Neurodivergence: A look into self-perception and friendship

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As the mental health field continues to evolve, access to stories about mental health as well as an updated diagnostic system for mental illness have helped bring mental health awareness to the forefront of popular discussion. With social media becoming an outlet for sharing experiences (Smith et al., 2022) and the ongoing development of outreach programs, both awareness and availability of support are becoming more widely spread. Young adults are finding ways to relate these experiences to their own lives in productive ways, and to understand and empathize with those whose lives are influenced by characteristics of mental illness. These efforts are reducing general stigmas held by older generations (Smith et al., 2022) and normalizing “neurodivergence” as an umbrella term in everyday society. Current research investigates how the extent of a person’s understanding and ability to relate to the characteristics of neurodivergence influences the quality of their friendships.

When referring to “neurodivergence” it is with the understanding that a neurodivergent person’s neurological functioning differs from what is considered “normal” or “typical” (Legault et al., 2021, pp. 12844-12846). This difference includes those who may be diagnosed with or experience symptoms of mental illnesses such as autism spectrum disorder, mood disorders, anxiety disorders, attention and learning disorders, and obsessive-compulsive disorder, among others. When referring to a person or participant as “neurotypical”, it is with the understanding that the person’s brain operates, behaves, and processes information in manners that are considered to be typical (Legault et al., 2021, p.12844). For the purposes of this study, participants will be self-reporting on general symptomatology and perceived neurodivergent qualities. Friendship “quality” as referenced in this research refers to the participant’s satisfaction with their chosen relationship and perspectives of the friendship’s function, usefulness, comfort,
and meaning (McKee, 2017).

Friendship is a social relationship influential in ways not observed in other relationship types, such as those with family members (Finke et al., 2019). Friendships act as a buffer against a person’s feelings of loneliness and depression, making friendship and social connection an essential need for humans. Along with this protection, friendship has also been shown to support one’s self-worth as well as heighten their acceptance among their peers (Black et al., 2022). Studies have found that neurotypical and neurodivergent friendships may be characterized by different perspectives and that individuals value different aspects of friendship (Finke et al., 2022). Friendships of neurotypical individuals are usually characterized by homophily and propinquity, or the concept that individuals tend to be friends with others who are similar and available (both physically and socially). In addition, these individuals place an emphasis on companionship, intimacy, affection, and mutual assistance (Black et al., 2022 & McKee, 2017). Black et al. (2022) found neurotypical participants value more social activity and closeness with their friends and engage more frequently in conflict resolution.

With the lack of previous research done regarding friendships among individuals that exhibit general neurodivergent characteristics, researchers of the current study were prompted to investigate individual’s general neurodivergent characteristics and their relationship to friendship. Specifically researched were overlapping characteristics present within generalized anxiety disorder (GAD), bipolar disorder (BD), attention deficit hyperactivity disorder (ADHD), and autism spectrum disorder (ASD) (Mayo Clinic, 2022).

Anxiety and depressive disorders are among the most commonly experienced and normalized forms of mental illness in American society (ADAA, 2022), and these disorders are both characterized by symptoms that influence social functioning and interpersonal relationships.
Individuals with self-reported anxiety symptoms or GAD feel higher levels of distress, social inhibition, interpersonal difficulties, fear of disapproval, feelings of helplessness, and fears of exploitation however studies have also indicated that these individuals value a close relationship with their friends and tend to get very involved in their friends’ lives (Eng & Heimberg, 2006). Similarly, depressive disorders commonly consist of issues with self-image, feelings of hopelessness, and lack of ambition for pleasurable activities (Kennedy, 2008). The intensity and number of feelings experienced may vary on an individual level but can have a major impact on how individuals function on a daily basis, and can severely affect their interpersonal relationships.

Bipolar disorder has high rates of comorbidity with other mental illnesses and disorders such as ADHD and Generalized Anxiety Disorder (Althoff, 2006). Within each of these disorders the general severity of symptoms is associated with stress levels, which in turn affects severity of impairment in social functioning (Siegel et al., 2015). The actual presentation and severity of symptoms has a greater impact on social functioning than the presence of a formal diagnosis, leading the current research to seek participant’s perception of general symptomatology of various disorders rather than requiring participants to have a formal diagnosis (Siegel et al., 2015). There are numerous mood and personality disorders that could be considered “neurodivergent” but for the purpose of this study, general symptomatology related to bipolar disorder was the focus. Individuals experiencing issues related to mood disorders such as bipolar disorder often have negative social experiences due to frequent hospitalizations or legal problems resulting from their symptoms (Siegel et al., 2015). Due to symptoms that are characteristic of bipolar such as “high levels of expressed emotion” coupled with “low levels of cohesion and adaptability” (Siegel et al., 2015, p. 3), these individuals tend to struggle with peer
relations and overall quality of life. Often these disorders are genetic or have some associated statistic of heritability from biological parents (Althoff, 2006). Thus, bipolar disorder may play a role in the development of relationship behaviors and social skills in youth and adolescents as well as emotional regulation and interpersonal problem solving (Siegel et al., 2015). The negative cycle presented at home during crucial developmental periods further exacerbates symptoms of the disorder and creates vulnerability for peer victimization that contributes to the psychosocial and behavioral problems identified among individuals with this disorder.

