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**Comparison of Resilience, Empathy, Anxiety, and Depression Levels in College Aged
Individuals Who Have a Sibling with a Developmental Disorder and Those Who Have a
Typically Developing Sibling**

By

Cecelia Prentiss

A thesis submitted in partial fulfillment of the requirements of the
Honors College at the University of South Alabama and the
Bachelor of Sciences in the Psychology Department

University of South Alabama

Mobile

May 2021

Approved by:



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Dean, Honors College

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DEDICATION

I would like to dedicate this research to the future of psychology and therapy in looking further into the relationships of individuals who have a sibling with a developmental disorder.

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to my research mentor, Dr. Kimberly Zlomke of the Psychology department at the University of South Alabama. A little over two years ago, I began to look for a professor who had similar research interests and could potentially be my Honors research mentor. Shortly after reaching out, I began going to lab meetings and enjoyed learning more about research from graduate students. Dr. Zlomke has been the most supportive and understanding mentor I could asked for while navigating this world of research.

Secondly, I would like to thank Dr. Lisa Turner of the Psychology department and Dr. Tara Thompson of the Occupational Therapy department in agreeing to be committee members for my thesis. I appreciate the guidance and expertise of each of you, as well as the value it serves to this research.

Lastly, I would like to thank the University of South Alabama and the Honor's college for giving me the opportunity to pursue research. This research has allowed me to interact with people I would not have before, as well as given me insight into so many topics that are still yet to be explored. Thank you to all the people mentioned as well as others who have helped to further my education throughout the past 4 years.

ABSTRACT

Cecelia Prentiss: Comparison of Resilience, Empathy, Anxiety, and Depression Levels in College Aged Individuals Who Have a Sibling with a Developmental Disorder and Those Who Have a Typically Developing Sibling

(Under the direction of Kimberly Zlomke)

Observing and analyzing the relationships between siblings can bring insight to what kinds of behaviors they will be inclined to have, as well as how prominent those behaviors will be. Specifically, it is important to analyze and compare levels of resilience, empathy, anxiety, and depression in individuals who have a sibling with a developmental disorder (DD) and those who have a typically developing (TD) sibling. This research looks to find out more information on college-aged individuals who have a sibling with a developmental disorder. There have been many studies that have conducted research to show how children and older adults have been impacted negatively and positively depending on if they have a sibling with a developmental disorder. However, the impact of having a sibling with a developmental disorder on college aged individuals has not been thoroughly evaluated. We predicted that college aged students who had a sibling with a DD would adjust more positively than students who had a TD sibling. However, after running independent sample T-tests at a 95% confidence interval, the results indicated no significant difference as each measure test had a $p > .05$. Out of 76 participants, only 13 reported having a sibling with a DD which limited not having a large enough sample of this test group. These findings suggest that in future research there needs to be a larger sample of individuals who have a sibling with a DD so that we can inquire more about the difference in positive and negative behaviors between those with siblings with DD and those with TD siblings.

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LIST OF ABBREVIATIONS

AA: Adult Affect

AB: Adult Behavior

AC: Adult Cognitions

CA: Child Affect

CB: Child Behavior

CC: Child Cognitions

DASS: Depression Anxiety Stress Scale

DD: Developmental Disorder/Disability

EC: Empathetic Concern

FS: Fantasy Scale

IRI: Interpersonal Reactivity Index

LSRS: Lifespan Sibling Relationship Scale

N: sample size

p: significance or probability

PD: Person Distress

PT: Perspective Taking

SD: standard deviation

SEQS: The Siblings' Experience Quality Scale

SWLS: Satisfaction with Life Scale

TD: Typically Developing

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INTRODUCTION

This project is being conducted in order to find more information on the college-aged siblings of individuals who have different developmental disorders. Developmental disorders (DD) are a group of conditions that can impair a person's physical, cognitive, communication, or behavioral abilities. These disorders can begin early on in a person's development and impact them their entire life. Moreover, it is important to look at the relationship between a typically developing (TD) individual and their sibling with a developmental disorder (DD). There have been many studies that have conducted research to show how children have been impacted negatively and positively depending on if they have a sibling with a developmental disorder. In addition, there has been some research on adults from their mid-twenties to mid-fifties analyzing their behaviors and adjustment. However, the impact of having a sibling with a developmental disorder on college-aged individuals has not been thoroughly evaluated. This stage in an individual's life can be extremely life changing and is worthy to be looked at when determining their adjustment. We want to focus on this age group and population to see if they have positive or negative adjustments depending on if they have grown up with a sibling with a developmental disorder. Through a series of several survey measures, we will look at resilience levels, as well as social and emotional behaviors of empathy, depression, and anxiety. We will then analyze the data to compare the difference of positive and negative behaviors in individuals who reported having a sibling with a developmental disorder and individuals who reported having a typically developing sibling. Through running independent sample T-tests, we will observe if there is

significant difference in positive and negative behaviors between the group with developmental disorders and the group that is typically developing.

