisman, Bradovic, Long, & Tellegen, 2004). As such, in qualitative interviews about occupational decision-making with typically developing young adults, emergent themes included unrealized expectations, delays in achieving milestones, and uncertainty about the future (Mortimer, Zimmer-Gembeck, Holmes, & Shanahan, 2002).

This critical juncture is even more tenuous for vulnerable populations (Osgood, Foster, Courtney, 2010), such as individuals with developmental disabilities (DD). Developmental disabilities encompass a diverse set of chronic conditions and disorders, which result in impairments in physical, cognitive, or behavioral functioning. In the current dissertation, the primary focus will be on two groups of individuals with developmental disabilities: autism spectrum disorder (ASD) and intellectual disability (ID). As these individuals exit the public-school system, they and their families face what has been deemed a "service cliff," in which access to supportive services, accommodations, and programs becomes increasingly limited, and unmet needs increase (Turcotte, Mathew, Shea, Brusilovskiy, & Nonnemacher, 2016). Though there are government funded services and supports available for adults with disabilities, the systems can be difficult to navigate and eligibility decisions are sometimes inconsistently applied (Stapleton, O'Day, Livermore, & Imparato, 2006). Further, state and federal funding and policies do not consistently support integrated employment opportunities for individuals with ID, and may continue to perpetuate low societal expectations and stereotypes about this population (Butterworth, Smith, Hall, Migliore, & Winsor, 2013; Niemiec, Lavin, & Owens, 2009). The National Transition Longitudinal Study 2 (NTLS-2), a 10-year prospective study that followed youth in special education after high school completion, identified a steep decline in service

2

utilization in the transition period for youth with ASD (Shattuck, Wagner, Narendorf, Sterzing, & Hensley, 2011). Approximately 40% of parents reported that their transition aged child had not received any case management, mental health, speech/language, or medical services related to their disability in the 2 years following high school. Service utilization in young adulthood for these individuals also differed by poverty and race, with low-income and minority youth being less likely to receive services, further indicating that the presence of barriers to access and unmet needs.

These structural barriers to successful transitions to adulthood for individuals with DD come to fruition in data detailing negative adult outcomes for these populations. Survey data indicate that more than 50% of individuals with ASD have not participated in either paid employment or postsecondary education opportunities for the 2 years following high school (Shattuck et al., 2012). This rate of no participation was higher than every other disability population in the study, including learning disability, intellectual disability, and speech & language impairment. Similarly, one study found that adolescents and young adults with ASD self-report lower levels of self-determination, personal autonomy, and social competence than other youth with disabilities (Wagner, Newman, Cameto, Levine, & Marder, 2007). Prior research indicates poor social functioning in adulthood as well, suggesting that more than half of adults with autism report having no close friendships (Eaves & Ho, 2008; Howlin, Goode, Hutton, & Rutter, 2004). Further, although research suggests that the core ASD symptomatology generally improves with age, deterioration in functioning and behavior is found throughout adolescence (Levy & Perry, 2011). These functional impairments may be partially explained by the seventy-five percent of adults with ASD who report comorbid psychopathology, with the most common being anxiety and mood disorders (Eaves & Ho, 2008). Overall, when considering

multiple factors, such as independence, social relationships, and employment, about half of adults with ASD achieve "poor" outcome classifications (Eaves & Ho, 2008; Howlin, et al., 2004).

Individuals with intellectual disability (ID) similarly experience difficulty in the transition to adulthood. A systematic review concluded that young adults with ID fared worse than those without ID in the transition period with respect to health and well-being (Young-Southward, Philo, & Cooper, 2017). Data from the NTLS-2 indicated that individuals with ID similarly have difficulty attaining independence and employment, with 69.2% of respondents indicating that they were not employed at a paid job up to 3 years after high school (Bouck, 2012). Among those who were employed, young adults with ID were significantly more likely than individuals in other disability groups to be earning less than minimum wage (Grigal, Hart, & Migliore, 2011). Individuals with ID were significantly less likely to have postsecondary educational goals in their high school transition plans and less likely to enroll in PSE programs after high school, despite increased PSE options for this population and associated benefits of PSE for employment (Grigal, Hart, & Migliore, 2011; Newman, Wagner, Kameto, & Shaver, 2010; Hart, 2006). Similar to individuals with ASD, research has supported that adults with ID are also more likely than the general population to have comorbid mental health and behavior problems, with almost half of young adults with ID classified as at clinically significant risk for mental health problems (Cooper, Smiley, Morrison, Williamson, & Allan, 2007; McIntyre, Blacher, & Baker, 2002). Further, a recent meta-analysis highlighted a dearth of effective treatments for mental health problems in adults with ID (Koslowski et al., 2016), again recognizing a large unmet need.

Ultimately, the psychological experience of emerging adulthood may be fundamentally different for young adults with DD than for typically developing (TD) young adults. Many of these individuals stay in school longer than their TD peers, as the Individuals with Disabilities Education Act (IDEA) mandates provision of a free and appropriate education up until age 22. However, there is variability in how long each student receiving special education services remains enrolled, resulting in uncertainty and fragmentation of class cohorts. Further, during the transition period, young adults with mild to moderate ID reported worries about being bullied, losing a caretaker, and failing in life (Forte, Jahoda, & Dagnan, 2011). These concerns were fundamentally different than those of their typically developing peers, who instead reported worries about obtaining a job, finances, and decisions about the future (Forte, Jahoda, & Dagnan, 2011). Furthermore, compared to their TD peers, young adults with ID ruminated about these worries more frequently and were significantly more distressed by them. Research suggests that these discrepancies in the psychological experience are also present in young adults with ASD with no cognitive impairment. For example, young adults with ASD currently enrolled as undergraduates in four-year university postsecondary education settings endorsed rates of anxiety, depression, stress, and suicidality three to five times greater than are typically reported by undergraduates in the general population (Jackson, Hart, Thierfeld Brown, & Volkmar, 2018). These difficulties were significantly associated with experiences of loneliness (e.g., being left out, feeling isolated, or lacking companionship), which over 75% of the sample studied reported.

A New Focus

Mental Health. Compared to the general population, it is well documented that children and adults with ASD have higher rates of psychiatric comorbidities and mental health problems (Simonoff et al., 2008; Buck et al., 2014). Similarly, elevated rates of psychopathology have

been documented in both children and adults with ID (Caplan, Neece, & Baker, 2015; Baker, Blacher, Crnic & Edelbrock, 2002; Emerson, 2003; Tonge & Einfeld, 2003). Although this higher incidence of psychopathology in DD is widely accepted, less attention has been paid to the role of psychopathology in understanding the overall poor transition outcomes for these populations. Magiati and colleagues (2014) discussed that although most studies included in their review reported high levels of psychiatric comorbidity in adults with ASD, only one paper examined change in mental health over time in this population (Gray et al., 2012). In general, the limited research has observed mild improvements in mental health symptomatology from adolescence to early adulthood, with the caveats of continued high rates of comorbid mental health problems and substantial heterogeneity in trajectories, including groups of individuals whose mental health functioning declines over time (Gray et al., 2012; Woodman, Mailick, & Greenberg, 2016). For example, when examining specific disorders, there is evidence to suggest that prevalence of depressive (Ghaziuddin, Ghaziuddin, & Greden, 2002) and anxiety symptoms (Kuusikko et al., 2008) in individuals with ASD does indeed increase with age, though these studies were cross-sectional in nature.

The limited research relating mental health to transition outcomes does indeed support that mental health may be a critical component of transition success. In a review of the impact of serious emotional or mental health problems on transition outcomes in the general population, transition-aged young adults with mental health problems were less likely to obtain postsecondary education, to be employed, or to be married than young adults without mental health problems (Davis & Vander Stoep, 1997). A recent study of youth with ASD identified internalizing symptoms in adolescence as a risk factor for decreased social participation in young adulthood (Taylor, Adams, & Bishop, 2017). Presence of a mental health condition was

6

associated with significantly lower subjective quality of life, as reported by older adults with ASD (Mason, Mackintosh, McConachie, Rodgers, Finch, & Parr, 2019). Using qualitatively derived ratings of transition success from parents of young adults with severe ID, mental health problems distinguished young adults with successful or unsuccessful transitions (Neece, Kraemer, & Blacher, 2009). Thus, it is essential that research begin to focus on not only prevalence of mental health problems in DD populations, but also on how mental health impacts well-being and which childhood factors predict mental health outcomes in the transition to adulthood period.

Social Support. In examining different domains of quality of life in transition-aged youth with DD, more than a third of parents report that their child rarely or never spends time with friends (Biggs & Carter, 2016). Compared to a typically developing sample, both individuals with ASD and individuals with ID were rated as having significantly less social support. In studies of adults with ID, their social support networks have significantly fewer members than TD adults (Widmer, Kempf-Constanin, Robert-Tissot, Lanzi, & Carminati, 2008) and adults with physical disabilities (Lippold & Burns, 2009).

However, there are individuals with DD who have developed stronger social support networks. Parent report of their young adult child participating in extracurricular activities and having stronger religious faith were both predictive of higher social support (Biggs & Carter, 2016). These findings echo those in a study examining a unique cohort of adults with ASD living in Utah, of which the vast majority (93%) were active members of the Church of Jesus Christ of the Latter-Day Saints (Farley et al., 2009). This study reports much higher rates of "good" and "very good" overall outcome than other samples, including more social participation in romantic relationships and community activities. Further, a different paper examined determinants of

quality of life in adults with ASD, and identified perceived informal support and unmet professional support needs as predictors of quality of life (Renty & Roeyers, 2006). This was especially notable as other variables included in the model, such as IQ, age, gender, and autism severity did not emerge as significant predictors. Taken together, these results suggest that the development of social support through community participation and inclusion may very well be an integral, and understudied, protective factor in the transition period for individuals with DD.

Predicting Successful Transitions: Contextual Factors

Further, despite the growing literature base indicating that young adults with DD are in crisis, there is still a limited understanding of what predicts successful or unsuccessful transitions to adulthood for these individuals, due to a dearth of longitudinal studies in this population. Two recent reviews identified only 8 and 25 papers, respectively, depending on search criteria, that collected data in childhood and adulthood in youth with ASD (Kirby, Baranek, & Fox, 2016; Magiati, Tay, & Howlin, 2014). Cognitive ability and social-communication appear to be the most widely considered predictors, with positive associations observed between both of these predictors and a myriad of young adult outcomes, including later cognitive ability, later communication ability, autism symptom severity, adaptive functioning, and social outcomes (Magiati, Tay, & Howlin, 2014).

However, reviews of the literature in ASD (Kirby, Baranek, & Fox, 2016; Magiati, Tay, & Howlin, 2014) have highlighted a historical focus on individual characteristics (e.g., IQ, autism severity, language ability) as predictors of outcomes, with comparative lack of attention given to the contributions of environmental and social factors (e.g., family factors, social integration, services accessed, policy implications, employment opportunities). However, research from childhood has indicated that these factors, particularly family relationships and

family well-being, are essential to child development and outcomes in both ID and ASD (Baker, Fenning, Crnic, Baker, & Blacher, 2007; Siller & Sigman, 2002; Dekker & Koot, 2003; Baker et al., 2003). Blacher (2001) proposed a conceptual model detailing the multiple influences that affect transition success in individuals with DD, including not only individual characteristics, but also factors such as social supports, service access, family cohesion, socio-economic status, culture, school programming, and youth mental health. Further, ecological systems theory (Bronfrebrenner, 1992) and systems perspectives more broadly (Cicchetti & Rogosch, 2002; Sameroff, 2000) emphasize the importance of contextual, proximal, and distal variables in shaping individual developmental trajectories. Indeed, exploration of such environmental and systems factors as correlates of young adult outcomes has been labeled as an overarching research priority by the Health Care Transitions Research Network for Autism Spectrum Disorder and Other Developmental Disabilities (Shattuck, Lau, Anderson, & Kuo, 2018).

The very limited research that has examined these contextual factors in emerging adulthood supports their importance. For example, maternal expressed positive emotion and higher quality mother-child relationships through adolescence and the transition period were both associated with decreased externalizing, asocial, and maladaptive behaviors in young adults with ASD (Woodman, Smith, Greenberg, & Mailick, 2015). School context appears to matter as well, such that higher levels of inclusion in high school was associated with more positive outcomes and trajectories through the transition to adulthood (Chan, Smith, Hong, Greenberg, Taylor & Mailick, 2018; Woodman, Smith, Greenberg, & Mailick, 2016). Systemically, youth with ASD from low-income backgrounds and racial/ethnic minority youth with ASD are less likely to achieve positive functional outcomes in the transition to adulthood period (Eilenberg,

Paff, Johnson Harrison & Long, 2019), again highlighting disparities in access and the important role of systemic variables.

A final limitation of the current literature on predictors of transition success in DD is the reliance on the NTLS-2 dataset. Though this dataset includes a substantially larger sample, which confers power to analyses, the practice of multiple researchers addressing multiple research questions with the same dataset also confers additional probability of Type I error (Kirby, Baranek, & Fox, 2016). There is a desperate need to replicate and extend findings from the NTLS-2 to other samples of individuals with DD. Further, the NTLS-2 dataset is only inclusive of students who were receiving special education services in high school. First, this sample may then exclude individuals with high functioning ASD, who may not self-identify in high school or who are enrolled in regular education classrooms, but whose transition outcomes are similarly poor across many areas of functioning (Kapp, Gantman, & Laugeson, 2011). Additionally, the exclusion of a typically developing comparison group limits the ability to differentiate how processes and outcomes in emerging adulthood are common across all youth or unique to individuals with DD. Such data on the similarities and differences within the transition to adulthood for individuals with and without DD are essential to informing adequate public and educational policy for all young adults.

Current Studies

The most widely cited epidemiological source, the Center for Disease Control, has estimated the prevalence of ASD among national samples of 8-year-olds, documenting a stark rise from 1 in 150 children in 2002 to the most recent estimate of 1 in 54 children in 2020 (Maenner et al., 2020). Projecting from these numbers, the number of individuals with ASD transitioning out of the public education system and into adulthood can be expected to more than

double over the next 15 years. Despite this fast-approaching surge of young adults with ASD, research within the field has historically focused almost exclusively on childhood and adolescence. Further, although research supports that the transition to adulthood marks a vulnerable developmental period with pervasively poor outcomes for individuals with DD, contextual correlates of successful transitions have not yet been clearly identified. It is essential that such research be conducted, disseminated, and integrated into policy and practice.

The current dissertation sought to address some of these gaps in the literature through two studies utilizing a singular participant sample and data set collected as part of a larger longitudinal study. The sample consisted of typically developing (TD) young adults, young adults with ASD with or without comorbid ID, and young adults with ID, who were well-characterized at age 13 and 15 through participation in previous assessment time points. Examining adolescent predictors of young adult outcomes was warranted, given that adolescence is both proximal to young adulthood, and widely recognized as a distinct, critical developmental period (Steinberg, 2005). Study 1 included an examination of concurrent relationships between mental health problems and outcomes in emerging adulthood, as well as analyses to identify adolescent predictors of mental health in young adulthood. Study 2 characterized young adults' social support networks and perceived satisfaction with that social support, to shed light on specific areas of need for young adults with DD; additional analyses were conducted to elucidate associations between adolescent variables, various characteristics of young adult social support, and overall transition outcomes.

General Method

Participants

11

Participants included a subsample (*N*=93) of the 213 youth and families who previously

participated in the child age 13 and 15 assessment point of the Collaborative Family Study (CFS)

longitudinal study. All diagnostic groups were represented in the subsample collected, including

typically developing young adults (TD; *n*=44), young adults with intellectual disability (ID;

n=15), young adults with ASD with comorbid ID (ASD+ID; *n*=14), and young adults with ASD

and no cognitive impairments (ASD; *n*=20). Participants' age was between 20-24 years old,

corresponding directly to the most common ages of transition out of the public education system

(i.e., age 18 for diploma track, age 22 for non-diploma track).

Collapsing across groups, the current sample was 60.2% male. With respect to ethnicity,

61.3% of the young adult participants were Caucasian, 15.1% were Hispanic, 4.3% African-

American, 2.2% Asian, and 17.2% other, which generally captured individuals of mixed

ethnicity and racial backgrounds. See Table 1 for the gender, ethnicity, and standardized IQ and

adaptive behavior composite scores for each group (TD, ID, ASD+ID, ASD). As would be

expected, there were significant differences in Full Scale IQ at age 13 across the groups,

F=98.67, *p*<.001, with each post-hoc comparison reflecting significant differences only between

groups with and without intellectual disability, such that there are no differences between TD

and ASD Only, nor between ASD+ID and ID only. Typically developing youth had significantly

higher Adaptive Behavior Composite (ABC) scores on the Vineland Adaptive Behavior Scales

(VABS-II) than all other groups (ASD, *p*<.001; ASD+ID, p<.001; ID, *p*<.001). The ASD Only

group was also reported to have significantly higher adaptive skills at age 13 than those with

ASD+ID, *p*=.002. Group differences were observed in the distribution of gender as well, such

that the ASD Only group had the highest proportion of males, χ^2=15.53, *p*=.001. When

comparing the proportion of Caucasian to other ethnic/racial groups in each diagnostic group,

there were no significant differences observed. With respect to family income, a large percentage of families in the current sample opted not to disclose their income (15.1%). However, given data disclosed, the sample appeared to be high income, with almost half (47.3%) of families reporting an annual income greater than $95,000. When comparing proportion of these high-income families (>$95,000/year) to lower- and moderate-income families (less than $95,000/year) across groups, there were no statistically significant differences.

Procedure

All procedures for the larger follow-up study were submitted to the University of California, Riverside (UCR) Institutional Review Board (IRB) and subsequently approved by the University of California, Los Angeles IRB through a reliance system. Given the wide range of functioning in sample, procedures were modified systematically based on developmental status, as well as when determined necessary by research staff to ensure comprehension and validity. A team of five doctoral level graduate students were involved with data collection (e.g., conducting interviews, administering questionnaires), with the administrative support of seven undergraduate research assistants.

For typically developing young adults, parents who participated in previous assessment points were contacted and asked to provide their child's contact information, or the legal conservator's contact information. Young adults (or conservators) were then contacted directly regarding their own participation in the study as well as their parent's participation. If willing to participate, a research staff member set a time to speak to the young adult on the phone to review an informed consent form for their own participation, as well as to allow their parents to participate. Following review of the informed consent, young adult participants electronically signed the consent form via Qualtrics, a web-based data collection service. If a young adult was

13

conserved, research staff reviewed the informed consent with the conservator, and reviewed an assent form with the young adult. After obtaining consent, and assent if applicable, a phone interview was scheduled between the young adult and a trained research staff member to gather information about their perspective on and experience during the transition from schooling to adulthood using a semi-structured interview. After completion of the phone interview, young adults were sent a link to complete standardized questionnaires online, through a web-based research platform called Qualtrics.

In contrast to typically developing young adults who participated entirely remotely by phone and online, young adults with developmental disabilities (ID, ASD Only, ASD+ID) were asked to come to the lab locations, at UCLA or UCR, in person, to maximize comprehension of the material and increase validity of responses. The young adult interviews were conducted in person, and each participant completed their online questionnaires in the lab setting. A graduate student researcher with experience with clinical and developmental disability populations was present throughout each in-person visit to assess the participant's comprehension and ability during the interview and questionnaires. This graduate student researcher made adjustments to the procedure when clinically indicated; examples of common adjustments included: rewording or explaining questions to use simpler language (e.g., substituting more colloquial words, explaining double negatives), using visual supports to clarify response options, reading aloud items. These adjustments were largely in line with recommendations for maximizing response rates and reducing response biases in individuals with ID (Hartley & McLean, 2006).

For any participant, if travel to UCLA or UCR was prohibitive, a research staff member traveled to the young adult's home to enable participation. All young adult participants were compensated for their time with a $50 gift card to Amazon, which was disbursed electronically.

If the young adult consented to his or her parent's participation in the study, a similar procedure to that of typically developing young adults was followed. First, research staff reviewed an informed consent for parent to sign electronically. After obtaining consent, a trained research staff member conducted a 30-minute phone interview with the parent. Following the interview, parents were emailed a link to complete standardized questionnaires through Qualtrics. Throughout the online questionnaires and interview, parents were asked to report on their young adult child's functioning, as well as on their own well-being and experience during this period of their child's life. Parents also received a $50 Amazon gift card to compensate for their time, again disbursed electronically.

Measures

Young adults completed various self-report questionnaires measuring their mental health, relational, professional, and physical health functioning. Parents completed questionnaires about their child's functioning, as well as questionnaires assessing their own mental health and stress. In addition, semi-structured interviews with both parent and young adults were conducted to gain qualitative and descriptive information about the participants' and parents' transition and life experiences. Only measures that are central to the overall dissertation, across both studies, are reviewed in depth in the below General Method section. Measures that are specific to one study or aim within this dissertation will be discussed in the relevant study chapter.

Transition Outcome Composite.

Similar to prior studies characterizing transition outcomes in this population (Eaves & Ho, 2008; Howlin et al., 2004), three primary outcomes of interest were utilized to define successful transitions: participation in professional activities (i.e., employment, higher education); formation of meaningful social relationships; and independence (e.g., adaptive skills,

15

living supports). These three areas similarly map on to a three-pronged model (i.e., employment, residential environment, interpersonal networks) of community adjustment representative of young adult functioning within general child development theory (Halpern, 1985). Each area had defined criteria for scores ranging for 0-3, with 0 representing the best outcome, and 3 the worst. See below for the specific guidelines utilized for each domain. For each participant, a rating was derived based on the young adult's report and the parent's report on each of the following composite components. If both reporters indicated functioning that corresponded to the same rating, this rating was utilized for the participant. In cases where young adults and parents disagreed, a graduate student researcher incorporated other information available throughout the assessment to determine the most valid rating. All TOC ratings were independently coded by two graduate student researchers, with discrepancies resolved through joint discussion of individual cases and consultation of other available data from the assessment (e.g., interview transcriptions, other measures). The independent coding demonstrated adequate levels of inter-rater reliability, with 83.9% exact agreement. Scores from each of the three outcome areas were then summed to compute a transition outcome composite (TOC) for each young adult, which captured overall functioning during this vulnerable transition period. Scores of 0-1 correspond to "Very Good" Outcome, 2-3 to "Good" Outcome, 4-5 to "Fair" Outcome, 6-7 to "Poor" Outcome, and 8-9 to "Very Poor" Outcome.

Professional Activities. Professional activities ratings were primarily derived from young adult and parent reports of the participant's enrollment in educational programs or current paid employment.

- 0 = full-time employment, or 4-year university enrollment, or combination of any post-secondary program enrollment with part-time job, which together were equivalent to full-time;

- 1 = community college enrollment, or other part-time post-secondary education enrollment, or part-time paid employment;

- 2 = supported/sheltered employment or education program (e.g., a transition/independent living skills program);

- 3 = day center, or no employment or enrollment (jobs less than 5 hours per week considered no employment).

Social Relationships. Social relationship ratings were primarily derived from the number of close friends reported, combined with perceived satisfaction with social support networks.