In this same vein, researchers have observed that when analyzing friendships of college students with high scoring ADHD symptomatology, often their reported close friend also exhibits a high score of ADHD symptomatology. This similarity may be explained as an ability to share experiences and provide sympathy and emotional support, as well as better tolerance of ADHD symptoms that may be considered behavior deficits (McKee, 2017). Friendships between individuals with ADHD are observed to be less critical, more nurturing, and higher quality when both individuals in the friendship have matching levels of reported symptomatology (McKee, 2017). Furthermore, individuals report more positive first impression ratings of others with similar levels of ADHD symptomatology. This homophily may be explained by negative associations and reactions to certain behaviors associated with ADHD such as anger or impulsivity (McKee, 2017). In terms of friendship quality among reported individuals, those with higher inattention scores often depended more on their friend for support. Friends of the participants who reported the participant as inattentive also reported a lack of disclosure in this friendship, sought less support from friends perceived as inattentive, and even reported a lack of confidence in the longevity of the friendship. These findings suggest that perceived differences in ADHD characteristics between friends may influence important aspects of friendship, such as
support and emotional disclosure (McKee, 2017). McKee (2017) advocates for further research to better understand the impacts of high ADHD symptomatology friendships on aspects of life such as academics as, even though these friendships may have high social quality due to homophily, pairing these individuals may lack certain skills helpful for academic success.

Individuals with Autism Spectrum Disorder (ASD) prefer to befriend others with ASD or another disability, because they are able to be themselves around them (Black et al., 2022). Most often individuals with ASD make friends with those they already spend a lot of time around or share common interests with as it gives them an “in” for creating and maintaining a conversation (Black et al., 2022). The concept of congruence, which often relates to homophily, in friendships can influence both longevity and intensity of friendships, but perspectives and practices of friendship differ among those with ASD and without, influencing the likelihood of friendship. A lack of this congruence was found among individuals with and without autism where different friendship preferences were stronger or weaker across these populations. For individuals with autism, the inclusion of physical distance in a friendship was much preferred, though physical closeness was the preference of non-autistic individuals (Finke, McCarthy, & Sarver, 2019). In the same sense, autistic individuals are more likely to want a friend to have fun with rather than to confide in, and those without autism prefer the opposite (Finke, McCarthy, & Sarver, 2019). When noting the importance of congruence, or homophily, in friendships, differences in friendship perspectives and priorities may help explain why autistic individuals are more often friends with others who have autism, and why these individuals may see friendships with non-autistic individuals as harder to begin/sustain and vice versa with non-autistic individuals (Finke, McCarthy, & Sarver, 2019).

For neurodivergent individuals, making friends is only half of the battle. It has also been
found that they have an equally hard time maintaining their friendships due to the influences of the symptoms that are a part of their disorder (McKee, 2017; Eng & Heimberg, 2006; Siegel, 2015; Furman, 1996; & Black et al., 2022). Among participants with BD, ASD, and ADHD one factor that appears in all three disorders and impairs their ability to maintain friendships with neurotypical individuals is how they process, regulate, or express their emotions (Siegel, 2015, Black et al., 2022, & McKee, 2017). Those with GAD and women with ASD have been found to expect a lot of their friends in terms of the degree of involvement in their lives and high levels of contact frequency. Those with GAD have been reported as having poor personal boundaries with their friends which causes them to be intrusive into their friends’ lives (Eng & Heimberg, 2006 & Sedgwick et al., 2019). Women with ASD have reported their need for constant contact has caused their neurotypical friends to become disengaged from the friendship. Neurodivergent individuals having a different understanding of friendship and valuing different aspects of friendship due influences of their specific symptomatology may lead to neurodivergent individuals perceiving the quality of their friendships with neurotypical individuals differently.