LITERATURE REVIEW

Over the years, both positive and negative relationships have been observed between siblings who have normal functioning and those that have developmental disorders, such as autism spectrum disorder (ASD), attention/hyperactivity disorder (ADHD), and intellectual disability. Individuals who have a sibling with a developmental disorder may be impacted positively or negatively by their sibling's disorder. I believe that in a college aged individual, they are more likely to adjust positively in their resilience and social and emotional behaviors of empathy, depression, and anxiety. In addition, the overall family environment can be impacted by having a family member with a developmental disorder.

My specific focus for this research is to look at groups of individuals with developmental disorders along with unaffected individuals in order to see the impact this has on college aged siblings. We will also try to look at the closeness of the family in order to see if this has an effect on the adjustment of the individual. While there have been studies on various age groups, I want to eventually focus on the college aged group since there is not as much information. For research published so far, there have been results that showed positive adjustment of the sibling and others that show negative adjustment. This adjustment could also include how well the individual interacted with their family. From the research gathered from these different age groups of siblings, I will then be able to receive information and variables that will help me in conducting a study on how college aged individuals are impacted. I am writing this to find and understand additional information that could be missing when finding out how sibling status and

family closeness are related to an individual who has a sibling with a developmental disorder. I want to compare both groups to see what impacts the siblings with normal functioning experience. I will also look to see if the individual's relationship has any strain or benefit on the relationship between the siblings.

The literature on autism and various other developmental disorders suggests many positive and negative associations in the relationship between developmental disorders and siblings. Some negative feelings experienced by siblings include depression, anxiety, and behavioral problems (Marquis et al., 2020). On the other hand, though, some articles found positive emotions expressed in siblings, such as empathy and resilience (Moss et al., 2019). In some cases, family environment was mentioned as a factor that could be affecting these relationships (Laghi et al., 2017).

In Jpkiranta-Olkonemi's article on the risk of psychiatric and neurodevelopmental disorders, the authors state, "All childhood-onset disorders examined, including ASD, ADHD, ID, childhood emotional disorders, learning and coordination disorders, conduct and oppositional disorders, and tic disorders, were more frequent among siblings of cases with ASD" (Jpkiranta-Olkonemi, 2016). This study's results concluded that childhood-onset disorders did occur more frequently in the siblings of individuals with ASD. However, the study did not show how these disorders might change and develop into adulthood. This study also revealed that family might not have had a large effect on the outcome due to lower levels of stress compared to some family situations. These families who brought in their children without ASD to get tested for other disorders might also be biased since they already have a child with a developmental disorder. Overall, this article shows how siblings of children with developmental may be at increased risk for other diseases. This information provides negative outcomes for individuals who have a

sibling with a developmental disorder. While specific ages are not indicated but rather birth dates, the data set seems to be younger. In order to get a more accurate set of ages to compare to college aged students, specific ages, as well as a mean age should be included.

Another study that included negative sibling behavior outcomes is Sandra Marquis' research that used administrative data to examine variables that affect the mental health of siblings of children who have a developmental disability. Administrative data is data that was collected from a large group of people with related issues. This administrative data allowed the study to look at a large cohort of people in order to then break the data into more specific subcategories. Marquis found that siblings can develop disorders and become more stressed than those with non-disabled siblings. Like Marquis, researchers have looked for negative associations and disorders in the siblings of children with developmental disorders. However, this study compared the effect between brothers and sisters and their position in the birth order of their family. This study also compared the effects of children with autism (ASD), fetal alcohol syndrome (FAS), Down syndrome, and other rarer developmental disorders. While this study is helpful because it provides a large population over 29 years, it might tend to overlook the exceptions to each result found. Therefore, it is still hard to determine if my hypothesis of college aged individuals having more positive outcomes would prove true. Overall, this study provided essential administrative data, but it does lack a control group that allows for the comparison of siblings of children without a developmental disorder. I believe that a control group is more important because it provides data on how groups with developmental disorders compare to typically developing individuals.

Looking at more positive outcomes in typically developing siblings, Laura Green's article on "The Well-Being of Siblings of Individuals with Autism" further highlights the relationship

between siblings with Autism and those without. She states, “It has been established that the younger siblings of individuals with autism spectrum disorder (ASD) are at heightened risk of developmental problems in comparison to the general population. Some of these developmental difficulties include the following: social and cognitive deficiencies, and neurocognitive and behavioural delays, specifically executive function and repetitive behaviours” (Green, 2013). Similar to the data gathered by Sandra Marquis, Green’s data looks at birth order to determine if the placement of a child might determine if they are more at risk for having a developmental disorder. While data mentioned before this revealed primarily negative associations, Green’s data shows how siblings of children with autism are sometimes not affected. She also explains how siblings of children with autism might even develop more positively in some situations. While siblings sometimes had more positive behaviors, it was found that siblings of individuals with a disability felt that they could not express their feelings regarding the disability (Green, 2013). This is something that can be observed more deeply in research in order to determine why these individuals develop these feelings. Even though the majority of siblings in this study reported positive behaviors, there were still some siblings of individuals with autism that are at risk of developing behavioral and developmental disorders. This gives me hope for my research that having a sibling with developmental disorder may encourage positive behaviors. With the information provided in this article, I can narrow the pool down to college aged individuals and possibly look at their rank in the birth order to see what the risk of development is.

