# INCLUSIVE PEER REVIEW ACTIVITIES IN COLLEGE WRITING CLASSES:

# AUTISTIC STUDENTS' PERSPECTIVES AND WAYS OF PARTICIPATING

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Cody Michael Kaser

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**By**

Cody Kaser

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with North Dakota State University's regulations and meets the

accepted standards for the degree of

**MASTER OF ARTS**

SUPERVISORY COMMITTEE:

Dr. Amy Rupiper Taggart
Chair

Dr. Kelly Sassi

Dr. Andrew Mara

Dr. Wendy Troop Gordon

Approved:

April 11th, 2014
Date

Gary Totten
Department Chair

ABSTRACT

To date, no composition research exists involving autistic college students and peer review. The literature regarding autism suggests that autistic students are likely to experience, value, and participate in peer review differently than nonautistic students. The study compared survey responses from an experimental group, autistic students, and a demographic comparison group, nonautistic students. The data suggests that autistic and nonautistic participants experience, value, and participate in peer response activities in many similar ways, with some general and specific differences supported by autism research. Generally, fewer autistic participants indicated positive experiences of peer review than nonautistic students. Minor differences in the data suggest that autistic participants show a stronger resistance to negative criticism, such as a grade given by partners. While illuminating some potential differences in autistic students' experiences and preferences regarding peer review, the study suggests the need for further research in the rhetoric and composition field.

TABLE OF CONTENTS

ABSTRACT……iii

LIST OF APPENDIX TABLES……..v

CHAPTER ONE: INTRODUCTION……..1

CHAPTER TWO: LITERATURE REVIEW……11

CHAPTER THREE: METHODS……...35

CHAPTER FOUR: RESULTS AND ANALYSIS..……..50

CHAPTER FIVE: DISCUSSION……..63

REFERENCES……...……....81

APPENDIX A: INSTRUMENTS……..89

APPENDIX B: TABLES……...97

LIST OF APPENDIX TABLES

Table Page

B1. Largest Number of Autistic Participants' Responses Indicating Helpfulness of Peer Review Feedback Types in Response to Survey Question 5……...…….……...97

B2. Strongest Autistic Responses Regarding Unhelpfulness of Peer Review Feedback Types in Response to Survey Question 5……...97

B3. Largest Numbers of Agreement to Responses to Survey Question 7…….98

B4. Smaller Numbers of Autistic Participants' Agreement to Responses to Survey Question 7..……98

B5. Largest Number of Autistic Participants' Responses Regarding Helpfulness of Peer review Activities in Response to Survey Question 5…….99

B6. Peer Review Aspects Rated as Least Helpful by Autistic Participants in Response to Question 9……..99

B7. Largest Number of Autistic Participants' Responses Regarding Importance of Peer Review Activities in Response to Survey Question 11……..100

# CHAPTER ONE: INTRODUCTION

Peer response activities for writing assignments, known variously as peer review, peer editing, peer group response, peer feedback, peer evaluation, or peer critique, comprise a common feature in composition classrooms and in writing assignments for non-composition classes. Peer review has been shown to have many benefits that help both student writers and the students conducting reviews (Lundstrom & Baker, 2009; Cho & MacArthur, 2011).

Peer review, for this study, is defined as any activity in which at least one student author exchanges feedback with at least one other student author for writing assignments in college classrooms. While peer review does not necessarily involve cooperation and negotiation to the degree that collaborative writing projects often do, reciprocity, role assumption and negotiation, and understanding others' perspectives are interwoven into the foundations of peer review activities, a social texture that autistic students, because of their neurological difference, are likely to interpret differently. Therefore, autistic students, because of their unique neurological condition, are also likely to participate in a range of different ways, ways that may not be accessible to instructors and professors (and classmates) accustomed to neuronormative social and behavioral conventions. Therefore, both the social complexity and the prevalence of peer review activities in writing and non-writing classrooms further speaks to the need to address differences autistic students may experience in such activities.

Students with autism spectrum disorder[1], to whom the paper will refer primarily as autistic[2] students, experience the world in a fundamentally different way than nonautistic

[1] As of the publication of the fifth edition of the American Psychological Association's *Diagnostic and Statistical Manual* (2013), autism spectrum disorder includes previously separate conditions, such as Asperger Syndrome, High Functioning Autism, and Pervasive Developmental Disorder-Not Otherwise Specified.