There is a need for research examining friendships between those who relate to neurotypical functioning and those who perceive themselves as neurodivergent. For the purpose of the research, the term neurodivergent encompasses qualities shared by multiple disorders, and not diagnostic criteria. The general symptomatology of these disorders will be considered, because without a formal diagnosis, it is the perception of the symptoms in oneself as well as their friends that impacts the relationships each individual has rather than documented disorders. As previous research has focused on individuals with confirmed diagnoses or scores on evaluative measures, there is consequently a lack of research into the quality of relationships among neurodivergent individuals. Much of previous research on friendship included
participants who are assumed to be neurotypical, or at least the studies have not focused on the neurodivergent qualities of participants.

The current research attempts to provide a more in-depth examination of friendship quality between individuals who perceive themselves as neurotypical and those who perceive themselves as neurodivergent, as well as the qualities of friendship among differently functioning friends. Based on examinations of previous research, the researchers hypothesized: 1) Those who perceive themselves to be neurodivergent or exhibit more neurodivergent qualities are more likely to perceive their closest friend to also exhibit neurodivergent qualities to the same degree. Thus, participants who score higher on this spectrum will also report their closest friend as having a higher number of neurodivergent qualities and vice versa. 2) Higher friendship quality will be found between the participant/closest friend pairs with matching neurodivergence scores, or pairs with the lowest quantitative difference between scores.

**Method**

**Participants**

The final sample of participants included in analyses consisted of 120 people, the majority of whom identified as women (66.7%), with 29.2% identifying as male, and 4.2% identifying outside of a binary. These 120 participants fell between the age range of 18-25 years (\(M=20.50, SD=1.92\)). The total sample of people who responded to the survey was 126, but six participants in the sample were removed from the final data analysis, because they fell outside of the target age range of 18-25. Participants were collected from within the Washington & Jefferson College student body as well as from social media platforms (Facebook, Instagram, and Twitter). Some W&J student participants were offered extra credit for their participation upon completion of the survey.
Measures

Measures assessed participants' perception of their closest friendships’ quality, perception of their own neurodivergent qualities and tendencies, and their perception of their closest friend’s neurodivergent qualities and tendencies. Each measure utilized a Likert scale to score participants’ level of neurodivergence and friendship quality in a continuous and quantitative manner. Measures included were the McGill Friendship Questionnaire-Friendship Functions (McGill-FF) (Mendelson & Aboud, 1999), McGill Friendship Questionnaire- Respondent’s Affection (McGill-RA) (Mendelson & Aboud, 2012), Camouflaging Autistic Traits Questionnaire (CAT-Q) (Hull et al., 2019), Depression Anxiety Stress Scale-10 (DASS-10) (Halford & Frost, 2021), General Behavioral Inventory (GBI) (Siegel, 2015), and the Adult ADHD Self-Report Scale (AASRS) (Kessler et al., 2005). Consistent with using the Likert scale, each response is associated with a value but in the case of the neurodivergent measures only for the purpose of statistical analysis. Participants only responded to the worded values such as “I strongly disagree” or “I strongly agree” etc.

The McGill-FF and McGill-RA measures were used to score participants’ perception of their closest friendship. The original McGill-FF questionnaire examined six distinct areas of friendship based on the functions of friendship. These areas include stimulation, companionship, help intimacy, reliable alliance, self-validation, and emotional security. The McGill-RA questionnaire consists of 16 items designed to “tap” into a person’s affection for their friend and satisfaction with the relationship (See Appendix A). The GBI is intended to indicate the presence and severity of depressive and manic/hypomanic symptoms and consists of 73 items that are to be answered with the person keeping in mind the frequency they have experienced the behavior over the past year. The CAT-Q measures camouflaging behaviors through 25 items on a Likert
scale. The scale identifies individuals who mask autistic characteristics in social interactions as to not be immediately noticeable, and the degree to which a person uses these camouflaging strategies. The DASS-10 utilized is a shortened version of the DASS-42, and both measure levels of distress and sub scale scores of depression and anxiety/stress. The DASS-10 indicates the level of distress that is specifically sensitive to clinical change that a person experiences. Finally, the AASRS is a screening questionnaire with 18 items that are based on the manifestations of ADHD symptoms in adults (See Appendix B). This version is specifically based on symptom criteria found in the DSM-IV. Upon investigation of the differences between the fourth and fifth editions of the DSM, no significant differences were found between the two as they related to current research or the items that were used in the survey (SAMHSA, 2016).