Like Green’s article, Dempsey’s article on emotional and behavioral adjustment discusses some positive outcomes of typically developing siblings who have a sibling with autism spectrum disorder. However, this study uses parent and teacher reports to analyze the child’s behavior. These parents and teachers took a questionnaire that evaluated the individual’s

behavioral, emotional, and social functioning if they had a sibling with autism. Most importantly, it was found that internalizing (emotional) problems and externalizing (behavioral) problems were not elevated among the individuals who had a sibling with autism. Although this is among school-age children, I believe that these statistics of positive behaviors would apply to college-aged students as well. While this study provides strong evidence that siblings of those with ASD adjust normally, this data might be skewed depending on the parent and teacher's perceptions. The parents and teachers might have the same level of agreement while others might have more negative perceptions of the development of individuals who have a sibling with ASD causing the data to result in more negative functioning outcomes. A limitation is that this study did not have a group of individuals who had typically developing siblings only, which provided no control group. In my research, I will compare the results of individuals who have a sibling with a developmental disorder to those who have typically developing siblings in order to have a control group. The questionnaires used in this research will be useful guides to use in my own research when asking college students how they feel they have adjusted emotionally and behaviorally.

More information on potential behavioral problems and adjustment of siblings of children with developmental disabilities comes from Hasting's research. The goal of this study was to collect the data of children's behaviors who had a sibling with a developmental disability, such as autism or Down syndrome and compare it at two collection points that were 2 years apart. Like Dempsey's study, this also involved using other people's reports on their behavior rather than the child's own perception. The reports of a child's mother were observed in order to look at differences in behavioral adjustment. It was questioned whether siblings of children with autism were at a greater risk for behavioral adjustment problems. On the other hand, the data states, "In

fact, mothers reported that the siblings of children with developmental disabilities were relatively well-adjusted when compared with a representative national population normative sample” (Hastings, 2006). This evidence once again provides a stronger support for siblings of children with autism having more positive behavioral outcomes. However, like the previous study, there might be bias since the mother might believe her child’s adjustment is more positive than it is. Overall, I believe these positive behavioral outcomes would also apply to looking at college aged individuals who have a sibling with a developmental disorder. The survey questions in this survey could be used to ask college aged individuals their take on how they believe they have adjusted as a result of having a sibling with a developmental disorder.

While some studies have just looked at the parent’s or the child’s perspective, Jones’s research on adjustment and the relationship of having a sibling with autism looks at both perspectives. The measures in this study are most similar to ones I will use when testing my hypothesis that college aged individuals who have a sibling with a developmental disorder will have more positive behavioral outcomes. The factors of depression, support, coping, and internalizing and externalizing behaviors that were observed will be essential determinants in a sibling’s behavioral outcomes. This study concluded, “Greater behavior difficulties in siblings with ASD related to poorer TD sibling adjustment and quality of the sibling relationship. A more positive TD sibling perception of the sibling relationship was associated with greater TD sibling coping and support” (Jones, 2019). However, these results still show how there are mixed results of positive and negative behavioral outcomes dependent on a variety of variables. Using the measures in this study, I can test for levels of resilience, empathy, depression, and anxiety in college aged individuals in order to see if there are more positive or negative behavioral outcomes.

Patricia Howlin and colleagues write about the “Outcomes in Adult Life Among Siblings of Individuals with Autism.” Unlike the previous articles mentioned, this article looks at adults with a mean age of 39 years old. When these participants were about twenty years younger, they were tested as being “unaffected” or as meeting criteria for the “Broader Autism Phenotype” (BAP). While those who were unaffected seemed to be better adjusted at first, information has also been found that these individuals might be at risk for other developmental, emotional, or behavioral problems. This information can help to provide reasoning that even though individuals may seem unaffected, there can be underlying problems. Overall, adults seemed to be positively well adjusted in comparison to data gathered with children. However, data is still limited in this age group due to varying factors. For my research, this article offers insight into the possible problems older adults face if they have a sibling with autism. Adults seem to have more positive behaviors than children do; however, they do have some negative thoughts as a result of being potential caregivers. I think that by looking at college aged individuals, the division to these differences in behavior can be looked at more effectively.