[2] While people-first language dictates that the term 'people with autism/autism spectrum disorder' be used, there exists a growing trend in the autistic community for autistic people claiming a different preference: 'autistic person'. Autist and autism advocate Jim Sinclair (1999) was among the first to articulate this preference, stating that autism is an essential quality of a person and cannot be divorced from the person's neurology and therefore cannot be

students. Autism spectrum disorder is a neurobiological condition that causes people with the condition to process sensory input as a flux of disparate stimuli, as opposed to nonautistic people, whose brains selectively filter stimuli; thus, autistic people experience what Bogdashina (2005) described as a comparatively fragmented perception of reality. Such differentiated perception of reality affects the way autistic students infer meaning from social (and other) contexts. Autistic perception, therefore, affects the process of intuitively inferring meaning from sensory input in social surroundings, and thus affects how autistic people generalize from one social situation to the next. Accordingly, most of the American Psychiatric Association's diagnostic criteria for autism spectrum disorder center on social behavior.

Concerning peer review activities in writing classes, autistic perception, therefore, is the unique way in which autistic people experience the world, and thus how they negotiate social roles, show social reciprocity, participate in collaborative activities, interpret human behavior, as well as show a host of other unique behavioral traits. Autistic students may thus experience peer and participate in peer review activities, because of peer review's highly social contexts and collaborative texture, very differently than nonautistic students; further, they may engage in peer review in ways their nonautistic instructors (and peers) may deem unconventional.

Peer review activities, as activities by themselves, do not necessitate the degree of social interaction group writing projects generally require. To clarify, peer review generally involves one student evaluating another's writing according to criteria mandated by the class instructor, with the goal being, to one degree or another, to exchange feedback about each other's writing.

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distinct from the person's identity; and that the label 'person with autism' suggests a negative connotation, as though the person *has* a disease (p. 223-224). Autism advocates such as Landon Bryce and Karla Fischer use "autistic people" almost exclusively, for example.

The process of peer review centered social interaction stops when the activity has ended, as opposed to collaborative writing projects, where social activities such as negotiation typically continues throughout a much longer process. Further, peer review activities represent a moment(s) or stage(s) in a process rather than the entirety of the process itself, as collaborative writing projects can be. Peer review activities, for example, may occur during class and can be based on a worksheet that students complete during that class, or may be completed by students at home and feedback emailed to partners. Collaborative writing projects, on the other hand, can include students exchanging feedback on each other's work throughout the process of completing one project.

The more isolated nature of peer review can thus change the texture of social negotiation from one in which students work to achieve a common goal, as with a collaborative writing project, to one in which the common goal, such as helping a classmate achieve success on his or her assignment, becomes less intrinsically motivating and less concrete. Such social elements can, for this study, be referred to in the general, since the study aims only to offer a preliminary impression of autistic perspectives on peer review. Regardless, as Wyatt (2010) hypothesized, peer review activities do have an inherent set of social elements that may pose problems for autistic students.

Collaborative writing and its subspecies peer review are based on normative assumptions of social behavior. Some aspects of the contexts in which peer review occurs include face-to-face communication, computer mediation in such virtual contexts as Google Docs or PeerScholar, varying group size, varying degrees of instructor presence (Ching 2007), students' mixed academic and writing experience (Jesnek, 2000), and distinct classroom 'personalities' (McAlexander, 2000 ). Varieties of peer review surely exist beyond this list, since each peer

review activity is shaped by individual instructors' own teaching experience and pedagogy, and institutional context. Regarding autistic students, the underlying concern remains the social texture and contexts of peer review activities.

Because autistic students experience the social world in such different ways, activities that involve socialization may pose unique challenges. Peer review requires students to interact with each other to varying degrees, providing feedback for their partner(s), and is almost always based on directions of some sort. While the social and environmental intensity may be lessened by computer-mediated peer review, most, if not all, forms of peer review for writing assignments require reciprocity and some degree of empathy, at least insofar as peer review requires taking on the perspective of one's partner(s) (Nystrand, 1990; Liu and Hansen, 2002), involving, to one degree or another, negotiating and maintaining social roles (George, 1984; McAlexander, 2000).