- 0 = many friends (5 or more friends) and high satisfaction (6 or 7 on scale of 1-7);

- 1 = some friends (1-4 friends) and high satisfaction (6 or 7 on scale of 1-7), or any number of friends with moderate satisfaction (5 on scale of 1-7);

- 2 = any number of friends with low satisfaction (4 or lower on scale of 1-7);

- 3 = no friends, or one friend with low satisfaction (4 or lower on scale of 1-7).

Independence. Independence ratings were derived by reported living situation of young adult participant, combined with perceived level of autonomy (e.g., independence within their living situation, level of responsibility, and control of their time) on scales from 1 to 7, where lower numbers indicated lower autonomy.

- 0 = living independently with or without roommates;

- 1 = in semi-sheltered accommodation (e.g., dormitory) or still living with parents, high degree of autonomy (6-7 on scale of 1-7);

- 2 = living with parents, some autonomy (3-5 on scale of 1-7);
- 3 = living with parents with limited autonomy (1-2 on scale of 1-7), or in institution or residential facility.

Quality of Life.

Quality of life was measured by the World Health Organization Quality of Life WHOQOL-BREF (Skevington, Lofty, & O'Connell, 2004). The WHOQOL-BREF is a 26-item measure, adapted from the longer 100-item WHOQOL-100 assessment. It was validated using a large sample (n=11,830) of demographically diverse adults in 23 countries, sampled from a variety of settings (e.g., general population, hospital, rehabilitation). The WHOQOL-BREF correlates highly with the expanded measure and produces an overall quality of life score as well as 4 domain scores relevant to quality of life: physical health, psychological, social relationships, and environment (Whoqol Group, 1998). In the validation study, it demonstrated satisfactory internal consistency and provided support for the 4 domain factors (Skevington et al., 2004). An examination of the social validity of the items in the WHOQOL-BREF across 14 countries using 12 languages further supports the importance and universality of the items and construct measurement (Saxena, Carlson, Billington, & Orley, 2001). Further, the WHOQOL-BREF has demonstrated adequate internal consistency with adults with ASD (Hong, Bishop-Fitzpatrick, Smith, Greenberg, & Mailick, 2016) and adults with ID (Lucas-Carrasco & Salvador-Carulla, 2012).

Initial Results

Multivariate ANOVAs were conducted to determine whether functional outcome, as measured by the TOC, and quality of life outcome differed by developmental status. In these initial analyses, developmental status was divided into four groups: typically developing young

adults (TD), young adults with intellectual disability (ID), young adults with intellectual disability and autism spectrum disorder (ASD+ID), and young adults with autism spectrum disorder only (ASD Only).

As shown in Figure 1, results indicated that there were significant differences among the developmental status groups in all three domains of the TOC composite: professional, $F(3,89)=22.42$, $p<.001$; independence, $F(3,89)=19.10$, $p<.001$; social, $F(3,89)=15.68$, $p<.001$. These differences were significant for the overall composite as well, $F(3,89)=36.31$, $p<.001$, with a large effect size. Using the overall composite score, post-hoc analyses indicate that typically developing young adults have the best functional outcome ($M=1.39$, $SD=1.43$), an outcome that was significantly higher than all three other groups and would be generally classified as a "Very Good" outcome. In contrast, young adults with ASD+ID had the worst functional outcome ($M=5.79$, $SD=1.42$), with the majority of these young adults achieving a "Poor" outcome classification. Young adults with ASD+ID had a significantly lower TOC score than young adults with ASD Only ($M=4.25$, $SD=1.99$), $p=.038$, whose average classification fell in "Fair" outcome range. Young adults with ID did not differ significantly from either the ASD+ID or the ASD Only group, and also achieved an average outcome classified as "Fair" ($M=4.47$, $SD=1.73$).

The multivariate ANOVA utilizing the WHOQOL-BREF domains as outcomes indicated that there were significant differences by status group only for the Psychological, $F(3,85)=3.23$, $p=.026$, and Social Domains, $F(3,76)=7.71$, $p<.001$. No differences emerged within the Physiological Domain, $F(3,87)=1.71$, ns, Environmental Domain, $F(3,76)=0.37$, ns, nor on the single item reporting on overall quality of life, $F(3,87)=1.57$, ns. Young adults with ASD only reported significantly lower quality of life in the Psychological Domain ($M=58.33$, $SD=18.27$) as

compared to the young adults with typical development (M=69.38, SD=13.85), p=.046, and young adults with ID only (M=73.21, SD=15.57), p=.032. Similarly, the ASD Only group reported significantly lower quality of life in the Social Domain (M=56.02, SD=23.19) as compared to both young adults with typical development (M=75.20, SD=19.50), p=.003, and young adults with ID only (M=87.88, SD=10.11), p<.001. No other contrasts were significant in either domain.

Thus, in our sample, young adults with any developmental disability achieve a significantly worse functional outcome than typically developing young adults. Those young adults with multiple diagnoses, who have both ASD and ID, are at highest risk for poor functional outcomes. However, with respect to self-reported quality of life, young adults with ASD, without comorbid intellectual disability, are at the highest risk for negative outcomes.

Study I: Mental Health

Introduction

Mental Health in Young Adulthood

Mental health in young people is a fundamental challenge faced globally, with epidemiological research indicating that as many as 1 in 4 young adults (18-24 years old) were diagnosable with a mental health or substance use disorder in the past 12 months (Patel, Flisher, Hetrick, & McGorry, 2007). Another study suggests that almost 50% of transition-aged adults, 18-25 years, meet criteria for a DSM diagnosis, with the most common being substance abuse disorders, mood and anxiety disorders, and personality disorders (Blanco et al., 2008; Gibb, Fergusson, & Horwood, 2010). Even more concerning, a 2019 national survey conducted by the American College Health Association (ACHA) found that approximately 14% of more than 50,000 undergraduates surveyed had seriously considered suicide within the last 12 months (ACHA, 2019). Beyond this high prevalence, research evidence has further highlighted young adulthood as a period of increased mental health risk, with data showing that rates of substance use, affective, anxiety, and eating disorders were all significantly higher in young adults (e.g., 18-24 year olds) than in adolescents (e.g., 11-17 year olds; Cannon, Coughlan, Clarke, Harley, & Kelleher, 2013; Wittchen, Nelson, & Lachner, 1998).

Mental health difficulties have been reliably associated with a number of negative outcomes in young adulthood. Individuals with current or previous mental health problems are at higher concurrent risk of being unengaged in employment or education (Holloway, Rickwood, Rehm, Meyer, Griffiths, & Telford, 2018; Baggio et al., 2015), with these negative impacts of mental health disorders exerting long-term effects on various indicators of economic stability (Gibb et al., 2010). In college samples, depression and anxiety disorders were significantly

associated with lower academic performance and higher probability of dropping out (Eisenberg, Golberstein, & Hunt, 2009). In a review, the World Health Organization attributed 31.7% of years documented as "lived-with-disability" to neuropsychiatric disorders, most commonly major depression, further supporting the debilitating impact of mental health problems on functioning (Prince et al., 2007). There is also evidence that the mental health needs of young adults are not being adequately met. In young adults (ages 19-24 years old) experiencing impairing mental health symptoms, between 40-75% reported not accessing mental health services (Cheung & Dewa, 2007; Cannon et al., 2013). Although structural barriers are likely present, personal reluctance or perception of stigma around help-seeking behavior is a documented factor as well. In a sample of Australian adolescents and young adults, 29% reported that they would never use a service for emotional distress, regardless of the circumstances (Donald, Dower, Lucke & Raphael, 2000).

Mental Health in Individuals with Developmental Disabilities

As discussed in the general introduction, it is widely documented that children and adults with ASD have elevated rates of mental health problems and comorbid disorders, as compared to typically developing individuals (Simonoff et al., 2008; Buck et al., 2014). These findings of increased rates of psychopathology relative to the general population have been duplicated in both children and adults with ID, whether comparing to control groups matched by age or developmental level (Caplan et al., 2015; Baker et al., 2002; Emerson, 2003; Tonge & Einfeld, 2003). Some of this unique risk may be a function of how accepting individuals feel others are of their diagnosis, as well as one's own self-acceptance of their identity, inclusive of their neurodevelopmental diagnosis. For adults with ASD, lower perceptions of social acceptance and

the associated engagement in "camouflaging" behavior to hide one's differences each predicted depressive symptoms (Cage, Di Monaco, & Newell, 2018).

Comparing developmental disability populations, there are mixed findings when comparing prevalence of mental health problems across individuals with ID only, individuals with ASD only, and individuals with ASD and comorbid ID. Some research suggests that, in general, individuals with ASD show significantly higher levels of a wide range of symptomatology, including ADHD, depression, anxiety, and disruptive disorders, as compared to non-specific DD and ID populations (Brereton, Tonge, & Einfeld, 2006; Gotham, Brunwasser, & Lord, 2015; Bradley, Summers, Wood, & Bryson, 2004). However, others have concluded that the current literature does not support that adults with ASD and comorbid ID are more vulnerable to mental health problems than adults with ID only (Underwood, McCarthy, & Tsakanikos, 2010). Within ASD samples, there is mixed evidence, where some studies suggest that the dual diagnosis of ASD+ID contributes to increased risk for maladaptive behavior and mental health problems through the transition to adulthood (Woodman et al., 2015). Other researchers have found evidence that individuals with ASD and average intellectual ability are at greater risk for mental health problems, such as anxiety and depression, than those with ASD+ID (Sterling, Dawson, Estes, & Greenson, 2008), possibly due to their increased awareness of their differences from, and rejection by, peers. Meanwhile, other studies have found no significant differences in presence of comorbid psychiatric disorders based on IQ in children or adults with ASD (Hutton, Goode, Murphy, Le Couteur, & Rutter, 2008; Strang et al., 2012; Simonoff et al., 2008). Clearly, more research is needed to understand how DD populations may differ from each other in their level of risk for mental health problems.

Similar to the general population, research has shown that individuals with DD endorse barriers to accessing mental health services in adulthood. Young adults with ASD have reported experience stigma associated with mental health problems, less structure in and access to mental health services, and a disconnect between mental health and developmental disability related service systems (Crane, Adams, Harper, Welch, & Pellicano, 2019; Camm-Crosbie, Bradley, Shaw, Baron-Cohen, & Cassidy, 2019). Evidence of barriers to access are present for adults with ID as well, who received less psychological treatment than their neurotypical adult peers with the same mental health symptom severity (Shimoyama, Iwasa, & Sonoyama, 2018). Further exacerbating the problems individuals with ASD and/or ID and comorbid mental health problems face, mental health providers are often ill-equipped to serve adults with developmental disabilities, with respect to their knowledge, experience, and confidence in working with these populations (Maddox et al., 2019; Weise, Fisher, Turner, & Troller, 2019).

Ultimately, as mental health disorders, in and of themselves, result in functional impairments, it is highly probable that the presence of comorbid psychopathology is a risk factor associated with increased likelihood of poor adult outcome. Given that young adults with DD show elevated rates of comorbid psychopathology, this is likely a contributing factor to the poor transition outcomes observed in these populations. Indeed, in a study of 66 young adults with ASD, levels of maladaptive behaviors, including internalizing and externalizing symptoms, significantly differentiated those who achieved competitive employment or post-secondary school enrollment from those who were attending adult day service programs (Taylor & Seltzer, 2011). Further, 85.7% of young adults who were staying home without regular engagement in employment, education, or day services were diagnosed with a comorbid psychiatric disorder. This rate was higher than the proportion of adults with comorbid diagnoses in every other

outcome category (i.e., post-secondary education: 33.3%, competitive employment: 66.7%, supported employment: 62.5%, adult day services: 52.5%; Taylor & Seltzer, 2011), further suggesting that mental health difficulties may contribute to poor adult outcomes. A review of comorbid depressive disorders in ASD also found evidence to support declines in adaptive functioning following onset of depressive episode (Stewart, Barnard, Pearson, Hasan & O'Brien, 2006).

Although risk factors for later mental health problems have been identified in typically developing populations, data in this area are relatively limited when examining DD populations. Some initial studies investigating family risk factors have shown mixed effects. For example, in a sample of children with ASD, lack of family resources (e.g., ownership of a car, house) conferred increased risk for a comorbid disorder, while parent occupational level, educational level, and parenting stress were all not associated with such increased risk (Simonoff et al., 2008). In another study, higher quality mother-child relationships through adolescence and the transition period were both associated with decreased externalizing, asocial, and maladaptive behaviors in youth with ASD (Woodman, et al., 2015). Overall, however, there are many possibly important predictors that have been understudied in their relation to adult mental health outcomes in individuals with developmental disabilities.

Predicting Young Adult Mental Health

  Parenting Practices. Parenting behaviors have been clearly linked to both mental health problems in typically developing youth. A recent review detailed the effects of multiple parental behavior constructs on adolescent adjustment (Hoskins, 2014). Discipline, harsh parenting, and parental warmth/support all showed relationships with both internalizing (e.g., depressive symptoms, self-esteem) and externalizing (e.g., aggression, substance use) mental health

outcomes. Data also suggest that the effects of parenting behaviors continue over multiple years in childhood; for example, the utilization of use of praise and positive affect in parent-child interactions with school-aged children is a protective factor against adolescent conduct problems in risk populations (Chronis et al., 2007). Similarly, other studies indicate that low supervision, inconsistent discipline, and high parental rejection/hostility were predictive of higher rates of juvenile delinquency two years later (Simons, Simons, Chen, Brody, & Lin, 2007). The predictive longevity of parenting suggests it may be a powerful childhood predictor to examine with respect to young adulthood.

The significance of parenting behaviors to child mental health has been demonstrated in populations of children with developmental delays as well, though not as thoroughly. For example, high levels of unsupportive and interfering parenting behaviors corresponded to increased behavior problems, lower adaptive skills, and poorer social skills in preschoolers with developmental delays (Paczkowski & Baker, 2007; Green, Caplan, & Baker, 2014). In contrast, maternal supportive behaviors and scaffolding predicted later social competence and fewer behavior problems in a sample of early-school aged children with developmental delays (Baker, Fenning, Crnic, Baker & Blacher, 2007). In samples of children with ASD, parenting intervention programs have been associated with decreased child aggression and noncompliance (Singh et al., 2006). However, in general, much of the literature has related positive parenting behaviors to developmental outcomes, such as language (e.g., Siller & Sigman, 2002), instead of mental health outcomes.

Though parenting practices have been reliably linked to child and adolescent outcomes, these findings have been linked to young adult outcomes less frequently. And though childhood abuse and neglect have certainly demonstrated long-lasting impacts (Kessler et al., 2010), and

26

may be associated with parenting behaviors, these would represent parenting extremes. One study examining parenting practices in adolescence and young adult outcomes did find that high rates of parenting behaviors characterized by conflictual control (e.g., arguing, yelling) in adolescence significantly predicted later irritability and hostility as well as lower levels of self-efficacy and life satisfaction for the young adult child (Aquilino & Supple, 2001). Parenting conflictual control in adolescence was also positively associated with young adult maladaptive substance use. Positive parenting practices, such as exhibiting warmth and support, were related to reduced levels of depressive symptoms and irritability/hostility. Similarly, in an examination of young adult risk-taking, parenting practices such as family closeness and parental behavioral control (e.g., monitoring, supervision) corresponded to less problem drinking and sexually risky behavior in early adulthood (Roche, Ahmed, & Blum, 2008). Though these few studies provide supportive evidence that parenting practices do indeed exert influence through childhood, adolescence, and into adulthood, the current research has not examined a full range of possible young adult outcomes. Further, to our knowledge, these findings have not been extended to individuals with developmental disabilities. Given that children with developmental disabilities appear to be especially sensitive to variability in parenting behaviors (Baker et al., 2007; Paczkowski & Baker, 2007; Green et al., 2014), this may be a particularly potent area of investigation and intervention. Some initial research in this area suggests that, in a sample of individuals with ASD ages 3-25, those who were experiencing current mental health crises were also more likely to have parents who reported more depressive symptoms and lower family quality of life (Vasa, Hagopian, & Kalb, 2020). Although this study cannot tease apart directionality due to the contemporaneous data collection, the findings highlight the importance of the family context. Parental depression and family quality of life also may have impacts on

27

child functioning through their impact on parenting, further reinforcing the selection of parenting as a predictor to explore in the current study.

Student-Teacher Relationships. After parents, teachers represent another set of important adult figures in a child's life. Teachers similarly spend significant amounts of time with their students and can exhibit similar behaviors as parents, including warmth, praise, inconsistent or harsh discipline, and supervision. In the literature, student-teacher relationships (STRs) are most often characterized on two dimensions: conflict and closeness. Conflict is defined by discord, frustration, and anger between students and teachers, while closeness is marked by mutual respect, caring, and warmth.

In typically developing populations, there is ample evidence suggesting that student-teacher relationships are predictive of child mental health outcomes. Student-teacher relationships shows robust bidirectional relationship with both externalizing behavior problems and social skills in early childhood (Doumen et al., 2008; Howes, Matheson, & Hamilton, 1994). However, a meta-analysis of the effects of student-teacher relationships on school engagement and achievement also showed larger effect sizes in higher grades, especially positive aspects of these relationships (Roorda, Koomen, Split, & Oort, 2011). Indeed, student-teacher conflict operated as a significant mediator of the relationship between childhood temperament and adolescent risk-taking behavior (Rudasill, Reio, Stipanovic, & Taylor, 2010). In middle school, teacher high expectations and nurturance, akin to authoritative parenting, were associated with positive outcomes, such as social behavior and academic interests (Wentzel, 2002). Middle school student perceptions of changes in teacher support predicted changes in internalizing problems, such as self-esteem and depression (Reddy, Rhodes, & Mulhall, 2003). Further, early STRs appear to have lasting impacts on child adjustment over many years. Kindergarten teacher

28

ratings of high conflict and dependency were predictive of child academic and behavioral problems through 8th grade (Hamre & Pianta, 2001). This longevity of effect provides support for inclusion of STRs as important predictor of young adult mental health.

Children with ID and with ASD consistently have lower quality STRs than their typically developing peers, characterized by more conflict and less closeness (McIntyre, Blacher, & Baker, 2006; Blacher, Howell, Lauderdale-Littin, Reed, & Laugeson, 2014), which could be a contributing factor to the increased behavior problems in this population. In preliminary studies of the impact of STRs on child outcomes in DD populations, it appears that child externalizing problems drive declines in student-teacher relationship quality only, rather than the bidirectional relationship observed in typically developing children (Eisenhower, Blacher, & Bush, 2015). However, positive student-teacher relationships can also be especially protective for typically developing students at risk and can result in decreases in externalizing problems and improved academic performance over time (Hamre & Pianta, 2001; Silver, Measelle, Armstrong, & Essex, 2005; Hamre & Pianta, 2005). This provides further support for the exploration of the effect of student-teacher relationships in youth with developmental disabilities, a different at-risk population.

Peer Relationships. As children move into adolescence, they become increasingly independent from their families, and spend increasing amounts of time with peers (Parker et al., 2006). Formation of relationships with peers characterized by intimacy, closeness, and disclosure is considered a fundamental task of adolescence, crucial to self-understanding and identity development (Parker et al., 2006). However, adolescence also marks a time in which increased peer rejection, victimization, and bullying occur. Youth who struggle to make and maintain positive peer relationships, as well as those who are rejected by their peers, are both at risk for

increased mental health difficulties (Parker et al. 2006). In a study of high school aged youth, high status friendships (e.g., popular friends), high quality best friendships (e.g., high in support, affection, disclosure, reliability), and dating relationships all protected against social anxiety symptoms, while experience of peer victimization exacerbated social anxiety (La Greca & Harrison, 2005). Similarly, characteristics such as conflict, criticism, and dominance in best friendships, as well as victimization, increased risk for depressive symptoms. Bidirectional relationships between social anxiety and peer victimization have also been observed (Siegel, La Greca, & Harrison, 2009), providing evidence for an ongoing cycle of increasing mental health problems. Overall, these results suggest that both peer acceptance (e.g., presence of friendships) and peer rejection (e.g., bullying, victimization) contribute to mental health difficulties in adolescents. The bidirectionality indicates that these effects of adolescent peer acceptance extend into young adulthood. Indeed, this is supported by data showing that rejection or isolation by peers in childhood predicted young adult involvement in professional activities, as well as the presence of conduct problems (Nelson & Dishion, 2004). Additionally, friendships in high school also support transitions in emerging adulthood, such as the initial adjustment of first-year college students (Swenson, Nordstrom, & Hiester, 2008).

Within DD, youth with ASD and/or ID both report significantly more peer victimization and greater levels of emotional impact of victimization (Zeedyk, Rodriguez, Tipton, Baker, & Blacher, 2014). Guralnick (2006) discusses the pervasive social difficulties and resulting social isolation of children with ID as a serious risk factor to their mental health. These difficulties with peer relationships are seen in ASD as well, with some evidence suggesting that youth with ASD have even more difficulty establishing a best-friendship than those with other developmental disabilities (Sigman et al., 1999). Even for children with average intelligence with ASD,

30

considered "high functioning" (HFASD), higher rates of social anxiety are observed than in typically developing children (Kuusikko et al., 2008). This suggests that difficulties in social interactions and communication as a result of ASD symptomatology (APA, 2013) may place these youth at increased risk for anxiety and internalizing symptoms. This may be particularly true for individuals who are cognitively aware of their differences from and acceptance, or lack thereof, by peers. Similarly, depression in adolescents with ASD has been predicted by conflictual friendships and other social problems (Whitehouse, Durkin, Jaquet, & Ziatas, 2009; Mayes, Cahoun, Murray, & Zahid, 2011). Considering these bodies of research together, peer relationships in the critical period of adolescence may be an important risk or protective factor as individuals transition into adulthood.

   Perceptions of Self. A final essential relationship is the relationship one has with oneself. This relationship with self encompasses several constructs, including self-esteem, self-efficacy, and hope. Self-esteem, which can be defined as the global regard that one has for the self as a person, in adolescence is predictive of a variety of adult outcomes in the general population, including mental health and physical health (Trzesniewski et al., 2006). Recent research has also concretely linked self-esteem and self-acceptance to mental health outcomes in individuals with ASD (Cooper, Smith, & Russell, 2017; Cage et al., 2018). Hope, a construct related to self-esteem, has been defined as positive expectancies and perceptions that one's goals can be met (Snyder et al., 1997). Hope, or the self-perceived ability to achieve goals, can be broken into two components: the identification of strategies toward goals (i.e., pathways thinking) and the initiation of actions toward goals (i.e., agentic thinking). Hope has been demonstrated to correlate negatively with depressive symptoms, such that lower levels of hope relates to higher depressive symptoms (Snyder et al., 1997). Further, hope was significantly and positively

31

correlated to ratings of self-worth, yet also contributed above and beyond self-worth in explaining academic achievement scores. Additional research has demonstrated that hope is related to internalizing and externalizing symptoms in adolescence, and acts as a protective buffer against possible negative impact of stressful life events (Valle, Huebner, & Suldo, 2004; Valle, Huebner, & Suldo, 2006). Though the construct of hope shows strong predictive validity, it has largely not been studied in individuals with developmental disabilities, such as ASD or ID. Preliminary findings recently showed that adolescents with developmental disabilities, inclusive of those with ASD and/or ID, self-report having significantly lower hope than their neurotypical peers (Olabinjo, Moody, & Baker, 2019). This construct of hope holds promise as an important dispositional factor that may differentiate individuals with respect to transition outcome success.