Also connecting children and adult behavior, the article by Fiorenzo Laghi and colleagues analyzes both adolescents and young adults’ relationships with their siblings who have autism, unlike previous articles. Similar to Laura Green’s article, this data also reveals positive adjustment in the siblings of individuals with autism. It also looks at family functioning and sibling relationships, which can be useful to use in research in order to see where some confounding variables may lie. Like other studies in this review that looked at birth order, this article also revealed that they believed the youngest age group would engage in the most negative behavior. This information can be used to question why the youngest is most likely to have a negative outcome in comparison to the middle and oldest children. However, their

prediction was incorrect as age and order really did not make a difference on the behavior. As for family functioning, it was found that family members that appeared satisfied with each other were critical in the functioning and adjustment of the typically developing siblings. This study was limited though because of its small sample size, and it also did not compare these results to families that have all typically developing children. By analyzing this study, there is more reason that college aged siblings could result more positively, and their family engagement growing up could play a part.

Looking at adult siblings again, Phillipa Moss and other researchers look at the experiences of adults who have a sibling with autism. In this study, the majority of participants reported positive benefits to having a sibling with autism. However, when asked specific questions, almost all siblings reported negative feelings to growing up with a sibling who had autism. Individuals report that it was hard dealing with the behaviors of their siblings and in some cases said it had a negative effect on their family relationship with their parents always tending to their sibling's needs with autism. This study has some problems due to the high level of intelligence of many of their participants in the study, the involvement of people in similar studies, and the low number of questions asked. This study asked them to focus more on their feelings and not how they feel like they adjusted as a result. Once again, the information provides us with mixed reviews of positive and negative experiences.

In Orsmond's article, "Siblings of individuals with an autism spectrum disorder," a different perspective is provided when comparing how the relationships and well-being differ between adolescents and adults. This study observes engagement levels of shared activities in children and adults and how this impacted the support and coping levels. The goal is to look at how the relationship of an individual who has a sibling with autism may change over time and

what leads to this. This helps me in my research to see if college aged students have the same perspective as children or adults do, if it is completely different, or if it is the missing piece that brings these different stages of life together. These researchers also observe depressive symptoms and coping skills, which can relate to my research's variables of resilience, empathy, depression, and anxiety. Compared to previous studies, this one found that having a sibling with ASD indicated a stronger relationship into adulthood with their sibling than having a sibling without a developmental disorder. While it was predicted that adults and adolescents might vary in different areas of their well-results, results showed little to no major differences. Although factors have to be further evaluated, this study provided that stability in the relationship over time is more likely when a sibling has ASD. By looking at the shared activities and positive affect, this study gained objective and subjective information which provided different points of the relationship. This research provides further reasoning that other factors could be affecting how positive or negative an outcome may be; however, this study was able to look deeper into the similarities and differences in adolescence and adulthood. This provides more insight into why college aged students might adjust more positively as seen in the positive adjustment of these participants.

In the information analyzed thus far, there are many similarities but also many differences in the studies. While children have revealed negative facts, adults have revealed that there are both negative and positive impacts to functioning. I think that gathering experiences from college-aged students would be beneficial in seeing the change in opinions from child to adult and why these changes occur. By having an age group that has most likely just left their family's house but has not experienced the real world fully, I believe that there could be a variety of perceived adjustments. When looking at sibling status of students with typically developing

siblings or those with developmental disorders as well as family closeness as a result of factors like income and marriage, we will be able to more accurately predict if college-aged students will adjust positively or negatively. Overall, studies have found mixed data in sibling outcomes of different ages. By focusing on college aged individuals that have a sibling with a developmental disorder, I hope to find a clearer, more positive outcome.

PURPOSE

This research serves to bridge the gap and analyze the relationship between college aged students and their sibling who has a developmental disorder and how these behaviors compare to individuals who have typically developing siblings. Sibling status will be defined as those who are typically developing (TD) and those with varying developmental disorders (DD). The primary question asked through this research will be, “How do college aged individuals who have a sibling with a developmental disorder compare in their resilience and social and emotional behaviors of empathy, anxiety, and depression levels to college aged individuals with typically developing siblings?” After going through various literature, I believe that college aged siblings will adjust more positively if they have had a sibling with a developmental disorder compared to college aged individuals who do not have a sibling with a developmental disorder.