It is likely that autistic students not only experience differences in perceiving peer review, but in how they choose to participate in and contribute to the activities as well. While students with mental differences may certainly be capable of participating in ways accessible to 'normal' instructors and students, the former group may participate in seemingly unorthodox ways. Critiquing Feldmann's (2001) treatise on managing classroom civility, Price (2011) discussed the notion that some forms of classroom participation that instructors generally deem disruptive may actually be legitimate ways students with mental differences engage to accommodate their mental different-ness to the classroom and academic social context (p. 74). While Price was evaluating norms described from an instructor's perspective regarding a host of mental differences and ways of participating, her analysis and critique does call attention to the notion that autistic students are engaging in specific social activities within a larger infrastructure that shapes nonautistic instructors' and classmates' perceptions of engagement in class activities.

Price's evaluation of academic social context suggests that normative assumptions regarding behavior and participation create a milieu that autistic students, due to their difference, often find difficult to navigate, as supported by Angie's story (Prince-Hughes, 2002), who described negative experiences in academic contexts, described in fuller detail beginning on page 7 of this paper.

Autistic students interact with a system designed by and for nonautistic teachers, and, to a lesser degree, students. I regard autism as a mental difference—not disability— that becomes acute, to varying degrees, in academic social contexts. Therefore, with this study, I sought to provide writing instructors a means by which they might better understand and teach autistic students, and ways autistic students can be encouraged to participate in peer review activities. As discussed in the literature review, the historical and theoretical framework reveals that peer review activities are highly social in nature. I sought to elicit responses from autistic college students to offer a preliminary description of the ways autistic students may experience peer response activities. Also, due to autistic students' unique neurology, many of their educational needs may be somewhat different than those of neurotypical students. This study intended to examine how autistic students experience peer response activities in writing assignments, a highly social and collaborative activity.

## Research Objectives

Due to the importance of writing skills in writing classes and professional environments, as well as the paucity of research addressing autistic students and peer response, I designed this study to answer three specific questions in addition to helping address—but not completely answer—the question of how composition instructors can help improve peer response

experiences for autistic students, if indeed the data suggested that autistic students consistently perceived peer response negatively. This study sought to answer three central questions:

- How do autistic students experience peer review in college writing classrooms?
- What strengths and skills do autistic students bring to peer review activities in college writing classrooms?
- Are there any patterns regarding which types of peer revision situations autistic students prefer?
- How may college writing instructors create inclusive peer response activities?

This study looks toward the necessity of current and future research addressing the potential differences between autistic and nonautistic students' perception of and participation in peer review by gathering data from autistic students themselves.

## Autistic Students and the Importance of Inclusion

In the scope of a student's entire academic experience, it seems that peer response activities for writing assignments play a relatively minor role in helping ensure his or her success in college. However, autistic students (and all students) stand to benefit from their instructors' efforts at inclusive pedagogy. Therefore, viewing autistic students not as representative of an epidemic, or hopelessly neurologically *other*, but as individuals whose responses to their vastly different way of perceiving the world may enlighten our use of pedagogical practices, as well as shape collaborative writing and its subspecies peer review so that we can help autistic students enhance their educational experience.

In research such as Gerstle and Walsh's (2011) *Autism spectrum disorders in the college composition classroom;* Wolf, Brown, and Bork's (2009) *Students with Asperger Syndrome: A guide for college personnel;* and Jurecic's (2007) "Neurodiversity," one of the introductory

strategies consists of describing the numbers of autistic college students teachers and other college and university personnel are likely to encounter. I have consciously eschewed using such a rhetorical move, because describing how frequently we composition instructors are likely to encounter autistic students suggests that our pedagogies should be inclusive of autistic students only because of numbers. Instead of a quantitative appeal, I turn to the stories of some autistic students that speak to the need to for us to attend to their education with greater care and awareness regarding their mental differences.

In Prince-Hughes's (2002) anthology, *Aquamarine blue 5: Personal stories of college students with autism,* a contributor, known only as Angie (possibly a pseudonym), told her troubling story. According to Angie, a Canadian graduate student, her frustrations in trying to be successful in college originate in a hostile academic environment (p. 77). The 11 years' worth of hostility she perceived, combined with what she claimed was a systemic lack of support, exacerbated her anxiety and depression. Angie summed up her experience in these words, discussing how the hostility she perceived resulted in her leaving the academy:

> I have no dreams or aspirations anymore…I am not really interested in anything anymore (although I once had the remarkable ability to be interested in anything). In fact, I truly wish I had mental retardation instead because most people get what the hell that is and my life probably would have turned out better. If anything, I am exactly what a person would NOT [sic] want to be. (p. 78)

The least we can infer from Angie's story is that she was misunderstood, and possibly as a result, did not receive the support she needed to accomplish her goals. The resolute despair in her voice tells us that she has lost something of the utmost importance in her life—perhaps Angie's story represents a worst case scenario; at least, I certainly hope so.