Current Study

The above discussed research highlights that young adults with and without developmental disabilities are struggling with mental health difficulties. However, there is less knowledge regarding what role mental health plays in overall young adult outcomes, particularly for individuals with developmental disabilities. Given the pervasively negative outcomes in this population, it is essential to identify all possibly contributing and maintaining factors to poor functioning.

Further, there are a number of formative relationships in childhood, with parents, teachers, peers, and self, that have been reliably associated with mental health and related outcomes in childhood and adolescence. However, there is an overall paucity of longitudinal studies identifying childhood predictors of mental health outcomes in young adulthood, despite the importance and prevalence of mental health problems in this developmental period. This dearth of research is especially problematic within populations of individuals with

32

developmental disabilities, such as ID and ASD, who are at high-risk for mental health problems and poor young adulthood outcomes. The studies that do exist spanning childhood to adulthood almost exclusively utilize a singular population with respect to developmental disability status, rather than comparing multiple populations. Given some evidence that environmental and contextual factors, such as parenting, demonstrate different effect sizes across typically developing populations and populations with developmental disabilities (e.g., Baker et al., 2007), it is essential that research examine populations simultaneously to identify such moderating effects. Results from such studies can inform intervention and prevention efforts targeted at producing increasingly successful transitions to adulthood for all youth. Thus, the current study planned to address these gaps in the literature, with the following two exploratory aims.

Aim 1: To what extent, and for whom, does mental health in young adulthood relate to functional outcomes, such as employment and independence, and self-reported quality of life? We hypothesized that mental health would be related to functional outcome for all diagnostic groups. However, it was expected that the strength of that effect would be moderated by diagnostic group, such that mental health functioning would have a larger effect size on functional outcome for individuals with DD. Given the already tenuous nature of the limited independent living, post-secondary education, and employment opportunities in these populations (Shattuck et al., 2012; Grigal, Hart, & Migliore, 2011), we hypothesized that mental health dysfunction would cause create greater interference and impairment. In contrast, we did not anticipate diagnostic group will moderate the relationship between mental health functioning and quality of life, such that this relationship will be similar in nature for all groups.

Aim 2: Which relationship factors (i.e., parenting, STRs, peer relationships, and hope/self-efficacy) in adolescence predict mental health outcomes in young adulthood, and for

33

whom? It was expected that the effect of parenting practices would be moderated by diagnostic status, such that parenting practices would be most influential for DD groups. This hypothesis was supported by prior studies demonstrating that parenting is more predictive of later childhood outcomes in DD populations (Baker et al., 2007). Though more exploratory, we hypothesized that this pattern of results will extend to all predictors, given that developmental trajectories with individuals with developmental disabilities are arguably more variable than the complementary trajectories in TD populations (Geschwind & Levitt, 2007), and thus perhaps more susceptible to the influence of contextual factors.

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Method

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Participants

  Please see General Method section for description of participants.

Procedure

  Please see General Method section for description of procedure.

Measures

  Outcome.

  ASEBA Adult Forms (Achenbach & Rescorla, 2003). Young adults and their parents completed complementary versions of the ASEBA Adult forms for 18-59 year olds called the Adult Self Report (ASR; young adult self-report) and Adult Behavior Checklist (ABCL; parent-report). On both the Adult Self Report and Adult Behavior Checklist, respondents rated the frequency of 126 statements for themselves or their young adult child, respectively, on a scale from 0 (*not true*) to 2 (*very true*). From these ratings, Internalizing Problems, Externalizing Problems, and Total Problems composite T-scores are produced. The manual reports adequate reliability and validity for composite scores for both the ABCL and ASR (Achenbach &

Rescorla, 2003). The ASR has demonstrated divergent validity in differentiating young adults

with ASD and a comorbid mental health disorder from those with ASD and no psychiatric

comorbidities (Gadke, McKinney, & Oliveros, 2016).

Concurrent Measures.

Transition Outcome Composite (TOC). Please see General Method section for

description of TOC.

Quality of Life. Please see General Method section for description of quality of life

measurement.

Predictors.

Selected predictors of mental health mapped on to important relationships in an

adolescent's life: parent-child, student-teacher, peer relationships, and views about self.

Predictors were drawn from data collected at ages 13 and 15. Multiple informants were used

across measures, including youth's self-report, mother report, and teacher report.

Children's Hope Scale (Snyder et al., 1997). The Children's Hope Scale (CHS) is a six-

item self-report questionnaire for children 8-16 years old designed to assess dispositional goal-

directed thinking, in which children believe they possess the agency (e.g., ability to initiate and

sustain action toward goals) and methods (e.g., capability to identify pathways toward goals) to

actively pursue and achieve their goals. The CHS demonstrates construct validity, internal

consistency, temporal stability, and convergent validity with achievement scores, depression, and

self-worth. The CHS shows divergent validity with constructs such as intelligence, gender, age,

and race. Additional psychometric data specifically support the reliability and validity of the

CHS for use with high school students (Valle, Huebner, & Suldo, 2004). Items on the CHS use a

Likert scale from 1 (*none of the time*) to 6 (*all of the time*), which produces a total score, ranging

from 6 to 36, with higher scores greater dispositional hopeful thinking. In the current study, adolescents completed the CHS at the age 15 time-point.

Parent Child Interaction Rating Scale/System (PCIRS; Belsky et al., 1995). At the 15-year assessment, the PCIRS coding system was utilized to code parenting behavior during a joint problem-solving task on six different dimensions. The task asked the parent and adolescent participant dyad to work together in building a bridge using standardized materials (i.e., popsicle sticks, toothpicks, and marshmallows) to cross "a river" depicted on a poster board. From a video recording of this interaction, parenting behaviors consistent with the following dimensions were coded: positive affect, negative affect, stimulation of cognition (e.g., questions to promote child critical thinking), sensitivity, intrusiveness (e.g., being overly directive or "taking over" the task), and detachment (e.g., being disengaged, uninvolved). Each dimension of parenting behavior was coded on a 5-point scale (1=*not at all characteristic*; 5=*highly characteristic*). The raw scores are then standardized and summed to create two parenting composites derived from factor analysis (Fenning, Baker, Baker, & Crnic, 2007). The positive parenting composite is comprised of positive affect + stimulation of cognition + sensitivity + detachment (reverse scored). The negative parenting composite is derived from negative affect + intrusiveness.

Student-Teacher Relationship Scale (STRS; Pianta, 2001). Student-teacher relationships were measured at the age 13 and 15 assessments using the STRS. As many of the youth participants had more than one teacher at these ages, in middle and high school, participants were asked to select the teacher who knew them the best to complete the measure. The selected teacher completed the 28-item questionnaire that contains three subscales to assess different dimensions of the student-teacher relationship: conflict, closeness, and dependency. The STRS produces a total relationship quality score which is calculated using the following

formula: Total = (72 – Conflict) + Closeness + (30 – Dependency). Prior factor analytic work on the STRS has generally supported the presence of these three subscales (Jerome, Hamre, & Pianta, 2009); however, different samples have recommended deletion of different items due to low item factor loadings (e.g., Webb & Neuharth-Pritchett, 2011). In the current sample, the full 28-item STRS demonstrated adequate reliability; alphas for age 13 and 15 Total score were .86 and .87, respectively. Consistent with prior literature that student-teacher relationship quality demonstrates stability across multiple years and teachers (Pianta & Stuhlman, 2004), STRS Total scores at ages 13 and 15 were significantly and positively correlated, $r=.532$, $p<.001$. Thus, for participants who had teacher-rated STRS total data at both ages 13 and 15, these two scores were averaged, to produce an increasingly reliable estimate of their adolescent student-teacher relationships. For other participants, STRS data was utilized from whichever time point it was available to maximize power.

Peer Relationships. Mothers and teachers reported on the adolescent participant's peer social acceptance at ages 13 and 15, using an adaptation of a previously standardized scale (Harter & Pike, 1984) designed to assess similar constructs in older childhood and adolescence. This measure consisted of three items that utilize a 4-point Likert scale. The items assess different aspects of peer acceptance including ease of making friends, number of friends, and popularity. Higher scores indicate higher levels of social acceptance. All four measurements of social acceptance (i.e., teacher report at age 13, teacher report at age 15, mother report age 13, and mother report age 15) were significantly correlated with each other (Pearson coefficients ranging from .39 to .77) and each demonstrated adequate internal consistency (alphas ranging from .87 to .92). To maximize accuracy, we constructed a composite score that combined average teacher rated social acceptance with average mother rated social acceptance. Eighteen

participants did not have teacher data at either time point; however, given the significant

correlations observed across reporters and time points, mother data alone were utilized for these

participants.

In addition to peer acceptance, parent- and self-report of the participants' victimization

experiences in adolescence was also collected at the 15-year time point. Respondents answered 9

items on using a 5-point scale representing frequency (0=*never* to 4=*almost every day*) of

victimization experiences, such as being threatened, called names, or socially excluded. The

measure was developed using qualitative data from adolescents describing incidents of peer

harassments and demonstrated adequate reliability in use with middle schoolers age 12-15 years

(Juvonen, Nishina, & Graham, 2000). In the current study, the measure was adapted to include

online bullying behaviors, which had become more prevalent at the time of data collection. With

adaptations, parent- and self-report maintained high internal consistency in the current study,

with alpha values of .911 and .827, respectively. Parent and youth self-report were averaged to

create a bullying composite.

Covariates.

Child Behavior Checklist, ages 6-18 (CBCL; Achenbach & Rescorla, 2001). The CBCL

is a widely used parent-report measure of youth behavioral and emotional functioning with high

internal consistency and reliability. The CBCL contains 118 items that the parent rates on a scale

of 0 (*not true*) to 2 (*often true*) and produces Internalizing Problems, Externalizing Problems, and

Total Problems composite T-scores. The internal consistency, as measured by alpha coefficients,

of these three composites in the norming sample was .90, .94, and .97, respectively (Achenbach

& Rescorla, 2001). Mothers reported on their adolescent's functioning using the CBCL during

the age 15 assessment point. The CBCL will be utilized as a covariate in analyses to control for prior mental health functioning when predicting young adult mental health outcomes.

Data Analytic Plan

      Preliminary Analyses. Preliminary analyses included a planned multivariate ANOVA to test for group differences in the Internalizing Problems, Externalizing Problems, and Total Problems t-scores. This initial ANOVA was to include the four possible diagnostic groups: typically developing (TD), intellectual disability (ID), autism spectrum disorder without ID (ASD Only), and ASD with comorbid ID (ASD+ID). Based on the results, a diagnostic status variable for use in subsequent analyses for this study was to be created by collapsing groups with similar presentations of mental health difficulties in young adulthood. Additionally, analyses intended to probe whether differences in the relationship between parent- and self-report on the ABCL and ASR, respectively, differed by diagnostic group were also planned. These analyses were intended to determine whether the use of self-report for all populations was justified.

      Aim 1. *To determine whether mental health is a significant component of young adult outcomes,* multiple univariate ANCOVAs will be conducted. The first ANCOVA will include the diagnostic status variable, the Internalizing Problems composite, and the Externalizing Problems composite, as well as interactions between diagnostic status and the two mental health scales, as predictors of the Transition Outcome Composite (TOC). This was conducted to shed light on how different components of mental health contribute to functional transition outcome, and for which diagnostic groups. A similar procedure was followed using young adult Quality of Life as the outcome to determine how mental health contributes to perceptions of quality of life.

      Aim 2. *To determine whether mental health in young adulthood is predicted by relational variables collected in adolescence.* These analyses were exploratory in nature, as very little

39

previous research has examined socioemotional factors as predictors of outcome during the transition to adulthood period for young adults with developmental disabilities. For each selected predictor, a separate univariate ANCOVA was conducted, with Total Problems on the ASR as the outcome. In each model, age 15 mental health Total Problems as reported by parents on the equivalent measure for adolescents, the Child Behavior Checklist (CBCL), was included as a covariate. The diagnostic status variable and selected predictor were included, as well as the interaction term between these two variables to determine whether the predictor's impact varied by group. If the interaction was nonsignificant, a model without the interaction term was run to examine main effects of each variable and maximize power.

Results

Preliminary analyses were conducted to probe overarching group differences and inform the development of a diagnostic status variable. Using a dichotomous grouping, young adults with any developmental disability (DD) were significantly more likely to fall in the elevated range (T-score $\geq$ 60) for Total Problems than typically developing young adults, for both self-report, $\chi^2(1)=6.01$, $p=.014$, and parent-report, $\chi^2(1)=9.35$, $p=.002$. Using self-report, approximately 43% (20 of 47) of young adults with developmental disabilities fell in this elevated range for Total Problems, as compared to 19% (8 of 43) of typically developing young adults. Parent report highlights a similar picture, with the 35% (17 of 49) of the DD group in the elevated range for Total Problems, as compared to 8% (3 of 40) of the TD group. Overall, this strongly suggests that young adults with developmental disabilities have higher rates of mental health problems in transition to adulthood period.

A multivariate ANOVA was utilized to probe the differences in mental health problems among the four possible diagnostic groups (TD, ID, ASD+ID, and ASD Only) and inform the

40

formation of a diagnostic status variable for use in later analyses. In a model including

Internalizing, Externalizing, and Total Problems as reported on both the ABCL and ASR, the

overall MANOVA was significant, $F(18,218)=3.48$, $p<.001$. Post-hoc analyses indicated that, for

self-report, these differences were driven by the ASD Only group reporting significantly or

marginally higher rates of Internalizing and Total Problems than each of the other diagnostic

groups. However, when using parent-report, post-hoc analyses suggested that the Total Problems

score for each of the developmental disabilities groups was significantly higher than that of

typically developing young adults, with no significant differences between each of the DD

groups.

Based on these results taken together, the subsequent analyses in Study I utilized a

diagnostic variable of three groups: typically developing young adults (TD), young adults with

ID only or with ASD+ID (ID/ASD), and young adults with ASD and no comorbid intellectual

impairment (ASD Only). This approach was considered to be the most conservative given the

distribution of mental health outcomes observed across self-report, where the ASD Only group

was distinct, and parent-report, where the TD group was distinct.

Group Differences in Mental Health Outcomes

The MANOVA analyzing mental health outcomes using this three-group diagnostic

variable were rerun; self- and parent-reported mental health problems by group are shown in

Figures 2 and 3, respectively. A Bonferroni correction was applied in the examination of the six

individual ANOVAs, such that the adjusted significance level was set to $p=.008$. Significant

differences across groups were detected in Internalizing Problems, both for self-report,

$F(2,83)=7.02$, $p=.002$, and parent-report, $F(2,83)=5.60$, $p=.005$. No significant differences across

groups were observed for Externalizing Problems. There were also significant differences by

group in Total Problems, representing the full spectrum of behavioral and mental health difficulties, whether using self-report, $F(2,83)=8.46$, $p<.001$, or parent-report, $F(2,83)=10.45$, $p<.001$.

Post-hoc tests showed that the ASD Only group self-reported significantly higher internalizing problems ($M=61.50$, $SD=10.44$) than both the TD ($M=51.28$, $SD=10.66$), $p=.002$, and ID/ASD groups ($M=51.89$, $SD=10.13$), $p=.007$. A similar pattern emerged for Total Problems, such that young adults with ASD and no cognitive impairments reported significantly higher overall problems ($M=61.70$, $SD=9.19$) than either the TD ($M=50.82$, $SD=9.80$), $p=.003$, or the ID/ASD group ($M=51.60$, $SD=11.09$), $p<.001$. Of note, these results indicated that, on average, young adults with ASD report clinically elevated mental health problems (T-score > 60), while both other groups fall in the normative range on average.

In contrast, parents of young adult children with ID/ASD ($M=56.44$, $SD=11.91$), $p<.001$, and ASD Only ($M=54.80$, $SD=11.55$), $p=.004$, both reported significantly higher Total Problems than parents of typically developing young adults ($M=44.85$, $SD=10.20$). The same was true for parent-reported Internalizing Problems; parents of young adults with ID/ASD ($M=54.26$, $SD=11.86$), $p=.016$, and ASD Only ($M=54.65$, $SD=13.80$), $p=.022$, both reported higher rates of symptomatology than parents of young adults with TD ($M=45.90$, $SD=10.56$).

Relations between Parent and Self-Report

Bivariate correlations for the entire sample suggest moderate, but significant, levels of correlation between parent and self-report on Internalizing ($r=.42$, $p<.001$), Externalizing ($r=.34$, $p=.002$), and Total Problems ($r=.388$, $p<.001$). We tested whether the relationship between self-report and parent-report on each of these outcomes depended on diagnostic status using ANCOVAs. The interaction term was nonsignificant for all three broadband scale outcomes,

suggesting that there are no statistically meaningful differences across the diagnostic groups in how parent and self-report are correlated. Of note, quantitatively, both developmental disability groups (ID/ASD and ASD only) had lower correlations between parent and self-report than the typically developing group.

Paired samples t-tests were also utilized to examine whether parents and young adults reported similar levels of mental health problems on the whole. Typically developing young adults self-reported significantly higher Total Problems (*M*=50.82, *SD*=9.80) than did their parents (*M*=44.84, *SD*=10.20), *t*(38)=4.16, *p*<.001, though both reporters' average rating fell in the normative range. Similarly, young adults with ASD without cognitive impairments also reported significantly higher Total Problems (*M*=61.70, *SD*=9.18) on average than their parents (*M*=54.80, *SD*=11.55), *t*(19)=2.29, *p*=.034). However, for these young adults, their own self-report placed them in the elevated range, on average, while parents' report placed them in the normative range. Young adults with ID/ASD reported marginally fewer mental health problems (*M*=51.59, *SD*=11.08) than their parents reported seeing (*M*=56.44, *SD*=11.90), *t*(26)=-1.77, *p*=.088.

Relationship between Mental Health and Overall Outcomes

A univariate ANCOVA examining overall functional outcome, as measured by the TOC, revealed that there was a significant two-way interaction between diagnostic status and self-reported Internalizing Problems, *F*(2,83)=3.74, *p*=.028. Analysis of simple slopes showed that for young adults with ASD without comorbid ID, Internalizing Problems explained variance in the Transition Outcome Composite, *p*=.012, over and above that which is explained by Externalizing Problems and diagnostic status. This relationship showed that as young adults with ASD without intellectual disability reported more internalizing symptomatology, their functional

outcome correspondingly declined. No significant interaction or main effect emerged for self-reported Externalizing Problems as a correlate of functional outcome.

In contrast to self-report, no significant interactions between diagnostic status and either internalizing or externalizing problems emerged when using parent-reported Internalizing and Externalizing Problems. The interaction terms were removed from the ANCOVA model for parsimony. Thus, in the subsequent model with main effects only, parent reported mental health symptoms were significantly associated with functional outcomes (TOC) for all groups. Diagnostic status, $p<.001$, ABCL Internalizing Problems, $p=.047$, and ABCL Externalizing Problems, $p=.026$, each independently contributed to explanation of variance in the TOC, over and above all other variables. For all diagnostic groups, as parent-reported Internalizing or Externalizing Problems increased, young adults' functional outcome worsened. Both the parent- and self-report model explained a large amount of the variance in TOC scores, $R^2=.60$ and $R^2=.59$, respectively, suggesting that, together, mental health and diagnostic status account for much of the variability in functional outcomes.

For overall perceived quality of life, as measured by a single item on the WHOQOL-BREF ("How would you rate your quality of life?"), self-reported Internalizing Problems on the ASR was a significant predictor, $F(1,85)=31.99$, $p<.001$, over and above self-reported Externalizing Problems and diagnostic status. The interaction between Internalizing Problems and diagnostic status was nonsignificant as well, suggesting a universal effect for all groups. In contrast, neither diagnostic status nor self-reported Externalizing Problems emerged as predictors of perceived quality of life over and above Internalizing Problems. Using parent-report, there was a significant interaction between diagnostic status and Externalizing Problems, $F(2,80)=4.48$, $p=.014$, such that the Externalizing Problems was marginally negatively

associated with self-rated quality of life, but only for typically developing young adults, $p=.051$. Parent-reported internalizing symptoms was also a significant predictor of quality of life, $F(1,80)=9.63$, $p=.003$, for all groups, over and above diagnostic status. The direction of this effect was such that young adults whose parents reported them as having higher internalizing symptoms also self-reported lower quality of life.

Adolescent Predictors of Young Adult Mental Health

Parenting.

The positive parenting and negative parenting composites derived from the PCIRS coding of parent-child interactions in the lab at age 15 were each tested as potential predictors of later young adult mental health. In the first model including diagnostic status, positive parenting, and age 15 parent-reported mental health problems, positive parenting behaviors (i.e., positive affect, engagement, stimulation of cognition, sensitivity) did not emerge as a meaningful predictor of self-reported outcomes. However, as would be expected, mental health problems in adolescence, as reported by parents on the CBCL, $F(1,76)=14.67$, $p<.001$, and diagnostic status, $F(2,76)=5.16$, $p=.008$, were each significant, over and above the other. In the model testing negative parenting behaviors, the interaction was nonsignificant and removed for parsimony and power. The main effect of negative parenting behaviors emerged as a significant predictor of self-reported young adult mental health outcome, $F(1,76)=4.22$, $p=.043$, over and above diagnostic status and previous mental health problems, which were both also significant in the model. Thus, higher rates of observed negative parenting behaviors in adolescence corresponded to higher self-reported mental health problems in young adulthood, controlling for adolescent mental health.

Student-Teacher Relationships.

45

Overall relationship quality, as captured by the Student Teacher Relationship (STR) Scale Total score, which accounts for conflict, closeness, and dependency in the student-teacher relationship, averaged across age 13 and 15, was tested as a predictor of young adult mental health outcomes. The interaction term between Average STR Total and diagnostic status was nonsignificant, indicating the effect is similar across developmental groups. Further, there was no significant main effect of student-teacher relationship quality on self-reported young adult mental health, over and above the other predictors in the model (previous mental health and diagnostic status, which both remained significant).

Peer Relationships.

Both the adolescent social acceptance and bullying composites were entered into a univariate ANCOVA alongside diagnostic status and previous mental health problems in predicting current mental health problems. As in previous models, both diagnostic status and previous mental health problems were significant predictors of young adult mental health. The social acceptance composite, derived from parent and teacher ratings in adolescence, did not predict self-reported mental health problems in young adulthood. However, the bullying composite (an average of parent- and self-reported victimization experiences in adolescence) significantly predicted self-reported young adults' mental health Total Problems, $F(1,78)=7.03$, $p=.010$, over and above previous mental health problems, diagnostic status, and peer acceptance. Adolescents who reported more severe victimization experienced more mental health problems over time into young adulthood, controlling for baseline mental health problems in adolescence. The interaction terms in the model were nonsignificant, suggesting that peer victimization and rejection may have universal impacts over time on mental health, regardless of diagnostic group.