For the current research, a measure of friendship quality and a measure of perceived neurodivergence were created by compiling questions from friendship questionnaires and various mental health and behavior related questionnaires into two separate shorter questionnaires that permission was received to use and adjust (See Appendix C). Friendship quality items that were not applicable to the proposed research or were found to be redundant were removed. For example, items such as “would make me feel calmer if I was worried” and “would make me feel better if I was nervous” conveyed very similar aspects of friendship and in the interest of participants completing the survey in a timely manner were reduced to one item. This approach was also applied to the measures used that examine mental health with multiple items examining the same qualities or experiences. Because the proposed research examined characteristics of multiple mental health disorders in hopes of understanding friendship perception among neurodivergent individuals as a community rather than as individual disorders, items included were limited to those common or overlapping among several or most of the disorders examined.
For example, general feelings of depression may be related to a depressive disorder or relative dysfunction stemming from ASD or ADHD. The same items used by individual participants to answer questions about themselves were phrased to procure answers from the participant about their own perception and observations of their closest friend (See Appendix D). Basic demographic data was collected at the end of the survey including gender identity, racial identity, and age. Participants were given fill-in-the-blank items to respond how they felt best described them in terms of race and gender identity.

**Procedures**

A Qualtrics survey of 35 questions compiled from the McGill Friendship measures and various neurodivergent measures was distributed to participants. The survey was shared on various social media sites (Facebook, Twitter, and Instagram) with an IRB approved participation statement (See Appendix E) as well as distributed to the Washington and Jefferson student population through a campus email written by the faculty supervisor for the research lab (See Appendix F).

**Results**

**Demographics**

Participant ethnicity and participant gender identity came from the open-ended answer field and are represented below in Table 1.1. Most participants (76%) self-identified as white, with Asian and mixed identities being the next most popular at 6% each. 5% of participants self-identified as Latino or Hispanic, and 4% identified as Black. The last ethnicity group was a compilation of any other self-defined identity that did not fit within the other categories, including self-identification as Filipino, Arab, and Jewish (3%). In terms of gender identity,
responses were sorted into one of three categories (see Table 1.2). 67% of participants self-identified as being a woman, with 29% identifying as being a man. Five participants, or 4% self-identified outside of a male/female binary.

Table 1.1

*Frequencies of Participant Identified Ethnicity*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>91</td>
<td>76.5</td>
</tr>
<tr>
<td>Black</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Mixed</td>
<td>7</td>
<td>5.9</td>
</tr>
<tr>
<td>Asian</td>
<td>7</td>
<td>5.9</td>
</tr>
<tr>
<td>Other; Arab, Filipino, Jewish</td>
<td>3</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*Note:* Ethnicities were self-identified and defined by participants. Common identities were grouped into each group. One participant chose to not disclose their ethnicity.

Table 1.2

*Frequencies of Participant Identified Gender*

*Frequencies of Participant Identified Gender*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Woman</td>
<td>80</td>
<td>66.7</td>
</tr>
<tr>
<td>Male/Man</td>
<td>35</td>
<td>29.2</td>
</tr>
<tr>
<td>Identifying outside the binary</td>
<td>5</td>
<td>4.2</td>
</tr>
</tbody>
</table>

*Note:* Any gender identity not falling within the binary man/woman, masculine/feminine were classified as outside the binary.

**Score Correlations**

To investigate the first hypothesis, that participants’ scores would match the scores of their reported closest friend, a correlation was run between the score of the participant and the
participant reported score of their closest friend. This relationship was found to be significant \((p=0.01)\) with a Pearson’s correlation value of \(r (118)=.45\) (see Figure 1).

To investigate the second hypothesis regarding the relationship between scores and friendship quality, a correlation was run to understand the relationship between scores and friendship quality. To do this, the quantitative difference between participant score and closest friend score on the neurodivergence measure was calculated per pair. This relationship was not statistically significant.

**Figure 1**

*Scatterplot of Participant Neurodivergence Score and Perceived Neurodivergence of Friend*

![Scatterplot](image)

Note: Possible scores range from 12 to 84 on the Neurodivergence measure.

**Percentile scoring**

Scores of participants’ ratings of themselves and their friends were converted into percentiles for matching. Participants whose friend fell in the same percentile group (above or below the 50th) as them were considered to be “matched pairs;” these matched pairs were further distinguished by which half of the percentile scoring they fell on, below or above the half mark. Those above the half point were considered “high-high percentile matches.” This matching criterion included 90 pairs, with a Pearson correlation of \(r(88)=.37 (p=.1)\). For participants
whose friend fell in the same percentile group as them under the half point were considered
low-low percentile matches. For this criterion a correlation of \( r(5) = .80 \) was observed (\( n=7, \)
\( p=.05 \)). For the third grouping, or participants whose scores did not match those of their friends,
were considered unmatched pairs. This criterion had an observed correlation of \( r(21) = -.29 \) and
was not significant (\( n=23 \)). See Figure 2 for distribution of unmatched, matched high, and
matched low score pairs.