METHODS

For this research study, data was collected through an online survey that was set up for qualified participants. The questionnaire was set up through Qualtrics. Students at the University of South Alabama enrolled in Psychology courses were eligible to take this through the Psychology Subject Pool. Students enrolled in Psychology courses for the 2021 spring semester took this online survey from the months of February-March 2021. The participants that were included were college aged students from the University of South Alabama who were between the ages of 17-25. In order to be eligible to participate in this survey, the individual could not be an only child as this study looks at the relationship between siblings. There were 85 participants that clicked on the link to take the survey. Out of these 85 students, 81 participated in the online survey. The total number that ended up being eligible and met all requirements was 76 participants. Two participants were thrown out because they exceeded the age limit. Three participants were thrown out for not completing the questionnaires that included the measures that were being tested. Of the 76 eligible participants, 13 individuals reported having a sibling with a developmental disorder while 63 individuals reported having a typically developing sibling. The questionnaire was made to take about 30 minutes for participants to complete and students were granted one credit through the Psychology Subject Pool by completing the survey.

Each of these participants took a survey that included several questionnaires addressing measures of resilience, adjustment, sibling relationship, personality, and self-perceptions. The survey included general demographic questions regarding the participant's age, gender, ethnicity,

etc. The participant was also asked about where they lived and who their primary caregiver was during specific times in their life. The primary questions asked that would determine the group the participant would be in was if they had a sibling with a developmental disorder. In addition, they were asked about their current relationship with their sibling. From there, participants answered questions based on measures that tested their empathy, resilience, anxiety, and depression.

Data information from each survey was downloaded to IBM SPSS data software to analyze the results. After the data was collected, independent sample T-tests were taken to see if there was a significant difference in each of the measures between the group that had a sibling with a developmental disorder and the group that had a typically developing sibling. Participants that answered “Yes” to having a sibling with a developmental disorder were labeled as Group 1. Participants that answered “No” to having a sibling with a developmental disorder were labeled as Group 2. For each of the independent sample T-tests that were run at the 95% confidence interval, the significance or probability, p , was analyzed to determine if there was a significant difference between the two groups or if there was no difference between both groups. If the probability or significance was $p > .05$, then there was no difference between the groups. If the probability or significance was $p < .05$, then there was a difference between the groups. From these results, we were able to determine whether college aged siblings will adjust more positively if they have had a sibling with a developmental disorder compared to college aged individuals who do not have a sibling with a developmental disorder.

MEASURES

A measure of relationship/contact now questionnaire was given asking the participant a list of questions that pertained to how often the individual had participated in certain activities with their sibling in the past year. Some examples of questions asked were “Share a meal”, “Got to the movies or other recreational activities”, and “Go on vacation together.” Participants answered these questions with responses ranging from 0-7 with 0 being never to 7 being always. Total scores may range from 0-63.

Interpersonal reactivity index. Participants in this study completed the IRI (Davis, 1983), which is a 28-item self-report questionnaire consisting of four 7-item subscales. Each of these subscales assess a specific aspect of empathy. The Perspective Taking (PT) scale measures the tendency to adopt the point of view of other people in everyday life. An example question of this scale is 'I sometimes try to understand my friends better by imagining how things look from their perspective.' The Fantasy (FS) scale measures the tendency to transpose oneself into the feelings and actions of fictitious characters in books, movies, and plays. An example question would be “I really get involved with the feelings of the characters in a novel.” The Empathic Concern (EC) scale measures the tendency to experience feelings of warmth, compassion, and concern for other people. A sample item from this scale is “I often have tender, concerned feelings for people less fortunate than me.” The Personal Distress (PD) scale also assesses typical emotional reactions. However, it taps one's own feelings of personal unease and discomfort in

reaction to the emotions of others instead of feelings of concern. A typical question is "Being in a tense emotional situation scares me" (Davis, 1983).

Brief Resilience Scale. There are six items in the brief resilience scale (BRS). Items 1, 3, and 5 are positively worded while items 2, 4, and 6 are negatively worded. This scale is scored by reverse coding items 2, 4, and 6 and finding the mean of the six items. The following instructions are given to participants for this scale: "Please indicate the extent to which you agree with each of the following statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree" An example of a question from the BRS is "I tend to bounce back quickly after hard times" (Smith et al., 2008).

DASS 21. The DASS is a measure used to identify a person's behaviors related to negative affective states of depression, anxiety, and stress (P. H Lovibond & S. H. Lovibond, 1995; S. H. Lovibond & P. F. Lovibond, 1995). Participants are asked if the question does not apply to them at all "0" to applies to them very much "3". The Depression scale assesses feelings of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal musculature effects, situational anxiety, and subjective experience of anxious affect. The Stress scale assesses difficulty relaxing, nervous arousal, and being easily upset or agitated, irritable or overreactive, and impatient. An example question from the depression scale is "I felt that life was meaningless" (Lovibond & Lovibond, 1995).