Perceptions of Self.

46

Next, adolescents' self-reported hope on the Children's Hope Scale was tested as a predictor of self-reported mental health problems in young adulthood. The interaction term with diagnostic status was nonsignificant, suggesting that this relationship operates similarly for all three groups. In a model with main effects only, hope significantly predicted ASR Total Problems, $F(1,76)=10.60$, $p=.002$, over and above previous problem levels at age 15 and diagnostic status. The direction of the relationship indicated that adolescents with higher levels of hope subsequently reported fewer mental health problems in young adulthood.

Discussion

The first study of this dissertation sought to explore mental health problems in young adults with and without developmental disabilities. Beyond simply comparing prevalence rates, we aimed to determine how mental health symptoms were associated with outcomes in the transition to adulthood period and also to identify potential psychosocial predictors in adolescence of young adult mental health outcomes. In collecting multiple informants of mental health, we were also able to probe the relationship between parent-reported and self-reported mental health problems in these populations.

Our results were consistent with previous literature (Buck et al., 2014; Tonge & Einfeld, 2003) that young adults with developmental disabilities are broadly at higher risk for mental health problems. This elevated risk was more pronounced with respect to internalizing symptomatology than externalizing symptomatology, where the diagnostic groups did not significantly differ from each other. This is in contrast to previous research that has found elevations in externalizing problems in both ASD (Bauminger, Solomon, and Rogers, 2012) and ID youth populations (Dekker, Koot, van der Ende, & Verlhurst, 2002) relative to TD populations. It is possible that as young adults with DD age, there is a developmental or

intervention-driven process that reduces externalizing problems, such as aggression, perhaps through improved emotion regulation. An alternative explanation may be that contextual factors in childhood and adolescence, such as high demands (e.g., academics, multiple services at high frequency, such as ABA), may have exacerbated dysregulation.

Within developmental disability groups, the present data suggested that young adults with ASD and no cognitive impairment are most consistently at risk for mental health problems, as compared to the normative population. This is consistent with some previous literature (Sterling et al., 2008) that higher functioning individuals with ASD have higher levels of internalizing problems, perhaps due to their increased self-awareness of their differences. However, it is also inconsistent with other research, including in the same sample utilized in the current study but at earlier assessment time points, that has shown adolescents with ASD only do not differ from adolescents with ASD+ID across many metrics (Baker & Blacher, 2017; Strang et al., 2012; Hutton et al., 2008). There are likely two distinguishing factors behind this pattern of data. First, all studies that found no differences across the IQ spectrum in ASD relied solely on parent-report. When using only parent-report in the current study, the differences between the DD groups all but diminished, consistent with these previous findings. Secondly, it is also possible the stressors and demands during different developmental periods may produce shifts in the distribution of mental health problems across diagnostic groups. Thus, even in the same sample, two groups (ASD Only and ASD+ID) may look similar in adolescence with respect to mental health problems, but distinct in young adulthood. Prior research has shown that young adults with ASD and average cognitive functioning are less likely to get continued access to needed supports and services, while also being more likely to be not engaged in any activities (e.g., day programs, higher education, employment) than young adults with ASD+ID (Taylor & Seltzer,

48

2011). Together, the lack of behavioral activation, social interaction, reduced sense of self-efficacy, and diminished support systems may coalesce into a unique risk for mental health problems for young adults with ASD and no cognitive impairments in the transition to adulthood period.

Our results also indicated that there were only moderate correlations between parent and self-report of mental health problems, even for typically developing young adults. However, the relationship between parent and self-report was not moderated by diagnostic group. Notably though, parent and self-report frequently painted a different picture of young adults' mental health problems. For example, typically developing young adults and young adults with ASD with no cognitive impairment both consistently endorsed significantly more internalizing and externalizing symptoms on their own self-report than their parents reported observing. For these groups, parents may not have a full understanding of their young adults' worlds, both internal (e.g., self-esteem, worries) and external (e.g., substance use, social conflicts). Further, the pattern of group differences in mental health symptom severity varied by whether parent- or self-report was utilized. Parents tended to view their young adult children with ID, with or without comorbid ASD, as having significantly more mental health problems than parents of typically developing young adults did. In contrast, using self-report, young adults with ID/ASD reported similar levels of symptomatology as typically developing young adults. Part of this discrepancy may be explained by TD young adults self-reporting more problems than their parents, resulting in a change in the reference group in the self-report analyses. However, given that parents and young adults with ASD and no cognitive impairment displayed greater concordance (both informant groups rated the symptoms of the ASD group as higher than those of the TD group), perhaps the reflective capacity of the ID group limits their own insight into their symptoms.

49

Another contributing factor may be demonstrated biases in parent informant reports in developmental disability populations, where parents' initial responses to subjective items (e.g., satisfaction with self, friendships, life, etc.) differ from the responses they give when asked explicitly to hold the perspective of their child (Hong et al., 2016; Sheldrick, Neger, Shipman, & Perrin, 2012).

We found that mental health was concurrently related to other important outcomes in young adulthood, including functional outcome (e.g., independent, professional, and social functioning) and subjective quality of life. In particular, internalizing problems were robustly associated with self-reported quality of life, reaching significance for all groups and whether using parent- or self-reported internalizing symptoms. In contrast, only parent-reported externalizing problems were marginally associated with quality of life, and even then, only for typically developing young adults. It is possible that for typically developing young adults, externalizing problems may be more symbolic of maladaptive coping strategies (e.g., substance use) in reaction to unhappiness or dissatisfaction, while for young adults with developmental disabilities, externalizing problems may be borne out of general deficits in dysregulation (Nader-Grosbois, 2014; Samson, Phillips, Parker, Shah, Gross, & Hardan, 2014), rather than perceived lower quality of life.

Parent report of young adults' internalizing and externalizing symptomatology each independently related to young adult functional outcome, over and above differences explained by diagnostic status. When considering self-reported mental health, only internalizing problems for young adults with ASD and no cognitive impairment was significantly associated with functional outcome. Thus, internalizing problems may be especially impairing for these young adults. Prior research evidence indicates that this segment of the ASD population is significantly

more affected by the service cliff during the transition to adulthood (Taylor & Seltzer, 2011). In such a context, young adults with ASD without ID would have to exert more efforts and self-advocacy to find jobs and educational opportunities that support their needs and allow them to achieve their potential. However, for individuals with depressive or anxiety symptoms, maintaining such efforts and implementing self-advocacy skills can be challenging. Thus, the combination of both internalizing symptoms and the severe service cliff experienced by young adults with ASD and no ID may be creating a perfect storm, explaining the negative impacts on functional outcome for this subsection of the sample only. Alternatively, given that these measures were collected at the same time point, the direction of the effect may be such that lower functional outcomes contribute to the development of internalizing problems of young adults with ASD and no cognitive impairment. These young adults, who are more likely to enroll in 4-year universities or obtain competitive employment with neurotypical peers, may feel more isolated in the relative struggles they experience, potentially resulting in diminished self-worth or reduced motivation. Indeed, in a qualitative study of the perspectives of college students with ASD, a predominant theme was awareness of how their academic and social capabilities differ from that of their peers (Bolourian, Zeedyk, & Blacher, 2018).

Adolescent mental health consistently emerged as a significant predictor of young adult mental health, suggesting that having mental health problems in adolescence confers greater risk for mental health problems in the future. In exploring psychosocial predictors of mental health, negative parenting behaviors, peer victimization experiences, and hope in adolescence were identified as potent predictors of later mental health. The emergent predictors suggest that negative experiences in adolescence with peers (e.g., victimization/bullying) and parents (e.g., negative parenting behaviors) were meaningful in understanding young adult outcomes while

51

positive experiences (e.g., peer social acceptance, positive parenting) were not. This is consistent with previous literature documenting that negative interactions are more consequential than positive ones when examining longitudinally across developmental periods (Moody, Rodas, Norona, Blacher, Crnic, & Baker, 2019). The construct of hope also emerged as important in determining mental health outcomes. Hope as a construct is defined as the belief that one's goals can be achieved, which can be broken down into two sets of beliefs: 1) being able to identify multiple ways to solve a problem and 2) being able take action toward goals. These components of hope map neatly on the to the components of one hallmark of positive mental health: psychological flexibility, acceptance of negative experiences and commitment to values-based actions (Fledderus, Bohlmeijer, Smith, & Westerhof, 2010). The overlap in hope and psychological flexibility points to hope as a protective factor in the development of mental health symptoms.

Contrary to our hypothesis, student-teacher relationships (STRs) were not a significant predictor. It is possible that our measure of STRs, which averaged STRs at two time points with two teachers, does not adequately capture the complete complex STR experiences of youth who change teachers every year, and often have different teachers for different subjects in any given year. Further, adolescent participants were asked to pick the teacher that knows them best; this procedure may have masked the full variance in STRs, as participants may have selected the teachers with whom they have more positive relationships with. It is also important to consider that STRs were assessed through teacher report, and therefore may have been affected by demand characteristics, where teachers may have been less forthcoming about negative aspects of their relationships with students.

Critically, no significant interactions emerged in any of the models tested. This result points to a set of universal processes that unfold in adolescence to set the stage for young adult mental health. Unfortunately, the universally important variables identified are also ones that adolescents with DD are likely to experience at different rates than typically developing adolescents. Youth with DD are more likely to experience bullying (Zeedyk et al., 2014), be exposed to higher levels of negative parenting (Blacher, Baker, & Kaladijian, 2012; Green et al., 2014), and have lower levels of hope (Olabinjo et al., 2019). The current findings, aligned with this prior literature, may suggest that young adults with developmental disabilities, such as ASD and/or ID, are not at greater risk for mental health problems as a function of their diagnosis itself, but instead as a function of such elevated risk factors in adolescence.

Limitations

A primary limitation of the current study is the small sample size in each of the developmental disability groups ($n_{ASD\ ONLY}$=20; $n_{ID/ASD}$=29). This may have limited our power to detect between-group differences or interactions with smaller effect sizes. Even so, results highlighted a number of significant differences, with large effect sizes and clinically meaningful interpretations.

Another limitation lies in our data analytic approach. In the exploratory analyses of potential predictors of young adult mental health, we chose to examine each predictor in an independent analysis, due to the smaller sample size and desire to test whether the effect of each predictor was moderated by diagnostic status. This approach increases probability of Type I error due to the multiple tests run. Further, it does not allow for interpretations of how the predictors may interact with one another, nor does it provide information about whether the same predictors would be significant if entered into a larger model together. However, the inclusion of all

hypothesized predictors, and their interactions with diagnostic status, would have introduced vast complexities in interpretation and may have shrouded important findings. Further, the choice to include previous adolescent mental health problems in each model raised statistical rigor for accepting a tested variable as a predictor of later outcomes in young adulthood.

Implications

With 43% of young adults with DD self-reporting clinically elevated mental health problems, results highlight a serious need for widely accessible, evidence-based clinical treatments in these populations, especially for internalizing symptomatology. Reviews of therapeutic interventions have previously concluded that Cognitive Behavioral Therapy (CBT) approaches, including mindfulness, are promising in treating comorbid internalizing problems in adults with ASD, with a stronger evidence base for anxiety symptoms than for depressive symptoms (Spain, Sin, Chalder, Murphy, & Happe, 2015; White et al., 2018), and in adults with ID (Unwin, Tsimopoulou, Kroese, & Azmi, 2016). Despite this initial positive evidence, more rigorous research with larger samples, controlled designs, identification of moderators of treatment success, and exploration of beneficial adaptations for the DD population must be explored. In addition, adequate training for mental health providers on providing clinical care to people with developmental disabilities is also desperately needed.

Our analyses into the relationship between parent- and self-reported mental health symptoms suggest that the informant used may have important implications for the results of the study. As such, examining the validity and reliability of parent-report and self-report in ASD and/or ID populations in young adulthood would be an important avenue of study for future research. For example, parent informant report in this developmental period may be less valid if the young adult is no longer living in the home. Further, systematically testing how variation in

wording of scale items measuring mental health affects parent report is essential, as measures of quality of life have shown biases in this respect (Hong et al., 2016; Sheldrick et al., 2012). It would also be critical to determine whether young adults with ASD and/or ID are over- or under-reporting symptoms, and similarly, whether systematic adjustments to item wording (e.g., simple words, more items that ask about concrete behaviors) or presentation (e.g., visual aids embedded in scale) would affect reporting. However, such test development would benefit from creating measures that can be applied to both DD and neurotypical populations to enable comparisons. Scales for assessing mental health problems could be further validated against comprehensive clinical diagnostic assessments of people with DD.

The adolescent predictors of young adult mental health identified in this study provide pathways to intervene earlier on the mental health crisis observed in the transition to adulthood. Traditionally, parenting interventions are targeted toward younger children; however, the current results support the development and dissemination of interventions designed to reduce negative parenting behaviors in adolescence. Such programs can be low-cost, with minimal professional support, while still effectively changing parenting practices (Stallman & Ralph, 2007). With respect to peer victimization, programs teaching youth how to effectively respond to bullies (e.g., Laugeson et al. 2015), as well as programs to improve school culture and increase bystander intervention would all be universally beneficial (Whitted & Dupper, 2005), but especially impactful for youth with DD who are more likely to be bullied. Finally, brief school-based group therapy approaches for middle school students have been shown to be effective in raising hope, along with associated increases in life satisfaction and self-esteem (Marques, Lopez, & Pais-Ribeiro, 2011). Such programming, with only 5 group sessions with the adolescents, and 3 paired

parent-sessions, were designed to be feasible to implement in school settings and demonstrated benefits up to 18 months post-intervention.

Given that these three adolescent factors held predictive power through young adulthood for all diagnostic groups, universal applications may be utilized. Alternatively, adolescents and their families could be identified as at-risk through universal screening measures and provided supports when risk is indicated. The Children's Hope Scale, for example, at only 6-items long, could be easily administered at the start of the school year to inform enrollment into a school-based hope building program. The early identification and intervention to the ameliorate the negative impacts of these risk factors is especially critical for youth with ASD and/or ID. As such, large scale, government-funded service providers for individuals with developmental disabilities, such as Regional Centers in the state of California, may wish to integrate screening and intervention services targeted at these factors, such as collecting ongoing measures of parenting through observations of parent-child interactions.

Study II - Social Support

Introduction

Though social support is easily understood as an important construct at face value, its definition is more varied in the literature. One prominent definition states that social support is the "availability of helping relationships and the quality of those relationships – [reflecting] both the structure and content of the phenomenon," (Leavy, 1983, pg. 5). Social support has been reliably associated with widespread benefits across a number of important physical and mental health outcomes in the general adult population (Rueger, Malecki, Pyun, Aycock, & Coyle, 2016; Wang, Mann, Lloyd-Evans, Ma, & Johnson, 2018; Kawachi & Berkman, 2001; Uchino, Bowen, Kent de Grey, Mikel, & Fisher, 2018). Further, scientific studies have supported the hypothesis that greater social support acts as protective buffer, reducing the negative impact of stressors on well-being (Reid, Holt, Bowman, Espelage, & Greif Green, 2016; Lee & Goldstein, 2016; Pluut, Ilies, Curseu, & Liu, 2018).

Multidimensionality of Social Support

Importantly, the construct of social support is multifaceted and complex. One distinction within the larger construct of social support is that of perceived and received social support. Intuitively with its designation, received social support refers to the amount or quality of support provided by one's support network; in contrast, perceived social support is an individual's subjective perception or satisfaction with the availability and provision of support (Haber, Cohen, Lucas, & Baltes, 2007). Outside of the perceived and received distinction, social support can also be differentiated by its structural and functional characteristics. Structural characteristics refer to the size, composition, and density (e.g., how interconnected all of the members of the network are) of the relationships within a social network. In contrast, functional characteristics

57

refer to the various domains of support that can be provided. Again, there are varying conceptual frameworks that produce different functional domains of support in the literature; however, traditional frameworks include: *emotional support*, which provides validation, self-worth, and feelings of being loved; *belonging support*, which confers a sense of companionship and social recreation; *practical/tangible support,* which provides assistance (e.g., material, financial, time resources) with daily living and task completion; and *informational support*, which acts as a source of advice and knowledge to guide decision-making and actions (Bowen, Uchino, Birmingham, Carlisle, Smith, & Light, 2014).

Though many studies have examined social support as a unidimensional construct, the disaggregation of social support characteristics and domains may be clinically informative in specific circumstances or with respect to particular outcomes. For example, practical support demonstrated greater effects on medication adherence than did emotional support in a meta-analytic study (DiMatteo, 2004). In contrast, compared to other functional components, emotional and informational support showed the strongest effects on blood pressure (Bowen et al., 2014). There is evidence to suggest that perceived social support has greater and more reliable predictive value than received social support (Holt-Lunstad, Smith, and Layton, 2010). Similarly, quality of social support relationships shows stronger associations with well-being than quantity of social relationships (Pinquart & Sorensen, 2000). The most impactful providers of support (e.g., family members, friends, professionals) also appears to differ depending on the population, context, stressor, and outcome being examined (Reid et al., 2016; Lee & Goldstein, 2016).

Social Support of Individuals with Developmental Disabilities

58

Relative to other populations, the investigation of social support in individuals with developmental disabilities, such as ASD and ID, is in its infancy. An initial focus of the literature was on the social support of parents of children with developmental disabilities (e.g., Weiss, 2002; Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001), without much attention paid to the social support networks and quality of those networks for the individuals with DD directly. That being said, some researchers have begun to explore the quality, quantity, and importance of social support for this population.

Structure and Function of Social Support.

Research examining the size and composition of social support networks of adults with ID has generated varying estimates of the number of people who provide social support, ranging from 5 (Robertson et al., 2001) to 22 network members (Forrester-Jones et al., 2006). However, one consistent finding has been that a significant proportion of social support networks of individuals with ID is derived from service professionals (24%: van Asselt-Goverts, Embregts, & Hendriks, 2013; 43%: Forrester-Jones et al., 2006; 53%: Lippold & Burns, 2009). Although these professional relationships provided the most comprehensive support (e.g., practical, companionship, decision-making), these relationships were less likely to be rated as reciprocal, received lower ratings of connection and closeness, and were less often deemed as "critical" relationships than friendships (Forrester-Jones et al., 2006; van Asselt-Goverts et al., 2013).

Research on the size and composition of social support networks of adults with ASD has shown this group to have less social support than typically developing peers, even when matching across other demographic variables (Bishop-Fitzpatrick, Mazefskey, & Eack, 2018). Adults with ASD also report high levels of isolation and loneliness (Muller, Schuler, & Yates, 2008; Tobin, Drager, & Richardson, 2014). This effect may be most pronounced when

considering the perceived social support available from friends, with evidence indicating that adults with ASD are less likely than both typically developing adults and adults with ADHD to access friends as a source of social support (Alvarez-Fernandez et al., 2017). However, there have also been some studies that have not found differences in the amount or quality of social support when comparing across cognitively higher functioning adults with ASD and adults with TD (Jennes-Coussens, Magill-Evans, & Koning, 2006).

In general, the majority of studies conducting examining social support networks in people with developmental disabilities do not include comparison groups that would provide insights into the specific differences, deficits, or strengths of a given population's social support. In a study comparing young adults with ASD, young adults with ID, and young adults with TD identified that both the ASD and ID groups had smaller networks; however, each group had their own unique social support characteristics as well (van Asselt-Goverts, Embregts, Hendriks, Wegman, & Teunisse, 2015). For example, young adults with ID reported feeling less connected to their network than either the ASD or TD groups, while young adults with ASD reported less overall satisfaction with their networks. Other studies have replicated findings that adults with ID have smaller social networks than typically developing adults, as well as compared to physical disability populations, with some findings demonstrating networks less than half the size of comparison groups (Lippold & Burns, 2009; Widmer, et al., 2008).

Relationship to Outcomes.

In a literature review examining predictors of quality of life in both children and adults with ASD (Chiang & Wineman, 2014), the authors aggregated evidence that individual characteristics such as IQ, autism symptom severity, and adaptive behavior were associated with quality of life in children, but not in adults. This further points to the need to examine adults with

60

disabilities in depth, as their needs may be different than those of children with disabilities. Again, the role of contextual and environmental factors, such as family and social support, may play a larger role at this developmental stage of transition.

In studies examining such contextual and environmental predictors of outcomes in individuals with developmental disabilities, social support and social activities emerged as a significant determinant of outcomes. In adolescent boys, perceived social support moderated the relationship between having ASD and feeling lonely, such that higher levels of social support was a protective factor for these youth (Lasgaard, Nielsen, Eriksen, & Goossens, 2010). Similarly, for adolescents with ID, higher levels of perceived social support mitigated negative effects of online victimization on later depressive symptoms (Wright, 2017). In a sample of adults with ASD who used outpatient or residential services, staff members' rating of mother's support of the adult with ASD was predictive of psychological and social functioning (Kamio, Inada, & Komaya, 2013). In adults with ID, ratings of social support explained variance in future quality of life, while social conflict predicted later depressive symptoms (Lunsky & Benson, 2001). Other studies have identified that participation in recreational, leisure, and supported employment activities are associated with higher quality of life for adults with ASD (Billstedt, Gillberg, & Gillberg, 2011; Garcia-Villamisar, Wehman, & Navarro, 2002; Garcia-Villamisar & Dattilo, 2010). However, these studies are largely limited in their use of assessments that only indirectly capture social support (e.g., assessing participation in activities) or do not capture the multidimensionality of the construct (e.g., using one-item to assess support).

One study examining perceived informal social support through the Interpersonal Support Evaluation List (ISEL-12; Cohen, Mermelstein, Kamarck, & Hoberman, 1985) found that greater perceived practical support, but not belonging or emotional support, predicted lower depressive

symptomatology and, indirectly, reductions in suicidal ideation in adults with ASD (Hedley, Uljarevic, Wilmot, Richdale, & Dissanayake, 2017). In a study that utilized multiple measures of social support, perceived informal support (e.g., friends, family) and unmet needs from formal support systems (e.g., professionals, service systems) were both significantly associated with quality of life in adults with ASD, in the expected directions, over and above demographic characteristics and disability characteristics, such as IQ and autism severity (Renty & Roeyers, 2006). These support characteristics explained 51% percent of the variance in quality of life, while demographic and disability variables did not explain a significant amount of variance. These results provide strong evidence that social support across both formal and informal relationships is intertwined closely with adult outcome in disability populations. However, this study's sample excluded individuals with comorbid intellectual disability, thus limiting its generalizability to the full ASD spectrum. Further, there were no comparison groups to identify whether the significance of social support differed by population. A final limitation was the lack of investigation into multiple outcomes, such as functional success (e.g., independent living), in addition to self-reported quality of life.