**Figure 2**

Friendship Pairings’ Neurodivergence Score Percentiles.

*Note: Results showed that most friendship* pairs matched on their neurodivergence percentiles (lower 50% or higher
50% of scores).

**Discussion**

The aims of the research were to see if a person’s level of neurodivergent qualities or
symptoms influenced their decision of who they become friends with, and whether their
symptoms or lack thereof drew them to friends who were similar or different in terms of
neurodivergence symptoms or qualities. Additionally, this research also aimed to investigate
whether matched friendships (friends that have similar neurodivergence scores) or unmatched
friendships (friends that have different scores) have an observable difference in their quality of friendship. Overall, participants were more likely to perceive similar neurodivergence levels to close friends. However, there were no observed friendship quality differences regarding perceived differences or similarities on neurodivergence.

Results from this study are similar to those of previous studies in terms of the likelihood of individuals with high scores related to neurodivergence reporting friends who have similarly high scores, or low scores with low scores. In fact, the largest group of pairs observed in the results were individuals with matched high scores on the assessed neurodivergence measures. Other studies suggest reasons for why participants and their friends are often matching (whether low scoring or high scoring on any particular measure of neurodivergence), and one particularly compelling reason is that those with similar neurodivergence experiences may understand the struggles of their friends through shared experiences as well as be more accepting of behaviors that may be difficult for others who do not share those similar experiences (McKee, 2017).

Symptoms of neurodivergence influence aspects of daily life, especially social skills and in relationships. Being friends with someone who understands your struggles, maybe has the same struggles, and who may not feel insulted or upset by actions or behaviors influenced by neurodivergence seems more likely than other friendships. Additionally, a congruence in ideas and perspectives, especially those regarding friendship function, are influential in who a person chooses to be friends with (Finke, McCarthy, Sarver, 2019). Sharing a definition of friendship as well as sharing interests is more likely to lead to friendship, which relates to the fact that scores of participants correlate strongly to those of their friends, illustrating the preference for similarity rather than difference.

Furthermore, friendship quality was not observed to be influenced by participants’
neurodivergent scores whether they matched or mismatched. This observation does not support our second hypothesis, that less difference in score would lead to a higher quality score. This does, however, follow a similar direction as other past research. McKee’s research regarding ADHD symptom severity and friendship sees similar results; even when a friend’s ADHD symptomatology is different, friendship quality remains unaffected (2017). In their observations however, aspects of friendships such as amount of social support and nurturing, as well as perception of dominance, changes with symptomatology level of friends, noticing more support required by high scoring participants and a perception of dominance coming from their lower scoring friends (McKee, 2017). However, as in the results of this study, none of the observations regarding friend neurodivergence symptomatology difference influenced an overall perception of friendship quality. This finding perhaps is influenced by the fact that a friendship can be perceived as just as good, or just as helpful, when friends are different; social support is difficult for those with high levels of neurodivergence symptomatology, i.e., scoring higher on the neurodivergence measures in this study, which can be seen as a deficit (Siegel et al., 2015). Having a close friend who may not be influenced by symptoms that may make social relationships and interactions difficult, may allow that friendship to be well suited for those involved, allowing the difference in neurodivergence symptomatology not to influence the quality of the friendship.

As an interesting addition, research conducted by Duck (1973) investigated to what extent a person perceives their constructs, a person’s perception of the world and their personality because of these perceptions, to be similar to that of their friend’s constructs. Duck found that participants were likely to over perceive their personal constructs to be similar to those of their established friends in particular, rather than acquaintances or new friends (Duck,
1973). This research holds implications in the current research as it might be one explanation for why there was a large portion of the participant pairs in the data that had matching levels of neurodivergence, whether that be high or low. Perhaps these participants perceive their closest friend to be so similar in their “construct,” or personality, that they answer the neurodivergence measures in ways that lead to similar scores for their closest friend. Ultimately, having this possible overestimation of similarity between participant pairs suggests that when considering friendship, what was most important or influential for participants was if they perceived their friend’s neurodivergence to match or closely resemble their own.