Resourcefulness Scale. The 28-item RS (Zauszniewski et al., 2006) was used to measure individuals' abilities to use self-help (personal resourcefulness) and help-seeking behaviors (social resourcefulness) when facing challenging situations. The RS consists of 28 items and has 2 subscales: 16 items measure personal resourcefulness, and 12 items measure social

resourcefulness. The scale is rated on a 6-point scoring system ranging from 0 (not at all like me) to 5 (very much like me). The total scores can range from 0 to 140, with higher scores reflecting the greater resourcefulness. A sample question is “When I am depressed, I keep myself busy with things I like” (Bekhet & Zauszniewski, 2013)

Lifespan Sibling Relationship Scale. The LSRS is a self-report tool that measures one's attitude towards sibling relationships in childhood and adulthood. The degree of agreement or disagreement with 48 statements was rated using a 5-point scale ranging from 1 meaning “Strongly disagree” to 5 meaning “Strongly agree”. The LSRS includes 6 subscales, each consisting of 8 items. Subscales of Child Affect and Adult Affect measure emotional aspects in childhood and in adulthood, which include love, affection, pleasure, etc. Subscales of Child Behavior and Adult Behavior measure the degree of interactions through behaviors including phone calls, visits, sharing secrets, etc. Subscales of Child Cognitions and Adult Cognitions measure aspects of belief in sibling relationships (closeness and importance of the relationship) in their respective stages. The six subscale scores and the total score are calculated. The higher the score, the more positive attitudes they have toward sibling relationships (Jeong et al., 2013).

The Siblings' Experience Quality Scale (SEQS) is a self-report instrument assessing the emotional, behavioral, and cognitive experience. The scale consists of 23 items distributed on five subscales. Closeness consists of 5 items, e.g., “I feel close to my brother/sister.” Conflict consists of 5 items, e.g., “I often get angry with my brother/sister.” The jealousy subscale consists of 5 items, e.g., “My parents have often treated me unfairly compared to my brother/sister.” Self-Marginalization tests 3 items, e.g., “I often feel that I don't have to worry my parents.” The worry subscale contains 5 items, e.g., “I think that my brother/sister will never be truly autonomous.” Participants are asked to respond according to a 7-point scale ranging

from 1 meaning “Strongly disagree” to 7 meaning “Strongly agree.” Subscale scores are obtained by averaging the items that make up each subscale. Higher scores to subscales indicate higher levels of Closeness, Conflict, Jealousy, Self-Marginalization, and Worry (Sommanico et al., 2020).

Satisfaction with Life Scale (SWLS). The SWLS is a 5-item scale designed to measure global cognitive judgments of one’s life satisfaction (not a measure of either positive or negative affect). Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree. A sample question was “I am satisfied with my life” (Diener et al., 1985).

Flourishing Scale is a brief 8-item summary measure of the respondent's self-perceived success in important areas such as relationships, self-esteem, purpose, and optimism. The scale provides a single psychological well-being score. Participants indicated their agreement with each item on a 7-point scale with 7 meaning strongly agree to 1 strongly disagree. An example question from this scale is “I lead a purposeful and meaningful life” (Diener et al., 2009).

RESULTS

There was a total of 76 eligible participants from this study. Of the 76 participants, 13 participants reported having a sibling with a developmental disorder (DD) while 63 participants reported having a typically developing sibling (TD). Independent sample T-tests were run for each of the measures described above. Participants that answered “Yes” to having a sibling with a DD were Group 1 and participants that answered “No” to having a sibling with a DD were Group 2. The sample size (N), mean, standard deviation, for both groups of each measure is shown in the tables below. In addition, the significance or probability (p) that determined whether there was a difference between the groups is documented. If the probability resulted in $p > .05$, then no difference was indicated between the two groups. If the probability resulted in $p < .05$, then there was a significant difference between the groups.

Table 1 Measure of Relationship/Contact Now

SiblingWithDisorder	N	Mean	Std. deviation	p
Yes	13	24.000	13.36039	.325
No	60	31.7333	16.11491	

Table 2 Interpersonal Reactivity Index

	SiblingWithDisorder	N	Mean	Std. deviation	p
FSempathy	Yes	13	2.7363	.50456	.119
	No	62	2.3986	.69126	

ECempathy	Yes	13	2.9780	.61403	.612
	No	61	3.0000	.58379	
PTempathy	Yes	13	2.9121	.64823	.632
	No	62	2.6959	.59578	
PDempathy	Yes	13	1.7912	.59079	.256
	No	63	1.9342	.74400	
totalempathy	Yes	13	2.6044	.32323	.105
	No	59	2.5018	.45255	

Table 3 Brief Resilience Scale

SiblingWithDisorder	N	Mean	Std. deviation	p
Yes	13	3.5641	.68224	.534
No	61	3.2077	.73324	

Table 4 DASS 21

	SiblingWithDisorder	N	Mean	Std. deviation	p
Depression	Yes	12	8.2500	6.34071	.202
	No	62	6.6613	4.90548	
Anxiety	Yes	12	8.5833	4.48144	.754
	No	63	7.3810	4.73637	
Stress	Yes	13	10.2308	4.51209	.857
	No	63	8.1905	4.61364	