Though Angie's testimony does not offer conclusive proof that autistic students tend to have difficult experiences in college, it does show us that a college education is extremely important for her. Beyond Angie, many autistic students encounter shifting social expectations and tremendously complex and new environments in college; therefore, they often find the new experiences in college difficult to bear (Wolf, Brown, and Bork, 2009, p. 102-105; Attwood 2008, p. 25). Fortunately, other autistic college students have had more positive experiences than Angie, according to those who contributed to Prince-Hughes's anthology.

Susan's story shows the importance of success in college in a more positive light. In her piece, Susan reflected on the stability of her interests in historical change and linguistics. Her high school academic environment did not support her special interests at the time, and she therefore earned average marks; however, when she entered college, she found that that environment fostered her interests and she became much more successful. Similarly, another contributor, Darius, a Dutch graduate student, explains that he has been relatively successful in college, except in activities that involve socialization (p. 35-37). Finding the most success of any of the contributors was Douglas O'Neal, who earned his undergraduate and graduate degrees at Penn State. Despite some legitimate misgivings about his experience in high school and another college, of his experience at Penn State, O'Neal described "nowhere in the world is more special to me or more significant in my life" (p. 86).

Based on the above testimonies, college, for autistic students able to enter the academic community, becomes a tremendously important part of their lives. Prince-Hughes, herself a professor with Asperger's Syndrome, explains that the reality autistic college students experience runs counter to the way many professors and classmates perceive autistic behavior:

> One might believe that students engaging in these behaviors are exhibiting signs of inattention, apathy, boredom or worse: drug abuse, a rebellious nature, or perhaps a dangerous mental illness, leaving them completely out of touch and without any real connection to the society around them. [These are] students who, contrary to popular misconceptions, care deeply about connection; students for whom intellectual activity and a place in the academy are indispensable lifelines that give them the connections they need while providing an outlet for their unique intelligence. As promising students with special needs, we find ourselves being pushed from the one place that can maximize our potential and give our lives meaning. (p. xvii, xviii)

Of particular note are the last two sentences of the passage, detailing the importance that college holds for many autistic students, to which some are, effectively, denied access. Fortunately, some people like Douglas O'Neal have positive experiences, but others such as Angie encounter the systemic denial Prince-Hughes mentions above. While no empirical study supports her conclusion, Prince-Hughes, synthesizing the contributions to her anthology, emphatically claims that autistic college students want to learn and to be successful, but find the social element of college life—and college classrooms—proves very difficult to navigate.

Though no data currently exists that provides precise numbers regarding the dropout rate of autistic college students, writing professors and instructors have the potential to do much to help facilitate college success for these students. We do this in one way by being the 'gatekeepers' of academic discourse. Therefore, the question encompassing this study's research objectives is as important to higher education as it is indirectly important to our autistic students: how can we college professors and writing instructors improve the educational experience of autistic college students? For many students, we may be the "gatekeepers" to the academic

discourse community, especially for first-year students (Ribble, 2011, p. 15). Examining the research on and testimony of autistic students provides a framework with which we may approach the task of inclusive college composition instruction. Helping bridge literature on autism with our field is the small amount of literature on autistic adults and composition.

# CHAPTER TWO: LITERATURE REVIEW

The following literature review discusses autism research insomuch as it can help frame the pertinent literature on peer review activities. The peer review research discussed shows the social and collaborative textures of such activities, as well as exposes some of the neuronormative assumptions regarding participation in peer review. I gathered much of the literature on autism from books written by researchers in the autism field whose expertise and disciplinary orientation lent themselves to greater accessibility by an audience in the composition field, such as Olga Bogdashina, who was trained in linguistics. Some autistic literature I gathered directly from the neurological and psychological fields, since, academically, such fields carry the most credibility. In terms of the literature on peer review, I selected that which shows the clearest connections to peer review as a fundamentally social activity, such as the genealogies written by Gere (1987) and Ching (2007) that discuss the collaborative, communal activities from which peer review developed. An examination of the extant literature pertinent to this study not only frames an approach to peer review as a possible source of frustration or context for success, but also the need for future research in the area.