**Overall conclusion**

Ultimately, observations in this study illustrate that while friendship is more likely to be observed between individuals who perceive their friend to be like them in terms of neurodivergence, the amount of difference between friends still does not influence friendship quality. Individuals may seek out or create friendships with others they see as similar to themselves, whether it be due to shared experiences of neurodivergence, congruence in perspectives, or shared interest in any topic (Finke, McCarthy, Sarver, 2019, McKee, 2017). However, friendships with individuals scoring differently have the same capability of reflecting high friendship quality as pairs who perceive their friends’ neurodivergence to be like their own, perhaps because these individuals may still receive benefits from these friendships such as social support that may assist individuals impacted by their neurodivergent symptoms (McKee, 2017). There is also a chance that individuals may overestimate how similar their friends are to themselves, which may thus influence both who they choose to be friends with, as well as the way that they score their friends on the neurodivergence measures of this study (Duck, 1973).

**Limitations, Implication, and Future Directions**
Some limitations that were present in the current research lie predominantly within the sample. The nature of the participant collection method used self-selection and a self-administered survey. Participation relied on individuals choosing to participate, coming from the population the study was shared with, which also may be skewed in terms of demographics. The sample consisted of mostly white women, which was not a fully representative sample of the population especially considering there are known groups of individuals who are disproportionately affected by neurodivergent symptoms and other negative social stigmas. This lack of representation led the end results of this study to be difficult to generalize to a broader population.

Because this study was not intended to be diagnostic and items on the survey investigated general symptomatology that is observed in several disorders, the general symptomatology could span not only across multiple disorders but also into everyday life. For example, participant interpretation for items such as “I was worried about situations in which I might panic and make a fool of myself” may relate to an everyday situation experienced by many. This item may reflect when they were required to give a presentation in a class, and they were concerned over embarrassment while presenting, an experience general to most of the college-aged participants. This item, as well as many others, does not only reflect symptoms of neurodivergence, and may be considered general experience when considered alone. However, when all items are considered together, the experiences of participants are more reflective of the presence or lack of persistent and influential symptoms.

In order to analyze the participant scores, neurodivergence scores were divided into High or Low categories. The cutoff for these neurodivergence levels as high versus low was arbitrarily separated at the 50% threshold, which was done to distinguish between scores while ensuring
that there were participants in each category. The limitation to the study presented as a possible difficulty determining how to distinguish “levels of neurodivergence” in a meaningful way as well as distinguish between general experiences and neurodivergence symptom experiences.

Future investigations should include examinations of congruence among individual’s representative of the spectrum of neurodivergence and may even differentiate between types of disorders and social functioning among representative groups of people. Another possible variable to consider in future directions of study is how the environment and context of friendships can influence the social functioning of neurodivergent individuals. Future studies should focus on qualitative data of social interactions and relationships among neurodivergent individuals placing more importance on the perception and quality of these friendships.

Additionally, combining this research with other future studies on the impact of neurodivergence symptoms on friendship can inform how friendship can best help support neurodivergent individuals in different aspects of their lives such as academically (McKee, 2017). In addition, the knowledge that friendships among different individuals can be perceived to be as beneficial as those friendships among similar individuals is a comforting notion for individuals who experience or who do not experience neurodivergence symptoms. Further research can revolve around aspects of friendship related to neurodivergent symptoms, such as social support, conflict resolution, sharing interests, emotional disclosure, etc., to understand how these factors are impacted by similarity and differences in friendship homophily to help inform support given to neurodivergent individuals regarding how to make and keep friendships that they want to have.

Although the field of psychology is widely branching out into everyday conversation making the average person more educated and understanding of neurodivergence, truly
understanding the influence neurodivergence has on social functioning is pertinent to creating social structures that support and uplift disadvantaged individuals.
References


Anxiety & Depression Association of America. (2022, October). What Are Anxiety and Depression? *Understanding Disorders*. Understand the Facts | Anxiety and Depression (adaa.org)

https://doi.org/10.1007/s40489-022-00332-8


https://doi.org/10.1016/j.janxdis.2005.02.005

https://doi.org/10.1007/s10803-022-05573-4


https://doi.org/10.1007/s11229-021-03356-5

Mental illness- Symptoms and causes.

https://www.mayoclinic.org/diseases-conditions/mental-illness/symptoms-causes/syc-20374968


http://doi.org/10.1177/1087054714554934


Friends and lovers: The relationships of autistic and neurotypical women. *Autism in Adulthood, 1*(2), 112-123.

https://doi.org/10.1089/aut.2018.0028

Peer relationship difficulties in adolescents with bipolar disorder. *Child & Youth Care Forum, 44*.

https://doi.org/10.1007/s10566-014-9291-9

https://greatergood.berkeley.edu/article/item/how_were_overcoming_stigma_of_mental_illness

Appendix A

Friendship measures

McGill Friendship Questionnaire- Friendship Functions

Instructions: The items on this form concern the kind of friend your friend is to you. Imagine that the blank space in each item contains your friend's name. With him or her in mind, decide how often the item applies. On the scale directly to the right of each item circle the response that indicates how often your friend is or does what the item says. There are no right or wrong answers because adult friendships are very different from one another. Just describe your friend as he or she really is to you.