Table 5 Resourcefulness Scale

SiblingWithDisorder	N	Mean	Std. deviation	p
Yes	10	88.8000	17.15809	.199
No	60	81.5333	23.40612	

Table 6 Lifespan Sibling Relationship Scale

	SiblingWithDisorder	N	Mean	Std. deviation	p
LSRSAAtotal	Yes	13	31.7692	5.41839	.827
	No	62	32.0323	6.30630	
LSRSABtotal	Yes	13	25.8462	8.57172	.385
	No	61	26.2131	9.19985	
LSRSACtotal	Yes	13	30.0769	7.11175	.429
	No	62	30.0323	8.39978	
LSRSCAtotal	Yes	12	29.5833	5.01739	.710
	No	63	28.7302	5.63745	
LSRSCBtotal	Yes	13	28.5385	6.34580	.572
	No	61	27.4098	6.82734	
LSRSCCtotal	Yes	13	27.9231	7.66444	.628
	No	62	27.8226	7.03510	
LSRSStotal	Yes	12	175.2500	36.09111	.987
	No	58	172.2069	36.90945	

Table 7 Siblings' Experience Quality Scale

	SiblingWithDisorder	N	Mean	Std.deviation	p
SEQScloseness	Yes	13	5.3385	1.26329	.482
	No	62	5.2645	1.39403	
SEQSconflict	Yes	13	3.9692	.88636	.259
	No	61	3.3279	1.21602	
SEQSjealousy	Yes	13	3.3077	1.83597	.396
	No	63	2.5937	1.56286	
SEQSselfmarg	Yes	13	3.9744	1.08407	.436
	No	63	3.4603	1.29159	
SEQSworry	Yes	11	2.9273	1.38931	.644
	No	62	2.4226	1.29266	
SEQStotal	Yes	11	3.8024	.67338	.824
	No	59	3.4245	.75291	

Table 8 Satisfaction with Life Scale

SiblingWithDisorder	N	Mean	Std. deviation	P
Yes	13	25.2308	5.87585	.241
No	61	24.4426	7.62567	

Table 9 Flourishing Scale

SiblingWithDisorder	N	Mean	Std. deviation	P
Yes	13	45.6923	6.87246	.076
No	62	42.8710	9.98603	

From each of the measures listed in the table, the means for both groups were similar. Group 1 answered yes to having a sibling with a developmental disorder while group 2 answered no to having a sibling with a developmental disorder. For the measure of relationship/contact now with their sibling probability was $p=.325$, the mean for Group 1 was 24 (N=13, SD=13.36039) while the mean for Group 2 was 31.73 (N=60, SD=16.11). For the IRI the total empathy probability was $p=.101$, the mean for group 1 was 2.6044 (N=13, SD=.32323) while the mean for group 2 was 2.5018 (N=59, SD=.45255). For the Brief Resilience Scale probability was $p=.534$, the mean for group 1 was 3.5641 (N=13, SD=.68224) while the mean for group 2 was 3.2077 (N=61, SD=.73324). For the DASS 21 depression subscale probability was $p=.202$, the mean for group 1 was 8.25 (N=12, SD=6.34071) while the mean for group 2 was 6.6613 (N=62, SD=4.90548). For the DASS 21 anxiety subscale probability was $p=.754$, the mean for group 1 was 8.5833 (N=12, SD=4.48144) while the mean for group 2 was 7.3810 (N=63, SD=4.73637). For the DASS 21 stress subscale probability was $p=.857$, the mean for group 1 was 10.2308 (N=13, SD=4.51209) while the mean for group 2 was 8.1905 (N=63, SD=4.61364). For the Resourcefulness Scale probability was $p=.199$, the mean for group 1 was 88.8 (N=10, SD=17.15809) while the mean for group 2 was 81.5333 (N=60, SD=23.40612). For the LSRS Scale total probability was $p=.987$, the mean for group 1 was 175.25 (N=12, SD=36.09111)

while the mean for group 2 was 172.2069 (N=58, SD=36.90945). For the SEQs total scale probability was $p=.824$, the mean for group 1 was 3.8024 (N=11, SD=.67338) while the mean for group 2 was 3.4245 (N=59, SD=.75291). For the SWLS probability was $p=.241$, the mean for group 1 was 25.2308 (N=13, SD=5.87585) while the mean for group 2 was 24.4426 (N=61, SD=7.62567). For the Flourishing Scale probability was $p=.076$, the mean for group 1 was 45.6923 (N=13, SD=6.87246) while the mean for group 2 was 42.8710 (N=62, SD=9.98603).