Research on adult autistic writers is scant. The research on writing and autistic students concerns basic, mechanical skills and instruction in planning and process for primary and secondary students (Pennington and Delano, 2012). To date, only a paucity of literature exists on autistic college students and college composition; the research in the composition field includes Wyatt (2010), Gerstle and Walsh (2011), and Jurecic (2006, 2007). Wyatt's (2010) doctoral dissertation regarded online technical writing classrooms and their suitability for autistic students. Gerstle and Walsh's (2011) anthology of articles dealt with various aspects of teaching autistic college students writing—particularly April Mann's contribution involving writing

centers and autistic students. Finally, a pair of articles by Jurecic (2006, 2007) address, among other things, inclusive writing pedagogy for autistic students. In terms of literature on peer review and autistic college students, only Wyatt's (2010) brief consideration and Mann's article on writing center research exist.

Writing center tutors take on a similar role as peer tutors in class, though the environmental dynamics are different: in a teacher-led class, the teacher remains present in the activity in varying levels of authority, depending on his or her teaching style and pedagogy, and students may be paired or enter into small groups for peer response; in a writing center, the teacher is absent, and the writing tutor almost always works individually with the tutee.

Mann's (2011) article in Gerstle and Walsh (2011),"Structure and accommodation: Autism & the writing center," considered the differences autistic students are likely to experience in peer tutoring situations in writing centers, and how tutors (and teachers, by extension) can interact with such students in supportive ways. Mann's article becomes valuable in the peer review conversation as something that discussed some features of situations common to both writing centers and peer review that may be problematic for autistic students, such as the intensity of face-to-face interaction, sensory intensities resulting from the environment, and communication differences; she also discussed some of strengths they may bring to peer tutoring situations. In particular, she discussed the notion, arrived at through her personal observation, that many autistic students find face-to-face tutoring situations especially problematic due to their having faced "unpleasant social traumas" in the past (p. 59). As with much of the literature on autism, Mann frames autistic participation from a deficiency perspective. Wyatt follows suit in his brief consideration of peer review and autistic students.

Wyatt discussed the challenges autistic students may experience in peer response situations under the rubric of peer review as "a collaborative process that requires empathy and the ability to appreciate the potential viewpoints of the student or colleague being edited" (p. 127). Citing Harpur et. al (2004), he explained that autistic students may require a longer time to read their peers' work; as such, time constraints may prove frustrating for these students. Further, according to Wyatt, "students with [autism spectrum disorders] treat tasks mechanically and programmatically (p. 127), which may manifest in blunt feedback, lack of consideration of the autistic student's partner's intent, and, possibly, a lack of interest and thus participation in the activity (p. 128). However, as Mann (2011) illustrated, autistic students can certainly have predilections toward logical and analytical thinking and not being distracted by 'smooth talk' that may facilitate providing better feedback for peers. She also discussed Darius, a contributor to Prince-Hughes's (2002) anthology of autistic college students' testimony, who acknowledged the need to understand his audience (Mann 2011, p. 66).

While this study attempts to look past autism as a deficit, Wyatt's brief discussion does illustrate the need for researching peer review and autistic students. If autistic students experience peer review as negatively as he suggested, then the quality of their experience points to the need for critically engaging with peer review as it occurs within social contexts.

## Context and the Social Nature of Peer Review

Online and virtual classrooms are social contexts; I do not mean to belabor the obvious, but acknowledging the major contextual factor in which we teachers will be observing autistic difference will help provide a framework with which to connect autism research and peer review. Walsh (2011) described college composition classes as "socially intensive" environments that can pose challenges for autistic students in regards to collaborative work, "empathizing with

potential audiences," as well as task management (p. 7). Collaboration and task management, common requirements in face-to-face and computer-mediated composition classrooms, can extend to peer response. In peer response activities, students work collaboratively insomuch as they are interacting with each other's texts to help their partners improve their work, and when students exchange feedback, they are interacting with a real audience. As such, peer response may pose challenges to both autistic students and their partners.