<table>
<thead>
<tr>
<th>Once in</th>
<th>Fairly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>Rarely</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

- ___ helps me when I need it.
- ___ is someone I can tell private things to
- ___ would want to stay my friend if we didn’t see each other for a few months.
- ___ knows when I’m upset.
- ___ would still want to be my friend even if we had a fight.
- ___ would stay my friend even if other people did not like me.
- ___ would make me feel calmer if I were nervous.

McGill Friendship Questionnaire - Respondent's Affection

The items on this form concern your feelings for your friend. Imagine that the blank space in each item contains your friend's name. With him or her in mind, decide how much you agree or disagree with the item. On the scale directly to the right of each item circle the number that indicates how much you agree that the statement describes your feelings. There are no right or wrong answers, because adults' feelings for friends differ from person to person. Just honestly describe your feelings for your friend.

\[
\begin{array}{cccc|c}
\text{Very Much} & \text{Some-} & \text{Some-} & \text{Very} \\
\text{Disagree} & \text{what} & \text{what} & \text{Much} \\
-4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4
\end{array}
\]

- I care about ___
- I want to stay friends with ___ for a long time.
- I prefer ___ over most people I know.
- I think my friendship with ___ is strong.
Appendix B
Neurodivergence measures

Note: values associated with responses will not be visible to participants.

Instructions: Consider your own emotions, behaviors, and social interactions. Please rate your agreement for each item in relation to yourself. Please answer honestly and to the best of your ability.

<table>
<thead>
<tr>
<th>Camouflaging Autistic Traits Questionnaire</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel free to be myself when I am with other people.</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

- I feel free to be myself when I am with other people. (is inverted in terms of scaling where 7 is strongly disagree and 1 is strongly agree)

- I need the support of other people in order to socialize.

Adult ADHD Self-Report Scale
- When I am in a conversation, I find myself finishing the sentences of the people I am talking to before they can finish them themselves.
- I make careless mistakes when I have to work on a boring or difficult project.

General Behavioral Inventory
- I have had periods of extreme happiness and intense energy lasting several days or more when I also felt much more anxious or tense (jittery, nervous, uptight) than usual (other than related to the menstrual cycle).
- There have been times lasting several days or more when I felt I must have lots of excitement, and I actually did a lot of new or different things.
- There have been long periods over the last year when I felt sad, depressed, or irritable most of the time.
- I have had times when my thoughts and ideas came so fast that I couldn’t get them all out, or they came so quickly others complained that they couldn’t keep up with my ideas.
- I have found my enjoyment in being with people changes -- from times when I enjoy them immensely and want to be with them all the time, to times when I do not want to see them at all.
- I have had periods when I was so down that I found it hard to start talking or that talking took too much energy.
- It has seemed that I experience both pleasurable and painful emotions more intensely than other people.

Depression Anxiety Stress Scale-10
- I was worried about situations in which I might panic and make a fool of myself.
Appendix C

Documentation of permission

C1. McGill Friendship Questionnaires

Dear Stephanie and Colleagues,

I have attached the three articles that we usually send out to researchers wanting to use the McGill Friendship Questionnaire. If you have more questions, let me know.

Professor Aboud

C2. Adult ADHD Self-Report Scale

C3. Depression Anxiety Stress Scale-10
RE: Inquiry about utilizing the Depression Anxiety Stress Scale -10 in undergraduate research

Kim Halford <k.halford@psy.uq.edu.au>

To: Catherine J. McQuitty  CC: Stephanie Jade Shugerman; Aliya Leonardo

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Team,
You are welcome to use the DASS-10, it is in the public domain. You can download a PDF of the scale at https://www.briefrequirespsychology.com.au/dass-10/. Good luck with your research.

Regards,
Kim Halford

C4. Camouflaging Autistic Traits Questionnaire

RE: Inquiry about utilizing the CAT-Q in undergraduate research

Hull, Laura <laura.hull.14@ucl.ac.uk>

To: Catherine J. McQuitty

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Catherine, Stephanie, and Aliya,

Thanks for your email and your interest in using the CAT-Q in your research. I've attached a copy here which you are welcome to use; it includes instructions for scoring. Note that there is no threshold or cut-off score; you can report total scores or subscale scores. Do let me know if you have any further questions, and best of luck with your research!