DISCUSSION

The present study reports on various levels of resilience, adjustment, sibling relationship, personality, and self-perceptions. The hypothesis predicted that there would be a difference between individuals who had a sibling with a developmental disorder and those that do not have a sibling with a developmental disorder. Specifically, it was predicted that individuals who had a sibling with a developmental disorder would demonstrate more positive behaviors and adjustment when compared to the group with typically developing siblings. Through this research, it was found that there was no difference in levels of resilience, empathy, anxiety, and depression between individuals who have a sibling with a developmental disorder and individuals who do not have a sibling with a developmental disorder.

Like previous literature that studied the relationship between individuals and their sibling who has a developmental disorder, this study also proves difficult to determine if individuals who have a sibling with a developmental disorder have increased positive behaviors and adjustment. Like a study by Moss, this research also showed mixed results in positive and

negative behaviors as group 1 participants tended to score only slightly higher than individuals in group 2 on both positive and negative behaviors (Moss, 2019). Additionally, this research has shown that there is not a difference between the two groups much like what is discussed in an article by Dempsey analyzing the emotions and behaviors of siblings of autism. It was found that internalizing (emotional) problems and externalizing (behavioral) problems were not elevated among the individuals who had a sibling with autism (Dempsey, 2011). Although this study was parent's reporting on their child's behavior, college aged students showed results extremely similar unlike our hypothesis had predicted.

While mean scores for individual measures showed a slight difference in behaviors, overall significance indicated no difference as every survey measure had $p > .05$ indicating that there was no significant difference between the two groups. In most scales, individuals in group 1 had a slightly higher mean score than individuals in group 2. This was not only true for positive behaviors but also negative behaviors like depressions, anxiety, and stress. Still, the difference between the groups was not large enough to indicate a statistically significant difference. However, in the first measure regarding questions about their relationship and contact with their sibling currently, group 2 had a mean score of around 31 while group 1 had a mean score of 24. While this was not a significant difference, this showed that siblings in group 2 described themselves as having more of a relationship with their sibling than individuals in group 1. This difference in means contrasted to a study by Orsmond that looked at the relationship between adults and their siblings. Orsmond's study stated that having a sibling with ASD indicated a stronger relationship into adulthood with their sibling than having a sibling without a developmental disorder (Orsmond, 2019). Although these results provided us no indication that participants who have a sibling with a developmental disorder will adjust more positively than an

individual who does not have a sibling with a developmental disorder, we can look further at the relationship between measures. We can infer that participants who scored higher in the closeness subscale of the SEQS for both groups also scored higher for factors of resilience and empathy. Also, we can infer that participants who scored higher in the SWLS would be more likely to demonstrate positive behaviors of resilience and empathy.

While this study had a sample size of 76, a larger sample size would give a wider range of different participants. With looking at a larger sample, there is more possibility to have participants that have a sibling with a developmental disorder. Only 13 out of 76 participants in this study answered that they had a sibling with a DD, which proved to be a major limitation. By having more equal numbers in each group, there might prove to be a significant difference between factors of resilience, empathy, anxiety, and depression. Another limitation is that this was an online study taken by college students. Participants might not have cared to answer truthfully whereas adults taking this seriously might answer more thoughtfully. When analyzing the data, many students either answered to one extreme or the other repeatedly in order to complete the questionnaire faster. However, being that most studies have not included the college age range of 17-25, it is essential that this information is gathered. So, in the future it might be best to have participants that are really committed to knowing more information on this topic. The last notable limitation was the lack of knowing the definition of a developmental disorder. When asked if the question, “Do you have a sibling with a developmental disorder?” some participants answered with “I’m not sure.” Therefore, participants were not sure of what a developmental disorder was necessarily. Moreover, some participants said they were not sure but proceeded to list that their sibling had autism, ADHD, or another developmental disorder. Therefore, for the future of this study, it would be beneficial to have a definition of what a

developmental disorder is as well as a list of several developmental disorders. While it might not increase the total number of participants that have a sibling with a developmental disorder, explaining what a DD is should clear up any confusion and have the participant answer more correctly.

CONCLUSION

Overall, this research showed that there was not a significant difference in measures of resilience, adjustment, sibling relationship, personality, and self-perceptions between individuals who have a sibling with a developmental disability and those who have typically developing siblings. While many times individuals who had a sibling with a developmental disorder scored slightly higher than individuals who did not, it was too small to draw a conclusion that individuals who have a sibling with a developmental disorder have increased positive behaviors and are more positively adjusted. Going further, it is still important to look at the response of college aged students as they have been a major age group that has been overlooked in similar studies to this one. It is essential to have more college aged students participate that have a sibling with a developmental disorder so that we can look at a larger sample. Having a larger sample of individuals that have a sibling with a DD will compare more equally against a group of individuals who have a sibling that is TD. Also, it is important that we educate individuals on what a developmental disorder is in the future so they can accurately answer questions. This study, along with the literature findings, shows the necessity in continuing research to find the differences in positive and negative behaviors in sibling relationships between siblings of individuals with developmental disorders compared to those of typically developing siblings.

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