Predicting Social Support

Though the literature in both the general population and in DD populations have suggested that social support, involvement, and networks are associated with primary outcomes, the literature is less robust with respect to identifying predictors of social support. However, as social support has been identified as a possible contributing factor to success, understanding how differences in support develop over time is essential to planning interventions to bolster it. Some limited studies have collected correlational data on this topic. For example, in typically developing young adults in college, personality characteristics such as extraversion,

agreeableness, and openness all predicted perceived social support (Zhu, Woo, Porter, & Brzezinksi, 2013). For a sample of early-stage breast cancer patients, optimism significantly predicted later social support at 6 months later (Trunzo & Pinto, 2003). In populations of adults with ID, placement setting has been related to social involvement and quality of social relationships (Emerson & McVilly, 2004; Forrester-Jones et al., 2006). And as previously discussed, a recent study of youth with ASD identified internalizing symptoms in adolescence as a risk factor for decreased social participation in young adulthood (Taylor, Adams, & Bishop, 2017). In addition, intervention research has demonstrated that social skills training reduces loneliness and improves peer relationships (Hillier, Fish, Cloppert, & Beversdorf, 2007; Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015; McVey et al., 2016). However, these studies do not frequently formally measure perceived social support; in interventions that have measured it, no benefits have been found at post-assessments (Ncube, Shaikh, Ames, McMorris, & Bebko, 2019).

The Current Study

Preliminary research into the social support networks of individuals with ID and ASD suggest that their networks are significantly smaller, more restricted, and more dependent on professionals than in the general population (Lippold & Burns, 2009; van Asselt-Goverts et al., 2015; Forrester-Jones et al., 2006). However, less is understood about the functional components of these networks in comparison to other disability populations and typically developing populations. It is plausible that these groups have a paucity of support in a specific domain (e.g., emotional support), especially given the reliance on professionals for support, who may not provide adequate reciprocal intimacy.

Although the current research does suggest that social support is an important factor for all individuals, the associated effect size has been shown to vary across groups, such as gender, socio-economic status, and age (Kawachi & Berkman, 2001). This variability highlights a need to extend and compare the importance of social support across vulnerable populations, such as those with DD, for whom this variable could emerge as an important contributing factor. Alternatively, it is also possible that differences in social support may be less influential in individuals with ASD, who may be less socially motivated than the general population (Chevallier, Kohls, Troiani, Brodkin, & Schultz, 2012). Exploration of determinants of social support is also essential to identify possible treatment targets for different populations. Though social support is predominantly characterized as a predictor of mental health, this relationship is likely bidirectional and self-generating, such that lower social support results in poorer mental health, which subsequently leads to increasingly diminished support networks. In individuals with ASD and/or ID, who are already at risk for both low social support and mental health disorders, these relationships may be even more exaggerated. The construct of hope is also interesting, as optimism has been linked to social support in the general population (Trunzo & Pinto, 2003) but these findings have not been extended to DD populations. The current study sought to explore some of the above gaps in the literature, through the following three aims.

Aim 1. What group differences are present in the composition and perception of social support networks in young adulthood? We hypothesized that individuals with DD would have more depleted social networks with fewer friendships and heavier reliance on professionals, consistent with prior literature (Forrester-Jones et al., 2006; Widmer et al., 2008; Lippold & Burns, 2009; van Asselt-Goverts et al., 2015). With respect to specific functional components of social support, we anticipated significant differences across all three groups in number of

network members who provide emotional support and belonging support. Specifically, it was hypothesized that young adults with ASD would have the fewest network members in these two categories, followed by young adults with ID, and then TD young adults, who will have the densest support in these areas. This hypothesis is supported by the deficits in social communication and establishing reciprocal social relationships inherent to ASD (American Psychiatric Association, 2013).

Aim 2. To what extent, and for whom, do specific aspects of social support (e.g., structure, perception) in young adulthood concurrently relate to functional outcomes (e.g., employment, independence) and mental health? We expected that perceived social support would significantly predict self-reported mental health, over and above network size, which is generally supported by prior research (Haber et al., 2007). Given that prior research demonstrating that strength of social support differs by demographic characteristics (Kawachi & Berkman, 2001), a significant interaction was also predicted, such that the effect size of perceived social support would be larger in the DD populations. In contrast, we hypothesized that network size will be a significant predictor of functional outcomes, over and above perceived support, but only for young adults with ID and ASD. In these populations, sheer amount of support may facilitate increased success in areas such as obtaining and maintaining a job.

Aim 3. Do mental health and hope in adolescence predict social support outcomes in young adulthood, and how does this relationship differ by groups? Mental health and hope in adolescence were selected as hypothesized predictors of social support. The moderation hypothesis with respect to diagnostic groups is more exploratory in nature, as there is no prior literature to examine this or similar questions.

Method

Participants

Please see General Method section for description of participants.

Procedure

Please see General Method section for description of procedure.

Measures

Outcomes.

Interpersonal Support Evaluation List (ISEL-12; Cohen et al., 1985). The ISEL-12 is a short form version of the original 40 item Interpersonal Support Evaluation List (ISEL; Cohen & Haberman, 1983). The ISEL-12 measures perceived social support, and yields a total score as well as three subscale scores to assess the perceived availability of the following subtypes of support: Appraisal (e.g., someone to talk to about problems, advice about conflict resolution), belonging (e.g., people to do recreational activities with), and tangible (e.g., practical support or favors for daily tasks or in emergencies). In a large validation study of the ISEL-12 with Hispanic and Anglo adult respondents, the total score demonstrated strong psychometric properties, including internal consistency, convergent and divergent validity, and reliability across ethnic groups (Merz et al. 2014). Confirmatory factor analyses showed that a three factor, representing the three subscales, and one factor solution both adequately fit the data. However, the internal consistency within the subscales did not reach standards for some ancestry groups. In the current sample, internal consistency was adequate for both the total score (alpha=.87), as well as for the appraisal (alpha=.73) and belonging (alpha=.76) subscales. The tangible support subscale will not be utilized given inadequate internal consistency in the current sample.

Social Network Composition (adapted from Hepner, 2011). Young adult participants were asked to complete four prompts, each detailing the different types of social support: practical support, advice/informational support, belonging support, and emotional support. For each prompt, participants were asked to list the specific names of people who provided them with each kind of support, as well as the nature of the relationship with that person. Examples of relationship types were listed in the instructions to normalize inclusion of a wide range of people (e.g., therapist, job coach, mother). After completing the network composition, participants were asked to rate their satisfaction with their social support network on a Likert scale from 1 (*not at all happy*) to 7 (*completely happy*). For individuals with ID (with or without ASD), parents were also asked to report on their young adult child's support network members. For some of these young adults, time limitations did not allow us to complete the full questionnaire battery, or their responses were deemed invalid. In such cases, parent report was substituted for young adult report. This occurred for four participants in the current sample.

Concurrent Measures.

ASEBA Adult Forms (Achenbach & Rescorla, 2003). Please see Study I for description of ASEBA Adult Forms.

Transition Outcome Composite (TOC). Please see General Method section for description of TOC.

Quality of Life. Please see General Method section for description of quality of life measurement.

Predictors.

Child Behavior Checklist, ages 6-18 (CBCL; Achenbach & Rescorla, 2001). Please see Study I for description of the CBCL.

Children's Hope Scale (Snyder et al., 1997). Please see Study 1 for description of Children's Hope Scale.

Data Analytic Plan

Preliminary analyses were planned to explore differences across typically developing populations and populations with any developmental disability (i.e., ASD and/or ID). A multivariate ANOVA including all social support outcomes was then planned in order to test for patterns of differences within the four possible diagnostic groups. Results of the MANOVA were to be used to determine whether any diagnostic groups could be combined based on similarity in presentation, in order to maximize power in subsequent analyses.

Aim 1. *To determine whether there are significant differences across diagnostic groups in total perceived social support and support network characteristics (i.e., number of members)*, a MANOVA was to be utilized. An additional MANOVA were planned to examine the proportion of network members that fall into categories of family members, friends, and professionals to replicate previous findings that professionals comprise a large proportion of individuals with disabilities' support networks. These analyses and statistics were intended to shed light on overall group differences in the components of social support in adulthood for individuals with and without DD. The results of these analyses also informed the creation of the diagnostic status variable used in later analyses, where DD groups were combined based on data to maximize power.

Univariate ANOVAs were planned to examine the relationship between structural (i.e., size of network) and functional (i.e., perceived social support) components of social supports. Perceived social support was entered as the outcome, while social support network characteristics were entered as predictors. Diagnostic status as well as the interaction between

diagnostic status and network size were included to test for moderating effects. We hypothesized that some of the prior mixed findings with respect to this relationship may be due to differing components of social support measured. Specifically, it was expected that emotional support will most closely relate to perceived social support. Thus, a secondary ANOVA with the four specific domains of social support network size was run as well.

Aim 2. *To determine whether social support is predictive of broad-based young adult outcomes*, multiple univariate ANCOVAs were planned, in a similar style as in Study 1. The first ANCOVA included the diagnostic status variable, total perceived support, and total network size, as well as all interactions between diagnosis and the two support variables, as predictors of the Transition Outcome Composite (TOC). This was intended to shed light on how different social support contributes to transition outcome success, and for which diagnostic groups. Next, two final binary logistic regressions were planned to look at concurrent relationships between these three variables (i.e., diagnostic status, total perceived support, and total network size) and their interactions, using young adult internalizing and externalizing problems as measured by the ASR as the outcomes. Taken together, these analyses aimed to serve to elucidate the role that different components of social support play in supporting young adult outcome success, and for which groups.

Aim 3. *To identify adolescent predictors of social support outcomes in young adulthood*, Two ANCOVAs were conducted with hope/self-efficacy, internalizing problems, and externalizing problems in adolescence as predictors, as well as diagnostic status. The first of these ANCOVAS had total perceived social support as the outcome, while the second had total network size as its outcome. Interaction terms were to be included between all predictors and

diagnostic status to elucidate how these relationships operate similarly or differently across the different groups.

Results

Preliminary analyses were conducted comparing young adults with developmental disabilities of any kind to the normative typically developing group. Significant differences were observed across all subscales and the total score on the ISEL (appraisal: $t(88)=4.02$, $p<.001$; belonging: $t(88)=3.15$, $p=.002$; total: $t(88)=3.19$, $p=.002$), suggesting that young adults with DD subjectively experience themselves as having less access to various types of social support. With respect to social network composition, young adults with DD listed significantly fewer friends than their TD peers, $t(88)=3.23$, $p=.002$. Instead of relying on friends, young adults with DD listed marginally more family members, $t(88)=1.89$, $p=.061$, and professionals, $t(88)=1.94$, $p=.055$, as being in their social support networks than typically developing young adults.

In order to determine the categorization of the diagnostic status variable in Study II, a preliminary multivariate ANOVA with the four-level diagnostic status variable as the categorical predictor was conducted including all social support outcomes of interest: perceived total social support (ISEL), perceived belonging support (ISEL), perceived appraisal support (ISEL), total network size, total number of family members, total number of friends, and total number of professionals. The MANOVA was significant, $F(18,213)=3.33$, $p<.001$, suggesting that social support significantly differs across diagnostic groups. Analysis of homogenous subsets within the initial MANOVA suggested that the ASD+ID and ASD Only groups were always paired together, and were most often distinct from the TD group. The ID group was sometimes characterized as homogenous with the two ASD groups, and sometimes as homogenous with the TD group. Based on this data, the ASD+ID and ASD Only groups were combined to maximize

70

power, and for the following analyses, a three-level diagnostic status variable was utilized (i.e., ASD, ID, TD).

Group Differences in Social Support

The above MANOVA was rerun with the new three-level diagnostic status variable. As predicted, there were significant differences in social support by diagnostic status, F(12,152)=3.33, p<.001. In order to analyze group differences across the seven selected outcomes, a Bonferroni correction was utilized to minimize type I error; as such, alpha level was set at *p*=.007 for each ANOVA. The ANOVAs for perceived belonging support, *F*(2,81)=7.70, *p*=.001, perceived appraisal support, *F*(2,81)=10.78, *p*<.001, and perceived total support, *F*(2,81)=9.82, *p*=.001 were all significant. Group differences for perceived support are shown in Figure 4. The ASD group reported significantly lower perceived support in all three areas as compared to their typically developing peers. In general, young adults with ID reported perceptions of social support that fell between those with ASD and those with TD; young adults with ID had perceived access to significantly lower amounts of appraisal support than TD young adults.

With respect to network composition, as shown in Figure 5, no significant differences by diagnostic group were observed for total network size, total number of family members, or total number of professionals included. However, significant differences by diagnostic group did emerge with respect to the total number of friends in one's network, *F*(2,81)=6.04, *p*=.004. Here again, young adults with ASD were uniquely at risk, reporting significantly fewer friends (*M*=1.74, *SD*=2.42) as providing social support than their typically developing peers (*M*=4.21, *SD*=3.48), *p*=.002. However, post-hoc analyses did not support that young adults with ID were significantly different from either TD or ASD young adults in the number of friends in their

support networks. When considered in terms of proportionality of composition, family members comprised a significantly greater proportion of the social support network of the ASD groups (66%) when compared to young adults with TD (42%), p=.003. In contrast, friends comprised a significantly smaller proportion of the social support networks of the ASD group (28%) when compared to those with TD, who reported friends as composing the majority of their social support network (57%), p<.001. Again, those with ID were not significantly differentiated from either TD or ASD young adults, instead falling somewhere in between. Overall, these results indicate that young adults with ASD rely disproportionately on family, and less on friends, as compared to the normative population.

No significant differences arose between diagnostic groups in the number of people who they listed as providing each function of social support (e.g., practical support, emotional support). However, consistent with the above results, young adults with ASD listed significantly fewer friends than TD young adults in all functional support domains. Interestingly, young adults with ASD reported significantly more family members, p=.030, and professionals, p=.019, as providing them with emotional support, when compared to young adults with TD.

Interrelations of Dimensions of Social Support

We then tested the relationship between perceived social support and support network size, and whether this relationship differed by group. No significant interaction emerged; thus, for all groups, total network size was significantly associated with perceived total availability of social support on the ISEL, $F(1,80)$=8.55, p=.004, over and above diagnostic status. The direction of the effect suggested that as network size increased, so did perceptions of social support. We then ran this same analysis instead entering the total number of family members, friends, and professionals as predictors. Total number of family members, $F(1,78)$=7.82, p=.007,

and number of friends, $F(1,78)=4.70$, $p=.033$, included in support networks were each

independently and significantly associated with total perceived support, over and above

diagnostic status and the other types of people who provide support. In contrast, professionals in

one's network were not significantly associated with enhanced perceptions of social support.

These associations held true for all groups, with no significant interactions. Although this model

was significant, it explained only 30% of the variance in perceived social support, suggesting

that there are other factors important to the understanding of one's subjective perception of their

own social support.

Next, the number of people listed in each functional area of support (e.g., practical,

emotional, companionship, informational) were examined in relation to perceived support, to

determine whether density of support in one functional area contributed, over and above the

other functions, to one's perception of their total available support. Contrary to our hypotheses,

no functional areas emerged as individually significant when all types of support were included

in the model. However, total number of people listed as providing emotional support did emerge

as significant in predicting the corresponding ISEL subscale of appraisal support, $F(1,77)=6.02$,

$p=.016$, over and above all other functional areas (e.g., the number of people providing practical,

companionship, or informational support).

Social Support and Concurrent Transition Outcomes

Concurrent Functional Outcome.

Three predictors, diagnostic status, total network size, and perceived social support

(ISEL-total) were entered into a univariate ANCOVA with the Transition Outcome Composite

(TOC) as the outcome, representing functional achievement across professional, independence,

and friendship domains. Interaction terms between diagnostic status and both social support

variables were included, and then removed when determined nonsignificant. In the final model, total network size emerged as a significant predictor of functional achievement in young adulthood, $F(1,79)=11.13$, $p=.001$, over and above diagnostic status and perceived social support. This effect indicated that young adults with larger social support networks achieved better functional outcomes, regardless of diagnostic group. In contrast, perceived social support was nonsignificant.

Given that friendships are a component of the TOC (and thus people with more friends would have both larger networks and improved TOC scores), we also explored whether this effect was present when considering the professional and independence domains of the TOC individually. Neither perceived support nor network size were significantly associated with functioning within the independence domain. However, results indicated that, for all groups, larger support networks were significantly associated with improved professional functioning (i.e., engagement in employment or education), $F(1,79)=3.94$, $p=.051$, over and above diagnostic status and perceived support. In probing this effect further, it appeared the positive influences of network size on professional functioning were driven by number of friends in one's network, $F(1,79)=4.37$, $p=.040$, rather than by number of family members or professionals.

Concurrent Mental Health.

Binary logistic regression was utilized to test whether social support variables impacted the probability of a young adult reporting clinically elevated (T-score $\geq$ 60) mental health problems. Thus, in the first model, a binary outcome for internalizing problems (0=average range, 1=clinical range) was entered as the dependent variable, with diagnostic status, perceived total support, and total network size included as independent variables in the first step. The interaction terms between diagnostic status and each of the two social support variables were

entered in a hierarchal manner into a second step; the incremental change of this second step was nonsignificant, suggesting the interaction terms did not significantly contribute to the model. However, the initial model was indeed significant, $\chi^2(4)=27.34$, $p<.001$, and correctly classified 81% of the participants as falling in the normative or clinically elevated range for internalizing problems. Perceived social support emerged as significant, $p=.001$, while total network size did not. As perceived social support increased, the likelihood of a young adult being classified as having clinically elevated internalizing problems decreased. A secondary binary logistic regression was conducted to parse apart specific effects of perceived belonging and perceived appraisal support on this outcome. The model was significant, $\chi^2(4)=32.19$, $p<.001$, and only perceived belonging emerged as significant, $p=.002$, such that increased perceptions of belonging reduced the likelihood of clinically elevated internalizing problems, over and above the effects of diagnostic status and perceived appraisal support. Notably, in this model, diagnostic status became nonsignificant and did not contribute over and above perceived belonging and appraisal support in differentiating young adults with or without clinical internalizing problems. A similar procedure was followed for externalizing problems; however, the initial overall model was nonsignificant, with no significant predictors emerging.

Predicting Young Adult Social Support from Adolescence

Exploratory analyses to identify predictors of social support in young adulthood were conducted using univariate ANCOVAs. For each model, diagnostic status, adolescent hope (CHS-Total), adolescent internalizing problems (CBCL-Internalizing), and adolescent externalizing problems (CBCL-Externalizing) were each entered as predictors. Interaction terms between diagnostic status and each of the adolescent variables were included to test whether the effects of adolescent predictors on young adult social support vary by diagnostic group.

Adolescent hope emerged as the only significant predictor for both total perceived support, $F(1,75)=6.20$, $p=.015$, and perceived belonging support, $F(1,75)=9.85$, $p=.002$. Hope also was marginally significant in predicting perceived appraisal support, $F(1,75)=3.79$, $p=.055$. Thus, while both internalizing and externalizing symptomatology in adolescence did not relate to later perceived support in these areas, higher levels of hope were associated with greater perceptions of social support.

With respect to understanding total network size, none of the selected adolescent predictors, or their interactions with diagnostic status, emerged as significant. The same was true for the total number of friends reported in one's social support network. However, when predicting the number of family members, adolescent externalizing problems was a significant predictor, $F(1,71)=6.08$, $p=.016$. Results indicated that adolescents with greater adolescent externalizing symptomatology reported fewer family members in their social support networks in young adults, controlling for diagnostic status, adolescent internalizing problems, and adolescent hope. No interactions were significant, suggesting the effects were statistically uniform across all groups.

Discussion

Study II sought to elucidate how the social support networks of young adults with DD may differ from those of typically developing young adults, and how social support characteristics relate to outcomes in the transition to adulthood period. A secondary aim was to identify adolescent predictors of young adult social support.

Contrary to previous research (van Asselt-Goverts et al., 2015; Lippold & Burns, 2009; Widmer, et al., 2008), our results did not find that young adults with DD had significantly smaller social networks than typically developing young adults. However, the composition of

those networks was determined by diagnostic group, with a significant finding that young adults with DD listed fewer friends in their networks, as well as trending results indicating the inclusion of more family members and professionals instead. This is consistent with prior studies who have reported a greater reliance on professionals in ID populations (Forrester-Jones et al., 2006). However, when zooming in to compare the network characteristics of the three diagnostic groups, it is only young adults with ASD that are significantly differentiated from the normative sample, with fewer friends in their networks and a greater proportional reliance on family members.

In examining one's own subjective perceptions of their current social support, young adults with ASD consistently reported feeling as though they have significantly less social support as compared to typically developing young adults. This was true for feeling as though they would have someone to talk to about their problems (e.g., appraisal support) and for feeling as though they would have someone to go to lunch with (e.g., belonging support). Further, while young adults with ASD differed in perceptions of overall support from young adults with TD, those with ID did not significantly differ from either group. Thus, young adults with ASD are at particular risk for poor social functioning, in subjective and objective terms, and even more so than other disability groups (i.e., intellectual disability). These disparities are likely sequelae of the social communication deficits inherent in the diagnosis of ASD (APA, 2013).

Notably, our results also indicated that the number of family members and the number of friends in one's network each independently contributed to the young adults' overall subjective perception of their social support. Given that young adults with ASD had comparable numbers of family members in their networks, it is probable that the relative lack of friendships is a primary factor in understanding why young adults with ASD perceive themselves as having access to less

social support. This friendship gap in the social worlds of individuals with ASD may be particularly impactful during the transition to adulthood period. Research indicates that in young adulthood, number of friends typically increases through exposure to new contexts (e.g., work, college), emotional closeness with friends increases, and friends increasingly become providers of practical support (e.g., pet-sitting, giving a ride, helping to move; Wrzus, Zimmermann, Mund, & Neyer, 2017). These normative processes may be interrupted for young adults with ASD; thus, they may concretely have fewer friends, but their perceptions of their own social support may also be influenced by comparisons to their same-age peers, who are increasingly relying on their growing friendship networks for support.

Social support characteristics were related to concurrent young adult outcomes; however, there was specificity in these relationships. For example, total network size was associated with functional outcomes, such as professional involvement in paid work or higher education, while perceived social support was associated with mental health functioning. Young adults, across all diagnostic groups, who reported more people in their social support networks also achieved greater functional success in the transition to adulthood. The significant effects on professional involvement may be an indicator that additional people in one's network may make involvement in higher education or paid employment more accessible or feasible, whether it is through enhanced networking connections or additional practical support. It is also plausible that larger networks provide enhanced access to informal job coaching and advice in navigating professional situations (e.g., conflict with coworkers, writing a resume). One final explanation may be that a third variable explains the connection between these two, specifically that young adults with better social skills tend to both have larger networks and more professional success.

In contrast to functional outcome, it was perceived support that related to mental health outcomes, while objective network size did not have any significant association. Even more specifically, results indicated that perceptions of belonging were able to significantly differentiate those with clinically elevated internalizing problems from those without such elevations. Perception of social belonging, as measured in the current study, signified the availability of people to do recreational activities with, such as going to lunch or on a day trip to the beach. Low perceptions of belonging may contribute to diminished self-worth, a symptom of depression, in young adults and exacerbate anxiety symptoms related to negative social evaluation. The lack of a significant interaction with diagnostic status suggested that perceived belonging is an important correlate of mental health for all young adults. Even more notable, in these models, differences by diagnostic status were no longer significant. This provides evidence to suggest that the higher rates of internalizing problems in DD populations are best attributed to reduced feelings of social belonging, and not just the presence of a neurodevelopmental disorder.