Peer review, like the classroom infrastructures in which it occurs, has developed according to neurotypical conventions; scholarship and attending to the voices of autistic students will help us discern which features of peer review are necessary for all students and those that can be negotiated and thus changed. Some autistic students may find the intrinsic social nature of peer review difficult to navigate and therefore be unsure of how to participate in normative ways, or others, through their ingenuity in adapting to such contexts during years of experience, may participate in the standardized classroom discourse. Yet, others may find even more unique ways in which to participate. To better understand how autistic students perceive peer review and, consequently, assisting autistic students to more fully participate in peer review activities in nonautistic infrastructures, it is necessary to briefly examine the general kinds of frameworks we have applied to peer review.

According to Ferris (2003), there exist three general kinds of research on peer response: descriptive, prescriptive, and that which seeks students' perspectives (p. 71). While some composition scholars have addressed issues of authority in student writing groups, such as Gere (1987) and Spigelman (2000), much of the recent research in peer review has followed other lines. After coming to realize that factors for which neither she nor others accounted affect peer review, such as race, class, ethnicity, gender, and transnationalism, Flynn (2011) re-examined the

literature on peer review nearly three decades after she published a landmark article (1984) on peer review. Accordingly, this study accounts for other factors that have generally not yet been considered in peer review, such as mental differences.

As mentioned, there exists virtually no research regarding autistic students and peer review. Of other peer review research, Flynn (2011) found that research on peer review in American colleges and universities for native English speakers, for the most part, has waned since the 1990s and has been largely replaced by research studying peer review in ESL classrooms in America or other countries, and computer-mediated peer review. The burgeoning trend favoring computer-mediated peer review warrants pause. In studying peer review research conducted in contexts that were not considered during the 1980s and early 1990s, Flynn concluded, "changing the context within which peer evaluation takes place changes how it is conducted, who takes part in it, and why it is used" (2011). Therefore, with the slowly growing awareness of neurodiversity issues in the composition field (Jurecic 2007), coupled with the growing use of computer-mediated peer response activities resurrecting the peer review conversation, the time has come to consider perspectives of neurodiverse students regarding peer review activities.

Though this study's definition of peer review, mentioned in the introduction, was necessarily brief and general, it is necessary to provide a fuller definition of peer response in order to delve deeper into its social texture. K. Cho and J.G. Hansen (2002) provide a fuller definition as "the use of learners as sources of information and interactants for each other in such a way that learners assume roles and responsibilities normally taken on by a formally trained teacher, tutor, or editor in commenting on and critiquing each other's drafts in both written and oral formats in the process of writing" (italics in original, p. 1). Both Cho and Hansen's

definition as well as the simpler one provided in the study show that peer review is a fundamentally social activity. Further, peer review may take place at any stage of the writing process, may occur in a different medium, and may involve, to one degree or another, negotiating social roles and authority over peer response group participants' writing. Providing a framework with which to view peer review in L2 college classrooms, Cho and Hansen (2002) described theoretical "justifications" for peer review, which include process writing theory, collaborative learning, and Vygotsky's Zone of Proximal Development[3].

While peer review's place in the writing process remains an important consideration for peer review research, the scope of this study concerns the collaborative and cognitive elements of peer review. Wolf, Brown, and Bork (2009, p. 94-97) suggest that autistic students may experience collaborative writing and learning differently to significant degrees. Collaborative learning theory assumes that knowledge is socially constructed, and in the revision stage of the process[4], collaborative learning occurs when students "negotiate meaning as they help each other revise their papers," and can "pool resources" in order to assist individuals to help the feedback recipient invent topics, discover meaning, refine and clarify structure, arguments, etc. (Cho & Hansen, 2002, p. 2). The suggestions that comprise the pool of resources for the peer reviewer can also be rejected by the person receiving feedback.

Similar to learning as mediated through social negotiation and construction, Vygotsky's Zone of Proximal Development (ZPD) suggests that learning gaps, or gaps between a learner's actual and potential level of development, can be mediated by peers in greater proximity to a learner's level of development. While some may see proximal learning as 'the blind leading the

[3] The authors describe a fourth theory, Interaction and Second Language Acquisition. The fourth theory concerns participants that were not involved with this study, and therefore will not be considered.