Best wishes,
Laura

C5. General Behavior Inventory
Appendix D

Neurodivergence survey from the opposite point of view
Note: values associated with responses will not be visible to participants.

Instructions: Consider your current best or closest friend and answer based on their emotions, behaviors and social interactions. Please answer honestly and to the best of your ability.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

- Your friend has had periods of extreme happiness and intense energy lasting several days or more when they seemed much more anxious or tense (jittery, nervous, uptight) than usual (other than related to menstrual cycle).
- There have been times lasting several days or more when you have seen your friend need lots of excitement, and they actually did a lot of new or different things.
- There have been long periods over the last year when your friend seemed sad, depressed or irritable most of the time.
- There have been times when your friend's thoughts and ideas came so fast that they couldn't seem to get them all out, or they came so quickly you or others complained that they couldn't keep up with their ideas.
- Your friend's enjoyment in being with people changes -- from times when they enjoy them immensely and want to be with them all the time, to times when they do not want to see them at all?
- Your friend experiences periods when they were so down that they found it hard to start talking or that talking took too much energy.
- Has it seemed that your friend experiences both pleasurable and painful emotions more intensely than you or other people?
- Your friend needs the support of other people in order to socialize.
- When your friend is in a conversation, how often do you find them finishing the sentences of the people you are talking to, before they can finish them themselves?
- How often does your friend make careless mistakes when they have to work on a boring or difficult project?
- Your friend worries about situations in which they might panic and make a fool of themselves.
- Your friend feels free to be themselves when they are with other people (scale is inverted in terms of scoring where 7 is strongly disagree and 1 is strongly agree)

I feel free to be myself when I am with other people. | 7 | 6 | 5 | 4 | 3 | 2 | 1
Appendix E
Written Scripts

We will be approaching our potential participants via W&J emails as well as posting a link to the survey social media platforms.

For Twitter:

In the tweet:

Do you consider your friend to be “same person, different font?” Are you and your friend the perfect opposites to complement each other? Are you interested in learning about friendship, and how certain characteristics influence it?

https://washjeff.qualtrics.com/jfe/form/SV_cONMw2bkupEZ3y6

In a screen shot (to limit necessary text-280-character limit on twitter)

Are you interested in participating in our psychology research regarding this topic? Our research study is the one for you! We are 3 undergraduate students from Washington and Jefferson College working on our senior research project regarding friendship quality related to characteristics of the individuals involved. Linked here is the survey for our project, which we encourage you to complete. It will take around 10-15 minutes. Thank you! Please contact shugermansj@washjeff.edu, leonardoar@washjeff.edu, or mcquittycj@washjeff.edu

For other social medias:

Do you consider your friend to be “same person, different font?” Are you and your friend the perfect opposites to complement each other? Are you interested in learning about your friendship, and how certain characteristics may influence it? Our research study is the one for you! We are 3 undergraduate students from Washington and Jefferson College working on our senior research project regarding friendship quality related to characteristics of the individuals involved. Linked here is the survey for our project, which we encourage you to complete. It will take around 10-15 minutes. Thank you!
Appendix F

Faculty supervisor written department email

W&J Students:
Students in the Psychology 465 Lab invite your voluntary participation in their ongoing capstone research about friendship! Click HERE to learn more about the online surveys currently available. Questions? Contact Professor Rebecca McDonald (rmcdonald@washjeff.edu).
Appendix G

IRB Approval Letter

Institutional Review Board
60 South Lincoln Street
Washington, Pennsylvania 15301
tel/ 724-503-1001 x6223
c/ hbradshaw@washjeff.edu
www.washjeff.edu

Approval Letter

Principal Investigator(s): Alia Leonardo, Catherine McQuitty, & Stephanie Shugerman
Supervisor: Dr. McDonald, Washington & Jefferson College
Approval Period: April 5, 2023 – April 4, 2024
Subject: Expedited Approval
Protocol Number: 405-Leonardo-McQuitty-Shugerman-PSYCapstone-2023S
Title: Neurodivergence: A look into self-perception of function and friendship

The above referenced study has been reviewed as an expedited protocol by the Washington & Jefferson College Institutional Review Board and has been approved in accordance with the existing policy. It has been determined that this study is of minimal risk and meets the criteria for expedited review as defined below:

Sec. 5 Research on individual or group characteristics or behavior (including, but not limited to, research on perception, motivation, cognition, identity, language, communication, cultural beliefs and practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Sincerely,

Hannah K. Bradshaw, IRB Chair
Letter sent by Hannah K. Bradshaw on 04/05/2023