Results indicated that adolescent hope significantly predicted young adults' perceptions of their social support. This is consistent with previous research that showed optimism was positively associated with perceptions of social support (Trunzo & Pinto, 2003). Given that hope as a construct represents both the ability to find multiple ways to solve a problem and the ability to take action toward goals, it is possible that adolescents with higher hope found different ways to and/or were persistent in fostering social support over time, even when faced with social struggles. Assuming that hope is relatively stable over time, another possibility could be that higher levels of hope colored the outlook of young adults in responding to measures of perceived social support. For example, when asked if they had someone they could make lunch plans with, young adults with high hope may have been able to generate a larger number of approaches (e.g.,

meeting someone at their house to make lunch together, going out to eat at a restaurant near someone's work) and may have been more willing to consider reaching out to more peripheral members of their networks if their goal is to have a lunch date. Both of these thought processes would increase rate of success and achievement. Though the nature of the relationship between adolescent hope and later young adult perceptions of social support was uniform across diagnostic groups, recent research does suggest that adolescents with DD have lower hope than their TD peers (Olabinjo et al., 2019). This deficit in hope in adolescence may place individuals with DD at higher risk for later problems social support and may also explain some of the group differences observed in the group study.

Interestingly, neither mental health nor hope in adolescence predicted total network size or number of friends in one's network. For adolescents who struggle in this developmental period, this is a positive sign, suggesting that there may not be long-term negative impacts of mental health problems or low hope on friendship networks. The predictive power on these outcomes may also be mitigated by the contextual shifts that often occur in young adulthood, such as starting a new job or attending a new school, that may create fresh opportunities for social connection. This hypothesis is further supported by the finding that a more contextually stable component of social networks, family members, was significantly predicted by adolescent mental health. Adolescents who exhibited higher levels of externalizing behaviors, such as aggression and rule-breaking, had significantly fewer family members in their networks as young adults. It is possible that the challenging behavior of these adolescents served to burn bridges with family members through direct conflict. Relations with extended family may have also been strained by adolescents' externalizing behavior as well, where extended family may exclude due to the behavior problems, or the immediate family may self-isolate due to the behavior problems.

Limitations

As with Study I, a primary limitation is the current sample size. It is likely that our current sample, especially in the ID group, is underpowered to detect smaller effects. Further, the majority of participating young adults are White, non-Hispanic, coming from high-income families whose yearly incomes are greater than $95,000. Thus, these findings may not generalize to the other cultural groups, or to lower income families. Indeed, it is possible that young adults who identify as part of ethnic groups with more values aligned with collectivism or familism may show differences in their social support networks or perceptions as compared to the dominant individualistic culture of the United States. Evidence from international research supports cultural differences in perceived and received social support in the general population (Goodwin & Hernandez Plaza, 2000), though these findings have not been extended to individuals with developmental disabilities. This would be an important avenue for future research.

Another limitation may have been the use of self-report as a measure of social support network characteristics. It is possible that different individuals interpreted the prompts more broadly or narrowly. For example, individuals with ASD may have been more literal in interpreting the definitional examples provided for each type of support to aid in comprehension (for example, in being asked to list the people who provide belonging support, the following exemplars are included: "e.g., Who would go to the movies with you? Who would go shopping or take a walk with you? Who is good company?"). Although self-report has limitations, we believed it important to obtain the information from the young adults themselves whenever possible.

Implications

81

Results of the current study have several important implications. First, it continues to be the case that young adults with developmental disabilities, and especially those with ASD, have fewer friends and perceive having access to less social support than typically developing young adults. Although these outcomes are important in their own right, they become even more critical in their relations to professional successes and internalizing problems. As such, it is essential that multi-method efforts are aimed at bolstering the social support of young adults with ASD. Social skills training programs (Laugeson et al., 2015), which have been shown to increase the number of "get togethers" with peers that participants have each month, may be one avenue, though their impact on perceived social support is not yet clearly established. Another possible avenue of intervention may be through recreational programs for young adults with DD that provide a structured space to foster friendships and connection (Hesselmark, Plenty, & Bejerot, 2014). Finally, widespread public health efforts to increase awareness of neurodiversity, reduce stigma, and model friendships across diagnostic status may also be fruitful. This may be especially pertinent given well documented negative attitudes (e.g., desiring social distance) and judgments towards individuals with intellectual disability and autism spectrum disorder (Yazbeck, McVilly, & Parmenter, 2004; Scior, 2011; White, Hillier, Frye, & Makrez, 2019). Studies of attitudinal beliefs reliably indicate that having had interactions and contact with persons with DD reduce negative attitudes; thus, structured opportunities for inclusion and integration may produce meaningful movement in such negative beliefs and open up social opportunities for young adults with DD.

General Discussion

Consistently, across the many outcomes assessed in young adulthood in this dissertation, young adults with DD fare worse than TD young adults. This is broadly in line with previous literature demonstrating poor outcomes in young adulthood for individuals with neurodevelopmental differences (e.g., Shattuck et al., 2012; Eaves & Ho, 2008; Bouck, 2012; Young-Southward, Philo, & Cooper, 2017). In the area of social support in particular, young adults with ASD exhibited worse outcomes than a comparative DD group of young adults with intellectual disability.

Despite the presence of group differences in outcome measures, it was striking how few interactions were identified in the relationships and processes tested. By and large, the results of this dissertation suggest that there is broad universality in the correlates and predictors of successful transitions to adulthood. As such, in understanding transition outcomes for individuals with DD, it may be more helpful to focus on understanding how multiple factors, such as diminished social support, lower hope, history of peer victimization, or elevated internalizing problems, culminate to produce an environment in which success during the transition period, whether defined through functional outcomes or subjective satisfaction, becomes increasingly difficult to access for individuals with DD. Although a grim picture is painted by the coalescence of these risk factors, there is also vast potential for effective intervention. Each of the factors identified in this dissertation are amenable to change and have been shown responsive to intervention. This is in contrast to previous literature that has focused on largely immutable characteristics such as IQ, language ability, and autism symptom severity as predictors of outcomes.

In maximizing intervention effects, hope emerged as a significant predictor of both mental health and social support in young adulthood, suggesting it may be a particularly strong area to target. To our knowledge, this variable has been largely unexplored in DD populations, and the limited research on interventions designed to boost hope have not yet been applied to individuals with ASD and/or ID. Future research would also benefit from teasing apart mediational pathways of causation as well as bidirectional pathways of influence, given findings in the current dissertation that weave variables together. Such analyses would allow for even greater precision in timing and allocation of interventions.

	Typically Developing (*n*=98)	Intellectual Disability (*n*=15)	Autism Spectrum Disorder and Intellectual Disability (*n*=14)	Autism Spectrum Disorder only (*n*=20)	F or χ^2
Full Scale IQ – WISC Estimated at age 13	112.55 (11.43)	60.00 (12.69)	62.00 (13.06)	110.00 (13.82)	98.67***
Adaptive Behavior Composite – Vineland at age 13	97.42 (8.74)	75.00 (6.69)	68.00 (8.22)	78.84 (7.99)	58.93***
Young Adult Age	22.13 (0.80)	21.53 (0.74)	21.64 (0.75)	21.65 (0.81)	2.27
Young Adult Sex (% male)	43.2	60.0	64.3	95.0	15.53**
Young Adult Ethnicity (% Caucasian)	59.1	60.0	64.3	65.0	0.10
Family Income (% <95,000/year)	37.1	46.2	58.3	33.3	2.20

Table 1. Demographic data of current sample, split by the four diagnostic groups: TD, ID, ASD+ID, and ASD participants. *p<.05, **p<.01, ***p<.001
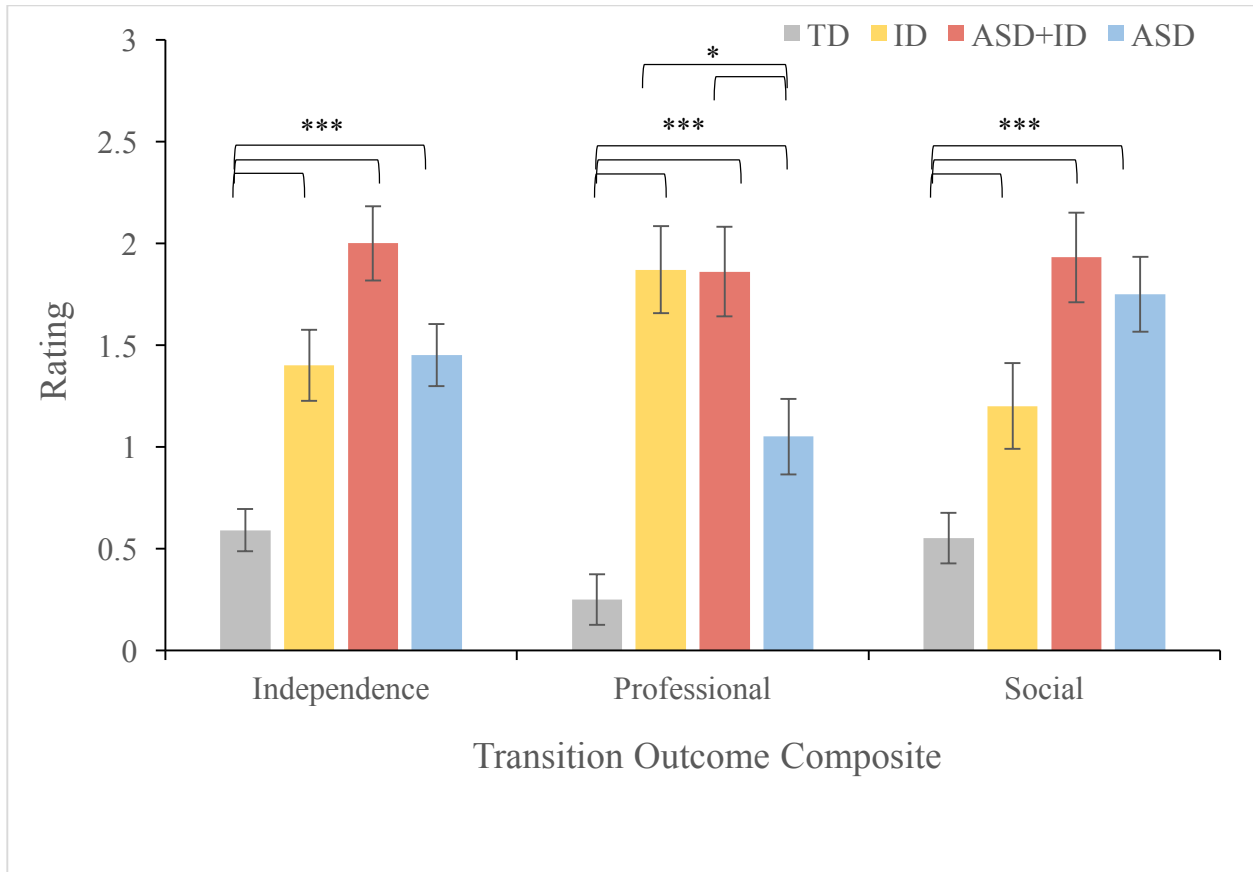
Figure 1. Transition outcome composite scores of each diagnostic group: typically developing (TD), intellectual disability (ID), autism spectrum disorder and comorbid intellectual disability (ASD+ID), and autism spectrum disorder with no cognitive impairment (ASD). $^*p<.05$, $^{**}p<.01$, $^{***}p<.001$
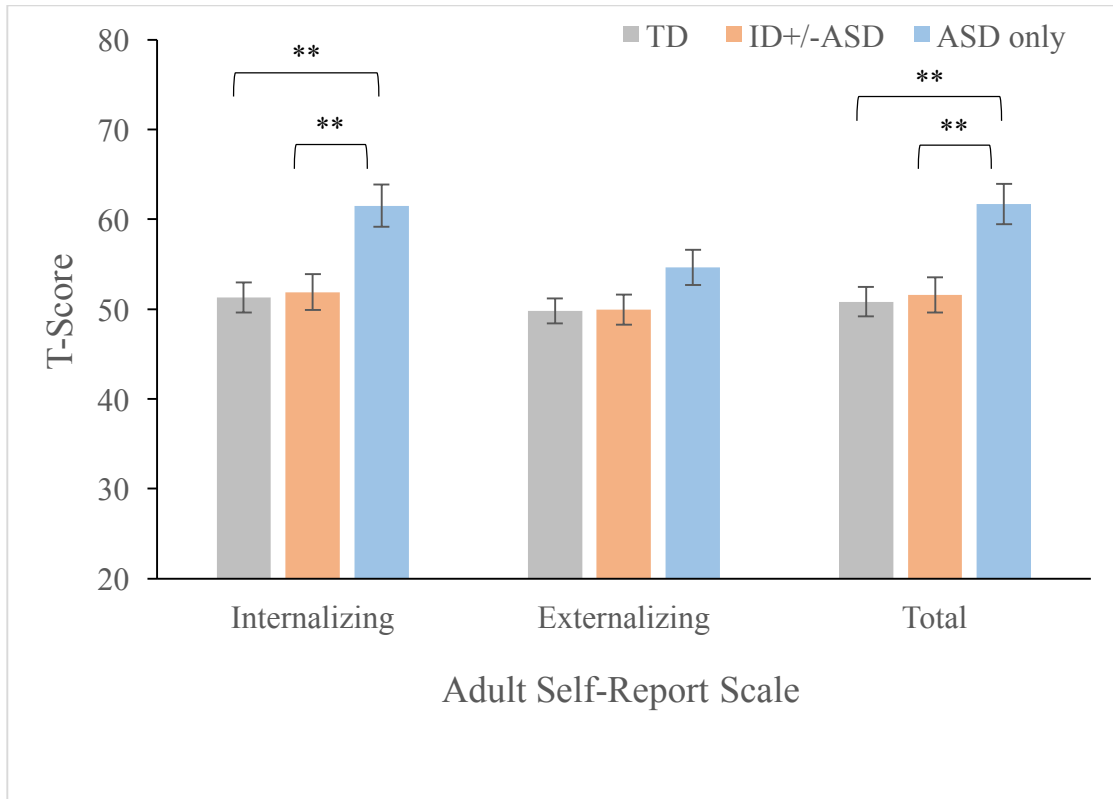
Figure 2. Self-reported young adult mental health problems measured by the Adult Self Report; diagnostic groupings drawn from Study I: typically developing (TD), intellectual disability with or without comorbid ASD (ID/ASD), and autism spectrum disorder with no cognitive impairment (ASD Only). T-scores 60 or greater are considered elevated, in the borderline clinical range, while 64 or greater is in the clinical range. $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$
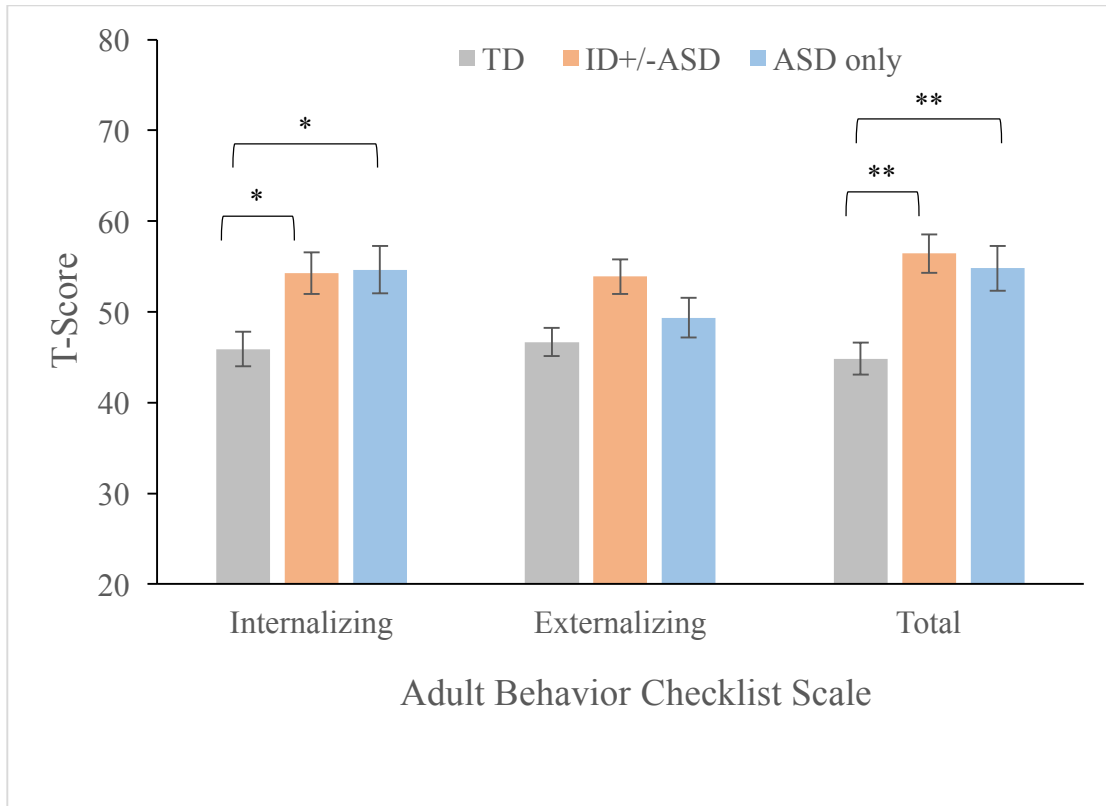
Figure 3. Parent-reported young adult mental health problems measured by the Adult Self Report; diagnostic groupings drawn from Study I: typically developing (TD), intellectual disability with or without comorbid ASD (ID/ASD), and autism spectrum disorder with no cognitive impairment (ASD Only). T-scores 60 or greater are considered elevated, in the borderline clinical range, while 64 or greater is in the clinical range. $^{*}p<.05,$ $^{**}p<.01,$ $^{***}p<.001$
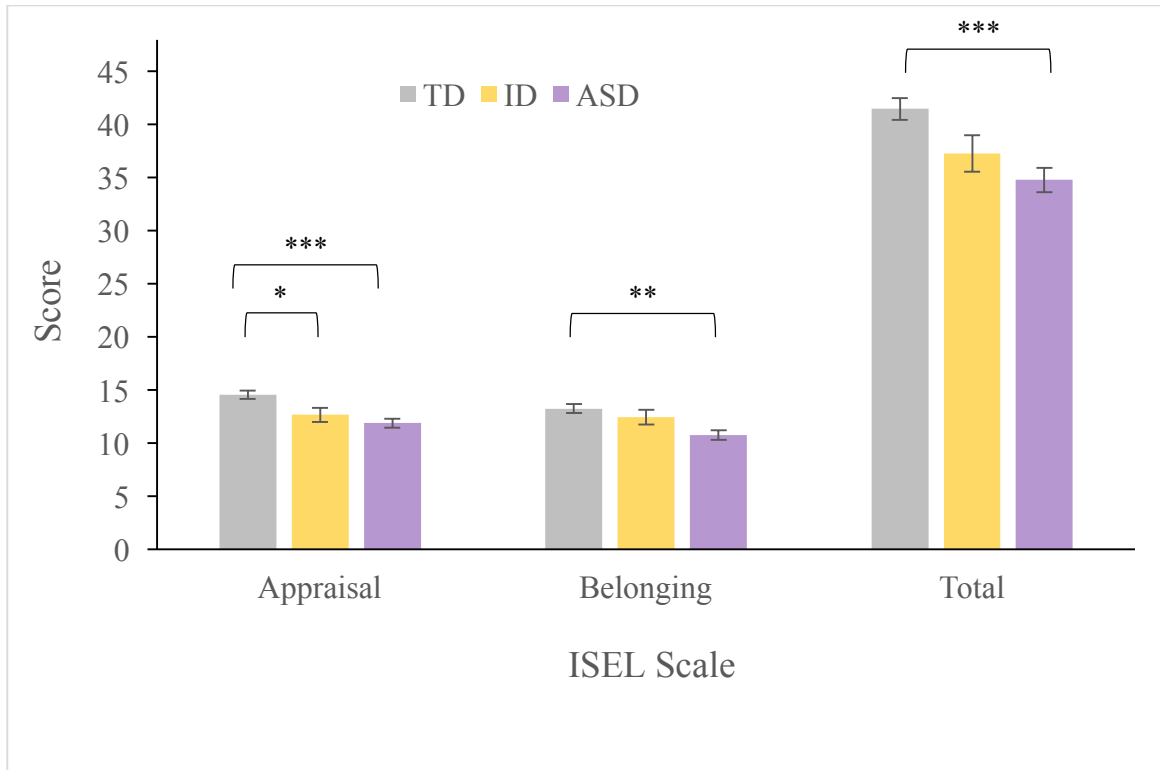
Figure 4. Perceived social support as measured by the Interpersonal Support Evaluation List –

Short Form (ISEL-12); diagnostic groupings drawn from Study II: typically developing (TD),

intellectual disability only (ID), and autism spectrum disorder, including ASD+ID and ASD with

no cognitive impairment (ASD). $^*p<.05$, $^{**}p<.01$, $^{***}p<.001$
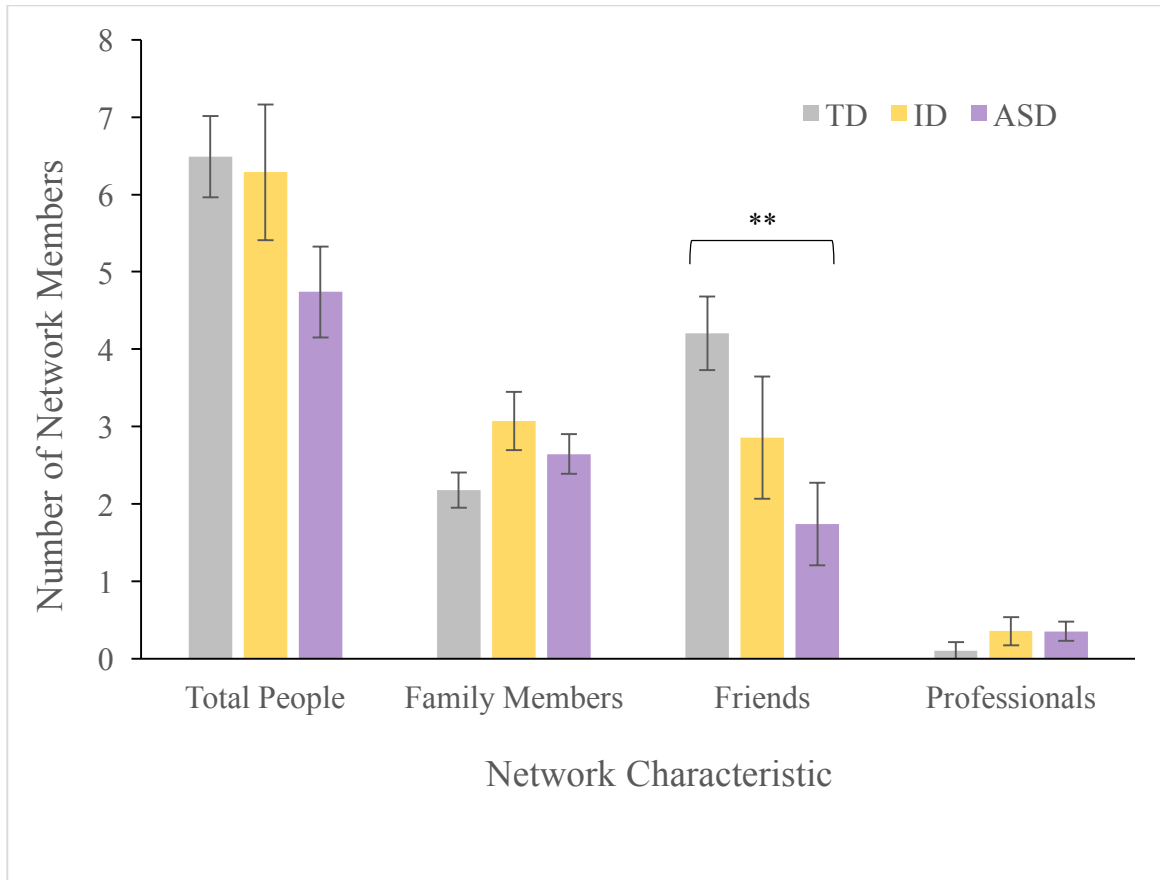
Figure 5. Social support network characteristics as self-reported by young adult participants; diagnostic groupings drawn from Study II: typically developing (TD), intellectual disability only (ID), and autism spectrum disorder, including ASD+ID and ASD with no cognitive impairment (ASD). $^*p<.05,$ $^{**}p<.01,$ $^{***}p<.001$

References

Achenbach, T. M., & Rescorla, L. (2001). ASEBA school-age forms & profiles.

Achenbach, T. M., & Rescorla, L. (2003). *Manual for the ASEBA adult forms & profiles: for ages 18-59: Adult self-report and adult behavior checklist*. ASEBA.

Alvarez-Fernandez, S., Brown, H. R., Zhao, Y., Raithel, J. A., Bishop, S. L., Kern, S. B., ... & Di Martino, A. (2017). Perceived social support in adults with autism spectrum disorder and attention-deficit/hyperactivity disorder. *Autism Research*, *10*(5), 866-877.

American College Health Association. American College Health Association-National College Health Assessment II: Undergraduate Student Executive Summary Spring 2019. Silver Spring, MD: American College Health Association; 2019.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Aquilino, W. S., & Supple, A. J. (2001). Long-term effects of parenting practices during adolescence on well-being outcomes in young adulthood. *Journal of Family Issues*, *22*(3), 289-308.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469.

Baggio, S., Iglesias, K., Deline, S., Studer, J., Henchoz, Y., Mohler-Kuo, M., & Gmel, G. (2015). Not in education, employment, or training status among young Swiss men. Longitudinal associations with mental health and substance use. *Journal of Adolescent Health*, *56*(2), 238-243.

Baker, B. L., & Blacher, J. (2019). Brief Report: Behavior Disorders and Social Skills in Adolescents with Autism Spectrum Disorder: Does IQ Matter? *Journal of Autism and Developmental Disorders*, 1-8.

Baker, B. L., Blacher, J., Crnic, K. A., & Edelbrock, C. (2002). Behavior problems and parenting stress in families of three-year-old children with and without developmental delays. *American Journal on Mental Retardation*, *107*(6), 433-444.

Baker, J. K., Fenning, R. M., Crnic, K. A., Baker, B. L., & Blacher, J. (2007). Prediction of social skills in 6-year-old children with and without developmental delays: Contributions of early regulation and maternal scaffolding. *American Journal on Mental Retardation*, *112*(5), 375-391.

Baker, B. L., McIntyre, L. L., Blacher, J., Crnic, K., Edelbrock, C., & Low, C. (2003). Pre-school children with and without developmental delay: behaviour problems and parenting stress over time. *Journal of Intellectual Disability Research*, *47*(4-5), 217-230.

Bauminger, N., Solomon, M., & Rogers, S. J. (2010). Externalizing and internalizing behaviors in ASD. *Autism Research*, *3*(3), 101-112.

Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient mood and daily hassles. *Journal of Personality, 63,* 905-929.

Biggs, E. E., & Carter, E. W. (2016). Quality of life for transition-age youth with autism or intellectual disability. *Journal of Autism and Developmental Disorders*, *46*(1), 190-204.

Billstedt, E., Gillberg, I. C., & Gillberg, C. (2011). Aspects of quality of life in adults diagnosed with autism in childhood: A population-based study. *Autism*, *15*(1), 7-20.

Bishop-Fitzpatrick, L., Mazefsky, C. A., & Eack, S. M. (2018). The combined impact of social

   support and perceived stress on quality of life in adults with autism spectrum disorder and

   without intellectual disability. *Autism*, *22*(6), 703-711.

Blacher, J. (2001). Transition to adulthood: Mental retardation, families, and culture. *American*

   Journal on Mental Retardation, *106*(2), 173-188.

Blacher, J., Baker, B. L., & Kaladjian, A. (2013). Syndrome specificity and mother–child

   interactions: Examining positive and negative parenting across contexts and

   time. *Journal of Autism and Developmental Disorders*, *43*(4), 761-774.

Blacher, J., Howell, E., Lauderdale-Littin, S., Reed, F. D. D., & Laugeson, E. A. (2014). Autism

   spectrum disorder and the student teacher relationship: A comparison study with peers

   with intellectual disability and typical development. *Research in Autism Spectrum*

   Disorders, *8*(3), 324-333.

Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S. M., & Olfson, M. (2008).

   Mental health of college students and their non–college-attending peers: results from the

   national epidemiologic study on alcohol and related conditions. *Archives of General*

   Psychiatry, *65*(12), 1429-1437.

Bolourian, Y., Zeedyk, S. M., & Blacher, J. (2018). Autism and the university experience:

   Narratives from students with neurodevelopmental disorders. *Journal of Autism and*

   Developmental Disorders, *48*(10), 3330-3343.

Bouck, E. C. (2012). Secondary students with moderate/severe intellectual disability:

   Considerations of curriculum and post-school outcomes from the National Longitudinal

   Transition Study-2. *Journal of Intellectual Disability Research*, *56*(12), 1175-1186.

Bowen, K. S., Uchino, B. N., Birmingham, W., Carlisle, M., Smith, T. W., & Light, K. C. (2014). The stress-buffering effects of functional social support on ambulatory blood pressure. *Health Psychology*, *33*(11), 1440.

Bradley, E. A., Summers, J. A., Wood, H. L., & Bryson, S. E. (2004). Comparing rates of psychiatric and behavior disorders in adolescents and young adults with severe intellectual disability with and without autism. *Journal of Autism and Developmental Disorders*, *34*(2), 151-161.

Brereton, A. V., Tonge, B. J., & Einfeld, S. L. (2006). Psychopathology in children and adolescents with autism compared to young people with intellectual disability. *Journal of Autism and Developmental Disorders*, *36*(7), 863-870.

Bronfenbrenner, U. (1992). *Ecological systems theory*. Jessica Kingsley Publishers.

Buchmann, M. C., & Kriesi, I. (2011). Transition to adulthood in Europe. *Annual Review of Sociology*, *37*, 481-503.

Buck, T. R., Viskochil, J., Farley, M., Coon, H., McMahon, W. M., Morgan, J., & Bilder, D. A. (2014). Psychiatric comorbidity and medication use in adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *44*(12), 3063-3071.

Butterworth, J., Smith, F. A., Hall, A. C., Migliore, A., Winsor, J., & Domin, D. (2013). StateData: The national report on employment services and outcomes, 2013.

Cage, E., Di Monaco, J., & Newell, V. (2018). Experiences of autism acceptance and mental health in autistic adults. *Journal of Autism and Developmental Disorders*, *48*(2), 473-484.

Camm-Crosbie, L., Bradley, L., Shaw, R., Baron-Cohen, S., & Cassidy, S. (2019). 'People like me don't get support': Autistic adults' experiences of support and treatment for mental health difficulties, self-injury and suicidality. *Autism*, *23*(6), 1431-1441.

Cannon, M., Coughlan, H., Clarke, M., Harley, M., & Kelleher, I. (2013). The mental health of young people in Ireland: A report of the Psychiatric epidemiology research across the lifespan (PERL) Group Dublin: Royal College of Surgeons in Ireland. *Dublin, Ireland*.

Caplan, B., Neece, C. L., & Baker, B. L. (2015). Developmental level and psychopathology: Comparing children with developmental delays to chronological and mental age matched controls. *Research in Developmental Disabilities*, *37*, 143-151.

Chan, W., Smith, L. E., Hong, J., Greenberg, J. S., Taylor, J. L., & Mailick, M. R. (2018). Factors associated with sustained community employment among adults with autism and co-occurring intellectual disability. *Autism*, *22*(7), 794-803.

Cheung, A. H., & Dewa, C. S. (2007). Mental health service use among adolescents and young adults with major depressive disorder and suicidality. *The Canadian Journal of Psychiatry*, *52*(4), 228-232.

Chevallier, C., Kohls, G., Troiani, V., Brodkin, E. S., & Schultz, R. T. (2012). The social motivation theory of autism. *Trends in Cognitive Sciences*, *16*(4), 231-239.

Chiang, H. M., & Wineman, I. (2014). Factors associated with quality of life in individuals with autism spectrum disorders: A review of literature. *Research in Autism Spectrum Disorders*, *8*(8), 974-986.

Chronis, A. M., Lahey, B. B., Pelham Jr, W. E., Williams, S. H., Baumann, B. L., Kipp, H., ... & Rathouz, P. J. (2007). Maternal depression and early positive parenting predict future conduct problems in young children with attention-deficit/hyperactivity disorder. *Developmental Psychology*, *43*(1), 70.

Cicchetti, D., & Rogosch, F. A. (2002). A developmental psychopathology perspective on adolescence. *Journal of Consulting and Clinical Psychology*, *70*(1), 6.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. M. (1985). Measuring the functional

    components of social support. In *Social support: Theory, Research and Applications* (pp.

    73-94). Springer, Dordrecht.

Cohen, P., Kasen, S., Chen, H., Hartmark, C., & Gordon, K. (2003). Variations in patterns of

    developmental transmissions in the emerging adulthood period. *Developmental*

    Psychology, *39*(4), 657.

Cooper, S. A., Smiley, E., Morrison, J., Williamson, A., & Allan, L. (2007). Mental ill-health in

    adults with intellectual disabilities: prevalence and associated factors. *The British Journal*

    of Psychiatry, *190*(1), 27-35.

Cooper, K., Smith, L. G., & Russell, A. (2017). Social identity, self-esteem, and mental health in

    autism. *European Journal of Social Psychology*, *47*(7), 844-854.

Crane, L., Adams, F., Harper, G., Welch, J., & Pellicano, E. (2019). 'Something needs to

    change': Mental health experiences of young autistic adults in England. *Autism*, *23*(2),

    477-493.

Davis, M., & Vander Stoep, A. (1997). The transition to adulthood for youth who have serious

    emotional disturbance: Developmental transition and young adult outcomes. *The Journal*

    of Mental Health Administration, *24*(4), 400-427.

Dekker, M. C., & Koot, H. M. (2003). DSM-IV disorders in children with borderline to moderate

    intellectual disability. II: Child and family predictors. *Journal of the American Academy*

    of Child & Adolescent Psychiatry, *42*(8), 923-931.

Dekker, M. C., Koot, H. M., Ende, J. V. D., & Verhulst, F. C. (2002). Emotional and behavioral

    problems in children and adolescents with and without intellectual disability. *Journal of*

    Child Psychology and Psychiatry, *43*(8), 1087-1098.

DiMatteo, M. R. (2004). Social support and patient adherence to medical treatment: a meta-
analysis. *Health Psychology*, *23*(2), 207.

Donald, M., Dower, J., Lucke, J., & Raphael, B. (2000). *The Queensland Young People's Mental
Health Survey Report*. Public Health Services, Queensland Health, GPO Box 48,
Brisbane, Queensland, Australia, 4001.

Doumen, S., Verschueren, K., Buyse, E., Germeijs, V., Luyckx, K., & Soenens, B. (2008).
Reciprocal relations between teacher–child conflict and aggressive behavior in
kindergarten: A three-wave longitudinal study. *Journal of Clinical Child & Adolescent
Psychology*, *37*(3), 588-599.

Dunn, M. E., Burbine, T., Bowers, C. A., & Tantleff-Dunn, S. (2001). Moderators of stress in
parents of children with autism. *Community Mental Health journal*, *37*(1), 39-52.

Eaves, L. C., & Ho, H. H. (2008). Young adult outcome of autism spectrum disorders. *Journal of
Autism and Developmental Disorders*, *38*(4), 739-747.

Eilenberg, J. S., Paff, M., Harrison, A. J., & Long, K. A. (2019). Disparities based on race,
ethnicity, and socioeconomic status over the transition to adulthood among adolescents
and young adults on the autism spectrum: a systematic review. *Current Psychiatry
Reports*, *21*(5), 32.

Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in
college. *The BE Journal of Economic Analysis & Policy*, *9*(1).

Eisenhower, A. S., Blacher, J., & Bush, H. H. (2015). Longitudinal associations between
externalizing problems and student–teacher relationship quality for young children with
ASD. *Research in Autism Spectrum Disorders*, *9*, 163-173.

Emerson, E. (2003). Prevalence of psychiatric disorders in children and adolescents with and

    without intellectual disability. *Journal of Intellectual Disability Research*, *47*(1), 51-58.

Emerson, E., & McVilly, K. (2004). Friendship activities of adults with intellectual disabilities in

    supported accommodation in Northern England. *Journal of Applied Research in*

    Intellectual Disabilities, *17*(3), 191-197.

Farley, M. A., McMahon, W. M., Fombonne, E., Jenson, W. R., Miller, J., Gardner, M., ... &

    Coon, H. (2009). Twenty-year outcome for individuals with autism and average or near-

    average cognitive abilities. *Autism Research*, *2*(2), 109-118.

Fenning, R. M., Baker, J. K., Baker, B. L., & Crnic, K. A., (2007). Parenting children with

    borderline intellectual functioning: A unique risk population. *American Journal on*

    Mental Retardation, 112, 107-121.

Fledderus, M., Bohlmeijer, E. T., Smit, F., & Westerhof, G. J. (2010). Mental health promotion

    as a new goal in public mental health care: A randomized controlled trial of an

    intervention enhancing psychological flexibility. *American Journal of Public*

    Health, *100*(12), 2372-2372.

Forrester-Jones, R., Carpenter, J., Coolen-Schrijner, P., Cambridge, P., Tate, A., Beecham, J., ...

    & Wooff, D. (2006). The social networks of people with intellectual disability living in

    the community 12 years after resettlement from long-stay hospitals. *Journal of Applied*

    Research in Intellectual Disabilities, *19*(4), 285-295.

Forte, M., Jahoda, A., & Dagnan, D. (2011). An anxious time? Exploring the nature of worries

    experienced by young people with a mild to moderate intellectual disability as they make

    the transition to adulthood. *British Journal of Clinical Psychology*, *50*(4), 398-411.

Gadke, D. L., McKinney, C., & Oliveros, A. (2016). Autism spectrum disorder symptoms and comorbidity in emerging adults. *Child Psychiatry & Human Development*, *47*(2), 194-201.

García-Villamisar, D., Wehman, P., & Navarro, M. D. (2002). Changes in the quality of autistic people's life that work in supported and sheltered employment. A 5-year follow-up study. *Journal of Vocational Rehabilitation*, *17*(4), 309-312.

García-Villamisar, D. A., & Dattilo, J. (2010). Effects of a leisure programme on quality of life and stress of individuals with ASD. *Journal of Intellectual Disability Research*, *54*(7), 611-619.

Geschwind, D. H., & Levitt, P. (2007). Autism spectrum disorders: developmental disconnection syndromes. *Current Opinion in Neurobiology*, *17*(1), 103-111.

Ghaziuddin, M., Ghaziuddin, N., & Greden, J. (2002). Depression in persons with autism: Implications for research and clinical care. *Journal of Autism and Developmental Disorders*, *32*(4), 299-306.

Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2010). Burden of psychiatric disorder in young adulthood and life outcomes at age 30. *The British Journal of Psychiatry*, *197*(2), 122-127.

Goodwin, R., & Hernandez Plaza, S. (2000). Perceived and received social support in two cultures: Collectivism and support among British and Spanish students. *Journal of Social and Personal Relationships*, *17*(2), 282-291.

Gotham, K., Brunwasser, S. M., & Lord, C. (2015). Depressive and anxiety symptom trajectories from school age through young adulthood in samples with autism spectrum disorder and

developmental delay. *Journal of the American Academy of Child & Adolescent Psychiatry*, *54*(5), 369-376.

Gray, K., Keating, C., Taffe, J., Brereton, A., Einfeld, S., & Tonge, B. (2012). Trajectory of behavior and emotional problems in autism. *American Journal on Intellectual and Developmental Disabilities*, *117*(2), 121-133.

Green, S., Caplan, B., & Baker, B. (2014). Maternal supportive and interfering control as predictors of adaptive and social development in children with and without developmental delays. *Journal of Intellectual Disability Research*, *58*(8), 691-703.

Haber, M. G., Cohen, J. L., Lucas, T., & Baltes, B. B. (2007). The relationship between self-reported received and perceived social support: A meta-analytic review. *American Journal of Community Psychology*, *39*(1-2), 133-144.

Halpern, A. S. (1985). Transition: A look at the foundations. *Exceptional Children*, *51*(6), 479-486.

Hamre, B. K., & Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, *72*(2), 625-638.

Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first-grade classroom make a difference for children at risk of school failure? *Child Development*, *76*(5), 949-967.

Hart, Debra, "Research to Practice: Postsecondary Education Options for Students with Intellectual Disabilities" (2006). Research to Practice Series, Institute for Community Inclusion. Paper 6.

Hartley, S. L., & MacLean Jr, W. E. (2006). A review of the reliability and validity of Likert-type scales for people with intellectual disability. *Journal of Intellectual Disability Research*, *50*(11), 813-827.

Hedley, D., Uljarević, M., Wilmot, M., Richdale, A., & Dissanayake, C. (2017). Brief report: social support, depression and suicidal ideation in adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *47*(11), 3669-3677.

Hepner, K. A. (2011). *Building Recovery by Improving Goals, Habits, and Thoughts (BRIGHT): A Group Cognitive Behavioral Therapy for Depression in Clients with Co-occurring Alcohol and Drug Use Problems: Group Leader's Manual*. RAND Health.

Hesselmark, E., Plenty, S., & Bejerot, S. (2014). Group cognitive behavioural therapy and group recreational activity for adults with autism spectrum disorders: A preliminary randomized controlled trial. *Autism*, *18*(6), 672-683.

Hillier, A., Fish, T., Cloppert, P., & Beversdorf, D. Q. (2007). Outcomes of a social and vocational skills support group for adolescents and young adults on the autism spectrum. *Focus on Autism and Other Developmental Disabilities*, *22*(2), 107-115.

Holloway, E. M., Rickwood, D., Rehm, I. C., Meyer, D., Griffiths, S., & Telford, N. (2018). Non-participation in education, employment, and training among young people accessing youth mental health services: demographic and clinical correlates. *Advances in Mental Health*, *16*(1), 19-32.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine*, *7*(7), e1000316.

Hong, J., Bishop-Fitzpatrick, L., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2016). Factors associated with subjective quality of life of adults with autism spectrum disorder: Self-

report versus maternal reports. *Journal of Autism and Developmental Disorders*, *46*(4), 1368-1378.

Hoskins, D. H. (2014). Consequences of parenting on adolescent outcomes. *Societies*, *4*(3), 506-531.

Howes, C., Matheson, C. C., & Hamilton, C. E. (1994). Maternal, teacher, and child care history correlates of children's relationships with peers. *Child Development*, *65*(1), 264-273.

Howlin, P., Goode, S., Hutton, J., & Rutter, M. (2004). Adult outcome for children with autism. *Journal of Child Psychology and Psychiatry*, *45*(2), 212-229.

Hutton, J., Goode, S., Murphy, M., Le Couteur, A., & Rutter, M. (2008). New-onset psychiatric disorders in individuals with autism. *Autism*, *12*(4), 373-390.

Jackson, S. L., Hart, L., Brown, J. T., & Volkmar, F. R. (2018). Brief report: Self-reported academic, social, and mental health experiences of post-secondary students with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *48*(3), 643-650.

Jennes-Coussens, M., Magill-Evans, J., & Koning, C. (2006). The quality of life of young men with Asperger syndrome: A brief report. *Autism*, *10*(4), 403-414.

Jerome, E. M., Hamre, B. K., & Pianta, R. C. (2009). Teacher–Child Relationships from Kindergarten to Sixth Grade: Early Childhood Predictors of Teacher-perceived Conflict and Closeness. *Social Development*, *18*(4), 915-945.

Juvonen, J., Nishina, A., & Graham, S. (2000). Peer harassment, psychological adjustment, and school functioning in early adolescence. *Journal of educational psychology*, *92*(2), 349.

Kapp, S. K., Gantman, A., & Laugeson, E. A. (2011). Transition to adulthood for high-functioning individuals with autism spectrum disorders. In *A Comprehensive Book on Autism Spectrum Disorders*. InTech.

Kamio, Y., Inada, N., & Koyama, T. (2013). A nationwide survey on quality of life and

associated factors of adults with high-functioning autism spectrum

disorders. *Autism*, *17*(1), 15-26.

Kawachi, I., & Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban

Health*, *78*(3), 458-467.

Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A.

M., ... & Benjet, C. (2010). Childhood adversities and adult psychopathology in the

WHO World Mental Health Surveys. *The British Journal of Psychiatry*, *197*(5), 378-385.

Kirby, A. V., Baranek, G. T., & Fox, L. (2016). Longitudinal predictors of outcomes for adults

with autism spectrum disorder: Systematic review. *OTJR: Occupation, Participation and

Health*, *36*(2), 55-64.

Koslowski, N., Klein, K., Arnold, K., Koesters, M., Schuetzwohl, M., Salize, H. J., & Puschner,

B. (2016). Effectiveness of interventions for adults with mild to moderate intellectual

disabilities and mental health problems: systematic review and meta-analysis. *The British

Journal of Psychiatry*, *209*(6), 469-474.

Kuusikko, S., Pollock-Wurman, R., Jussila, K., Carter, A. S., Mattila, M. L., Ebeling, H., ... &

Moilanen, I. (2008). Social anxiety in high-functioning children and adolescents with

autism and Asperger syndrome. *Journal of Autism and Developmental Disorders*, *38*(9),

1697-1709.

La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic

relationships: Do they predict social anxiety and depression? *Journal of Clinical Child

and Adolescent Psychology*, *34*(1), 49-61.

Lasgaard, M., Nielsen, A., Eriksen, M. E., & Goossens, L. (2010). Loneliness and social support in adolescent boys with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *40*(2), 218-226.

Laugeson, E. A., Gantman, A., Kapp, S. K., Orenski, K., & Ellingsen, R. (2015). A randomized controlled trial to improve social skills in young adults with autism spectrum disorder: The UCLA PEERS® program. *Journal of Autism and Developmental Disorders*, *45*(12), 3978-3989.

Leavy, R. L. (1983). Social support and psychological disorder: A review. *Journal of Community Psychology*, *11*(1), 3-21.

Lee, C. Y. S., & Goldstein, S. E. (2016). Loneliness, stress, and social support in young adulthood: Does the source of support matter? *Journal of Youth and Adolescence*, *45*(3), 568-580.

Levy, A., & Perry, A. (2011). Outcomes in adolescents and adults with autism: A review of the literature. *Research in Autism Spectrum Disorders*, *5*(4), 1271-1282.

Lippold, T., & Burns, J. (2009). Social support and intellectual disabilities: A comparison between social networks of adults with intellectual disability and those with physical disability. *Journal of Intellectual Disability Research*, *53*(5), 463-473.

Lucas-Carrasco, R., & Salvador-Carulla, L. (2012). Life satisfaction in persons with intellectual disabilities. *Research in Developmental Disabilities*, *33*(4), 1103-1109.

Lunsky, Y., & Benson, B. A. (2001). Association between perceived social support and strain, and positive and negative outcome for adults with mild intellectual disability. *Journal of Intellectual Disability Research*, *45*(2), 106-114.

Maddox, B. B., Crabbe, S., Beidas, R. S., Brookman-Frazee, L., Cannuscio, C. C., Miller, J. S.,

    ... & Mandell, D. S. (2019). "I wouldn't know where to start": Perspectives from

    clinicians, agency leaders, and autistic adults on improving community mental health

    services for autistic adults. *Autism*, 1362361319882227.

Maenner, M. J., Shaw, K. A., Baio, J., Washington, A., Patrick, M., DiRienzo, M., … & Dietz,

    P. M. (2020). Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years—

    Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States,

    2016. *MMWR. Surveillance Summaries*, *69*(4), 1-12.

Marques, S. C., Lopez, S. J., & Pais-Ribeiro, J. L. (2011). "Building hope for the future": A

    program to foster strengths in middle-school students. *Journal of Happiness*

    Studies, *12*(1), 139-152.

Magiati, I., Tay, X. W., & Howlin, P. (2014). Cognitive, language, social and behavioural

    outcomes in adults with autism spectrum disorders: a systematic review of longitudinal

    follow-up studies in adulthood. *Clinical Psychology Review*, *34*(1), 73-86.

Mason, D., Mackintosh, J., McConachie, H., Rodgers, J., Finch, T., & Parr, J. R. (2019). Quality

    of life for older autistic people: The impact of mental health difficulties. *Research in*

    Autism Spectrum Disorders, *63*, 13-22.

Masten, A. S., Burt, K. B., Roisman, G. I., Obradović, J., Long, J. D., & Tellegen, A. (2004).

    Resources and resilience in the transition to adulthood: Continuity and

    change. *Development andPpsychopathology*, *16*(4), 1071-1094.

Mayes, S. D., Calhoun, S. L., Murray, M. J., & Zahid, J. (2011). Variables associated with

    anxiety and depression in children with autism. *Journal of Developmental and Physical*

    Disabilities, *23*(4), 325-337.

McIntyre, L. L., Blacher, J., & Baker, B. L. (2002). Behaviour/mental health problems in young adults with intellectual disability: the impact on families. *Journal of Intellectual Disability Research*, *46*(3), 239-249.

McIntyre, L. L., Blacher, J., & Baker, B. L. (2006). The transition to school: Adaptation in young children with and without intellectual disability. *Journal of Intellectual Disability Research*, *50*(5), 349-361.

McVey, A. J., Dolan, B. K., Willar, K. S., Pleiss, S., Karst, J. S., Casnar, C. L., ... & Van Hecke, A. V. (2016). A replication and extension of the PEERS® for young adults social skills intervention: Examining effects on social skills and social anxiety in young adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *46*(12), 3739-3754.

Merz, E. L., Roesch, S. C., Malcarne, V. L., Penedo, F. J., Llabre, M. M., Weitzman, O. B., ... & Johnson, T. P. (2014). Validation of interpersonal support evaluation list-12 (ISEL-12) scores among English-and Spanish-speaking Hispanics/Latinos from the HCHS/SOL Sociocultural Ancillary Study. *Psychological Assessment*, *26*(2), 384.

Mortimer, J. T., Zimmer-Gembeck, M. J., Holmes, M., & Shanahan, M. J. (2002). The process of occupational decision making: Patterns during the transition to adulthood. *Journal of Vocational Behavior*, *61*(3), 439-465.

Müller, E., Schuler, A., & Yates, G. B. (2008). Social challenges and supports from the perspective of individuals with Asperger syndrome and other autism spectrum disabilities. *Autism*, *12*(2), 173-190.

Nader-Grosbois, N. (2014). Self-perception, self-regulation and metacognition in adolescents with intellectual disability. *Research in Developmental Disabilities*, *35*(6), 1334-1348.

Ncube, B. L., Shaikh, K. T., Ames, M. E., McMorris, C. A., & Bebko, J. M. (2019). Social

    support in postsecondary students with autism spectrum disorder. *International Journal*

    of Mental Health and Addiction, *17*(3), 573-584.

Neece, C. L., Kraemer, B. R., & Blacher, J. (2009). Transition satisfaction and family well being

    among parents of young adults with severe intellectual disability. *Intellectual and*

    Developmental Disabilities, *47*(1), 31-43.

Nelson, S. E., & Dishion, T. J. (2004). From boys to men: Predicting adult adaptation from

    middle childhood sociometric status. *Development and Psychopathology*, *16*(2), 441-459.

Newman, L., Wagner, M., Cameto, R., Knokey, A. M., & Shaver, D. (2010). Comparisons

    across Time of the Outcomes of Youth with Disabilities up to 4 Years after High School.

    A Report of Findings from the National Longitudinal Transition Study (NLTS) and the

    National Longitudinal Transition Study-2 (NLTS2). NCSER 2010-3008. *National Center*

    for Special Education Research.

Niemiec, B., Lavin, D., & Owens, L. A. (2009). Establishing a national employment first

    agenda. *Journal of Vocational Rehabilitation*, *31*(3), 139-144.

Olabinjo, I., Moody, C. T., & Baker, B. L. (2019, May). *Exploring the effect of parental*

    optimism on child hope. Poster presented at the Psychology Undergraduate Research

    Conference, Los Angeles, CA.

Osgood, D. W., Foster, E. M., & Courtney, M. E. (2010). Vulnerable populations and the

    transition to adulthood. *The Future of Children*, 209-229.

Parker, J. G., Rubin, K. H., Erath, S. A., Wojslawowicz, J. C., & Buskirk, A. A. (2006). Peer

    relationships, child development, and adjustment: A developmental psychopathology

    perspective. *Developmental Psychopathology, Theory and Method*, *1*, 419.

Patel, V., Flisher, A. J., Hetrick, S., & McGorry, P. (2007). Mental health of young people: a global public-health challenge. *The Lancet*, *369*(9569), 1302-1313.

Pianta, R. (2001). Student–teacher relationship scale–short form. *Lutz, FL: Psycho-logical Assessment Resources*.

Pianta, R. C., & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review*, *33*(3), 444.

Pinquart, M., & Sörensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: a meta-analysis. *Psychology and Aging*, *15*(2), 187.

Pluut, H., Ilies, R., Curşeu, P. L., & Liu, Y. (2018). Social support at work and at home: Dual-buffering effects in the work-family conflict process. *Organizational Behavior and Human Decision Processes*, *146*, 1-13.

Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., Phillips, M. R., & Rahman, A. (2007). No health without mental health. *The Lancet*, *370*(9590), 859-877.

Reddy, R., Rhodes, J. E., & Mulhall, P. (2003). The influence of teacher support on student adjustment in the middle school years: A latent growth curve study. *Development and Psychopathology*, *15*(1), 119-138.

Reid, G. M., Holt, M. K., Bowman, C. E., Espelage, D. L., & Green, J. G. (2016). Perceived social support and mental health among first-year college students with histories of bullying victimization. *Journal of Child and Family Studies*, *25*(11), 3331-3341.

Renty, J. O., & Roeyers, H. (2006). Quality of life in high-functioning adults with autism spectrum disorder: The predictive value of disability and support characteristics. *Autism*, *10*(5), 511-524.

Robertson, J., Emerson, E., Gregory, N., Hatton, C., Kessissoglou, S., Hallam, A., & Linehan, C. (2001). Social networks of people with mental retardation in residential settings. *Mental Retardation*, *39*(3), 201-214.

Roche, K. M., Ahmed, S., & Blum, R. W. (2008). Enduring consequences of parenting for risk behaviors from adolescence into early adulthood. *Social Science & Medicine*, *66*(9), 2023-2034.

Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research*, *81*(4), 493-529.

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin*, *142*(10), 1017.

Sameroff, A. J. (2000). Developmental systems and psychopathology. *Development and Psychopathology*, *12*(3), 297-312.

Samson, A. C., Phillips, J. M., Parker, K. J., Shah, S., Gross, J. J., & Hardan, A. Y. (2014). Emotion dysregulation and the core features of autism spectrum disorder. *Journal of Autism and developmental Disorders*, *44*(7), 1766-1772.

Saxena, S., Carlson, D., Billington, R., & Orley, J. (2001). The WHO quality of life assessment instrument (WHOQOL-Bref): the importance of its items for cross-cultural research. *Quality of Life Research*, *10*(8), 711-721.

Schulenberg, J. E., Sameroff, A. J., & Cicchetti, D. (2004). The transition to adulthood as a critical juncture in the course of psychopathology and mental health. *Development and Psychopathology*, *16*(4), 799-806.

Scior, K. (2011). Public awareness, attitudes and beliefs regarding intellectual disability: A

     systematic review. *Research in Developmental Disabilities*, *32*(6), 2164-2182.

Shattuck, P. T., Wagner, M., Narendorf, S., Sterzing, P., & Hensley, M. (2011). Post–high school

     service use among young adults with an autism spectrum disorder. *Archives of Pediatrics*

     & Adolescent Medicine, *165*(2), 141-146.

Shattuck, P. T., Narendorf, S. C., Cooper, B., Sterzing, P. R., Wagner, M., & Taylor, J. L.

     (2012). Postsecondary education and employment among youth with an autism spectrum

     disorder. *Pediatrics*, *129*(6), 1042-1049.

Shattuck, P. T., Lau, L., Anderson, K. A., & Kuo, A. A. (2018). A national research agenda for

     the transition of youth with autism. *Pediatrics*, *141*(Supplement 4), S355-S361.

Sheldrick, R. C., Neger, E. N., Shipman, D., & Perrin, E. C. (2012). Quality of life of adolescents

     with autism spectrum disorders: Concordance among adolescents' self-reports, parents'

     reports, and parents' proxy reports. *Quality of Life Research*, *21*(1), 53-57.

Shimoyama, M., Iwasa, K., & Sonoyama, S. (2018). The prevalence of mental health problems

     in adults with intellectual disabilities in Japan, associated factors and mental health

     service use. *Journal of Intellectual Disability Research*, *62*(11), 931-940.

Siegel, R. S., La Greca, A. M., & Harrison, H. M. (2009). Peer victimization and social anxiety

     in adolescents: Prospective and reciprocal relationships. *Journal of Youth and*

     Adolescence, *38*(8), 1096-1109.

Sigman, M., Ruskin, E., Arbelle, S., Corona, R., Dissanayake, C., Espinosa, M., ... & Robinson,

     B. F. (1999). Continuity and change in the social competence of children with autism,

     Down syndrome, and developmental delays. *Monographs of the Society for Research in*

     Child Development, i-139.

Siller, M., & Sigman, M. (2002). The behaviors of parents of children with autism predict the
subsequent development of their children's communication. *Journal of Autism and
Developmental Disorders*, *32*(2), 77-89.

Silver, R. B., Measelle, J. R., Armstrong, J. M., & Essex, M. J. (2005). Trajectories of classroom
externalizing behavior: Contributions of child characteristics, family characteristics, and
the teacher–child relationship during the school transition. *Journal of School
Psychology*, *43*(1), 39-60.

Simonoff, E., Pickles, A., Charman, T., Chandler, S., Loucas, T., & Baird, G. (2008). Psychiatric
disorders in children with autism spectrum disorders: prevalence, comorbidity, and
associated factors in a population-derived sample. *Journal of the American Academy of
Child & Adolescent Psychiatry*, *47*(8), 921-929.

Simons, R. L., Simons, L. G., Chen, Y. F., Brody, G. H., & Lin, K. H. (2007). Identifying the
psychological factors that mediate the association between parenting practices and
delinquency. *Criminology*, *45*(3), 481-517.

Skevington, S. M., Lotfy, M., & O'Connell, K. A. (2004). The World Health Organization's
WHOQOL-BREF quality of life assessment: psychometric properties and results of the
international field trial. A report from the WHOQOL group. *Quality of Life
Research*, *13*(2), 299-310.

Snyder, C. R., Hoza, B., Pelham, W. E., Rapoff, M., Ware, L., Danovsky, M., ... & Stahl, K. J.
(1997). The development and validation of the Children's Hope Scale. *Journal of
Pediatric Psychology*, *22*(3), 399-421.

Spain, D., Sin, J., Chalder, T., Murphy, D., & Happe, F. (2015). Cognitive behaviour therapy for adults with autism spectrum disorders and psychiatric co-morbidity: A review. *Research in Autism Spectrum Disorders*, *9*, 151-162.

Stallman, H. M., & Ralph, A. (2007). Reducing risk factors for adolescent behavioural and emotional problems: A pilot randomised controlled trial of a self-administered parenting intervention. *Australian e-Journal for the Advancement of Mental Health*, *6*(2), 125-137.

Stapleton, D. C., O'day, B. L., Livermore, G. A., & Imparato, A. J. (2006). Dismantling the poverty trap: Disability policy for the twenty-first century. *The Milbank Quarterly*, *84*(4), 701-732.

Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in cognitive sciences*, *9*(2), 69-74.

Sterling, L., Dawson, G., Estes, A., & Greenson, J. (2008). Characteristics associated with presence of depressive symptoms in adults with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *38*(6), 1011-1018.

Stewart, M. E., Barnard, L., Pearson, J., Hasan, R., & O'Brien, G. (2006). Presentation of depression in autism and Asperger syndrome: A review. *Autism*, *10*(1), 103-116.

Strang, J. F., Kenworthy, L., Daniolos, P., Case, L., Wills, M. C., Martin, A., & Wallace, G. L. (2012). Depression and anxiety symptoms in children and adolescents with autism spectrum disorders without intellectual disability. *Research in Autism Spectrum Disorders*, *6*(1), 406-412.

Swenson, L. M., Nordstrom, A., & Hiester, M. (2008). The role of peer relationships in adjustment to college. *Journal of College Student Development*, *49*(6), 551-567.

Taylor, J. L., Adams, R. E., & Bishop, S. L. (2017). Social participation and its relation to internalizing symptoms among youth with autism spectrum disorder as they transition from high school. *Autism Research*, *10*(4), 663-672.

Taylor, J. L., & Seltzer, M. M. (2011). Employment and post-secondary educational activities for young adults with autism spectrum disorders during the transition to adulthood. *Journal of Autism and Developmental Disorders*, *41*(5), 566-574.

Tobin, M. C., Drager, K. D., & Richardson, L. F. (2014). A systematic review of social participation for adults with autism spectrum disorders: Support, social functioning, and quality of life. *Research in Autism Spectrum Disorders*, *8*(3), 214-229.

Tonge, B. J., & Einfeld, S. L. (2003). Psychopathology and intellectual disability: The Australian child to adult longitudinal study. *International Review of Research in Mental Retardation*, *26*, 61-91.

Trunzo, J. J., & Pinto, B. M. (2003). Social support as a mediator of optimism and distress in breast cancer survivors. *Journal of Consulting and Clinical Psychology*, *71*(4), 805.

Trzesniewski, K. H., Donnellan, M. B., Moffitt, T. E., Robins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Developmental Psychology*, *42*(2), 381.

Turcotte, P., Mathew, M., Shea, L. L., Brusilovskiy, E., & Nonnemacher, S. L. (2016). Service needs across the lifespan for individuals with autism. *Journal of Autism and Developmental Disorders*, *46*(7), 2480-2489.

Uchino, B. N., Bowen, K., de Grey, R. K., Mikel, J., & Fisher, E. B. (2018). Social support and physical health: Models, mechanisms, and opportunities. In *Principles and concepts of behavioral medicine* (pp. 341-372). Springer, New York, NY.

Underwood, L., McCarthy, J., & Tsakanikos, E. (2010). Mental health of adults with autism spectrum disorders and intellectual disability. *Current Opinion in Psychiatry*, *23*(5), 421-426.

Unwin, G., Tsimopoulou, I., Kroese, B. S., & Azmi, S. (2016). Effectiveness of cognitive behavioural therapy (CBT) programmes for anxiety or depression in adults with intellectual disabilities: A review of the literature. *Research in Developmental Disabilities*, *51*, 60-75.

Valle, M. F., Huebner, E. S., & Suldo, S. M. (2004). Further evaluation of the Children's Hope Scale. *Journal of Psychoeducational Assessment*, *22*(4), 320-337.

Valle, M. F., Huebner, E. S., & Suldo, S. M. (2006). An analysis of hope as a psychological strength. *Journal of School Psychology*, *44*(5), 393-406.

van Asselt-Goverts, A. E., Embregts, P. J. C. M., & Hendriks, A. H. C. (2013). Structural and functional characteristics of the social networks of people with mild intellectual disabilities. *Research in Developmental Disabilities*, *34*(4), 1280-1288.

van Asselt-Goverts, A. E., Embregts, P. J. C. M., Hendriks, A. H. C., Wegman, K. M., & Teunisse, J. P. (2015). Do social networks differ? Comparison of the social networks of people with intellectual disabilities, people with autism spectrum disorders and other people living in the community. *Journal of Autism and Developmental Disorders*, *45*(5), 1191-1203.

Vasa, R. A., Hagopian, L., & Kalb, L. G. (2020). Investigating Mental Health Crisis in Youth with Autism Spectrum Disorder. *Autism Research, 13*(1), 112-121.

Wagner, M., Newman, L., Cameto, R., Levine, P., & Marder, C. (2007). Perceptions and Expectations of Youth with Disabilities. A Special Topic Report of Findings from the

National Longitudinal Transition Study-2 (NLTS2). NCSER 2007-3006. *National Center for Special Education Research*.

Wang, J., Mann, F., Lloyd-Evans, B., Ma, R., & Johnson, S. (2018). Associations between loneliness and perceived social support and outcomes of mental health problems: a systematic review. *BMC psychiatry*, *18*(1), 156.

Webb, M. L. & Neuharth-Pritchett, S. (2011). Examining factorial validity and measurement invariance of the Student–Teacher Relationship Scale. *Early Childhood Research Quarterly*, *26*(2), 205-215.

Weise, J., Fisher, K. R., Turner, B., & Trollor, J. N. (2019). What is the capability of the Australian mental health workforce to meet the needs of people with an intellectual disability and co-occurring mental ill health? *Journal of Intellectual & Developmental Disability*, 1-10.

Weiss, M. J. (2002). Hardiness and social support as predictors of stress in mothers of typical children, children with autism, and children with mental retardation. *Autism*, *6*(1), 115-130.

Wentzel, K. R. (2002). Are effective teachers like good parents? Teaching styles and student adjustment in early adolescence. *Child Development*, *73*(1), 287-301.

White, D., Hillier, A., Frye, A., & Makrez, E. (2019). College students' knowledge and attitudes towards students on the autism spectrum. *Journal of Autism and Developmental Disorders*, *49*(7), 2699-2705.

White, S. W., Simmons, G. L., Gotham, K. O., Conner, C. M., Smith, I. C., Beck, K. B., & Mazefsky, C. A. (2018). Psychosocial treatments targeting anxiety and depression in

adolescents and adults on the autism spectrum: Review of the latest research and recommended future directions. *Current psychiatry reports*, *20*(10), 82.

Whitehouse, A. J., Durkin, K., Jaquet, E., & Ziatas, K. (2009). Friendship, loneliness and depression in adolescents with Asperger's Syndrome. *Journal of Adolescence*, *32*(2), 309-322.

Whitted, K. S., & Dupper, D. R. (2005). Best practices for preventing or reducing bullying in schools. *Children & Schools*, *27*(3), 167-175.

Whoqol Group. (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychological Medicine*, *28*(3), 551-558.

Widmer, E. D., Kempf-Constantin, N., Robert-Tissot, C., Lanzi, F., & Carminati, G. G. (2008). How central and connected am I in my family?: Family-based social capital of individuals with intellectual disability. *Research in Developmental Disabilities*, *29*(2), 176-187.

Wittchen, H. U., Nelson, C. B., & Lachner, G. (1998). Prevalence of mental disorders and psychosocial impairments in adolescents and young adults. *Psychological Medicine*, *28*(1), 109-126.

Woodman, A. C., Mailick, M. R., & Greenberg, J. S. (2016). Trajectories of internalizing and externalizing symptoms among adults with autism spectrum disorders. *Development and Psychopathology*, *28*(2), 565-581.

Woodman, A. C., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2015). Change in autism symptoms and maladaptive behaviors in adolescence and adulthood: The role of positive family processes. *Journal of Autism and Developmental Disorders*, *45*(1), 111-126.

Woodman, A. C., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2016). Contextual factors predict patterns of change in functioning over 10 years among adolescents and adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *46*(1), 176-189.

Wright, M. F. (2017). Cyber victimization and depression among adolescents with intellectual disabilities and developmental disorders: The moderation of perceived social support. *Journal of Mental Health Research in Intellectual Disabilities*, *10*(2), 126-143.

Wrzus, C., Zimmermann, J., Mund, M., & Neyer, F. J. (2017). Friendships in young and middle adulthood: Normative patterns and personality differences. In M. Hojjat & A. Moyer (Eds.), *Psychology of Friendship*. New York: Oxford University Press.

Yazbeck, M., McVilly, K., & Parmenter, T. R. (2004). Attitudes toward people with intellectual disabilities: An Australian perspective. *Journal of Disability Policy Studies*, *15*(2), 97-111.

Young-Southward, G., Rydzewska, E., Philo, C., & Cooper, S. A. (2017). Physical and mental health of young people with and without intellectual disabilities: Cross-sectional analysis of a whole country population. *Journal of Intellectual Disability Research*, *61*(10), 984-993.

Zeedyk, S. M., Rodriguez, G., Tipton, L. A., Baker, B. L., & Blacher, J. (2014). Bullying of youth with autism spectrum disorder, intellectual disability, or typical development: Victim and parent perspectives. *Research in Autism Spectrum Disorders*, *8*(9), 1173-1183.

Zhu, X., Woo, S. E., Porter, C., & Brzezinski, M. (2013). Pathways to happiness: From personality to social networks and perceived support. *Social Networks*, *35*(3), 382-393.