[4] Revision is recursive, as described by Nancy Sommers (1980), and can occur at any stage of writing because writers constantly revise; however, it is assumed that Liu and Hansen mean the latter stage of the writing process, after the first draft has been completed.

blind' Bruffee (1986) insisted that learning is not received from an "outside source," that it is brought into existence by communities whose members' mental repositories are proximal with each other— those who have shared knowledge, in other words (p. 646). Further, Cho and Hansen explained that interaction between learners who share similar levels of mental development generates a crucial mediator for higher order cognitive processes. Such processes are engaged through what the authors explain as scaffolding theory, that learners in such groups become both novice individuals and collective experts, navigating through new knowledge with each other's guidance and negotiation. Peer review (and peer tutoring in writing centers by extension), rely on interaction to engage higher order cognitive processes in order to approximate more complex concepts, the discourse community's vision of what a text should be, etc. (Cho & Hansen, 2002, p. 4-5).

Bruffee's (1986) landmark essay on collaborative learning discussed learning as a shared, negotiated, social endeavor between not only instructors but a "community of knowledgeable peers," which he defined as "a group of people who accept, and whose work is guided by, the same paradigms and the same code of values and assumptions" (p. 643). He explained that social conversation necessarily precedes and shapes "internal conversation" in writing (640). However, a question arises if we look at such an assumption from a neurodiverse framework: how does internal conversation work for those who experience the social world in a fundamentally different way? If our understanding of collaborative learning begins from our sense of internal conversation, then it follows that the products of the interplay between internal and external conversation need reexamining as well.

Academic discourse codes, paradigms, values, etc., are social constructs, arisen, as are other discursive creations, out of a complex historical context. It is this context, however, that is

shaped by nonautistic ways of thinking and communicating. Collaborative learning, as Bruffee described it, consists of "working collaboratively to establish and maintain knowledge among a community of knowledgeable peers" (p. 646). Critiquing the fundamental principles that form collaborative learning is beyond the scope of this study; however, if we can tentatively conclude that collaborative learning in academic contexts carries with it certain biases inherent in the social framework governing communicative and learning processes, we can at least entertain the notion that, for someone who is not neurologically 'normal,' the experience of collaborative learning operates along different channels. For example, autistic people adhere to stable systems in order to make an incoherent sense of the world coherent; therefore, they experience change differently. If an autistic student has been acclimated to one way of knowing in, say, a high school academic discourse community that favors a more rote approach to learning and later enters a university discourse community that favors a more student-centered approach, can we assume that such a student will learn in and adapt to the new context the same way as his or her nonautistic peers?

Considering Vygotsky's (1978) Zone of Proximal Development, peer review may enhance learning among students—or not, in classes of students with mixed writing abilities and experiences, as Jesnek (2000) suggested. Regardless, such activities may show the seams of neuronormative assumptions. Howard (2000) discussed other scholars' concerns regarding collaborative learning, that, "too often, social constructionist theory assumes a community of like-*minded* peers" [italics mine] (p. 57). Proceeding from general concerns about assumptions inherent in social constructionist theory , Trimbur (1989) offered a response to objections to collaborative learning, claims that consensus can lead to 'groupthink,' and that collaborative learning can result in immersion of an academic discourse community's conventions, neglecting

broader social contexts (p. 733-735). He advocated a revision of the notion of consensus, that it can become a benchmark instead of the "horizon," from which students can begin to "work with [their] differences" rather than eliminate them or make them invisible, thus transforming learning into a system of cooperation instead of domination (p. 743-745). Though peer review activities do not necessarily involve levels of consensus that collaborative learning involves, such activities, by extension, envelop different levels of negotiated authority and teacher presence.

Groupthink negates the presence of [neuro]diverse perspectives, strictly limiting the act of negotiation. As Trimbur advocated, however, instructors can maintain a presence in peer groups by creating a framework in which groups can become aware of the "strategic moves" by which they "legitimize their own conversation by marginalizing" what Rorty (1979) termed "abnormal discourse" (Trimbur, 1989, p. 739). Trimbur transformed the notion of abnormal discourse from Rorty's original meaning, a "complement to normal discourse" that "keeps the conversation and thereby the community renewed and refreshed," to an approach to conversation that "offers a way to analyze the strategic moves by which discourse communities legitimize their own conversation by marginalizing others"; he termed this transformed sense of abnormal discourse "dissensus" (p. 739). Trimbur suggested that the consensus students can work toward in classrooms instead of the Bruffean notion of "collective agreements" is collectively understanding and negotiating difference (p. 741). Such a re-formed collaborative learning framework allows students to "change the social character of [knowledge] production" (p. 743). Under Trimbur's rubric, the ways autistic students communicate and participate can be seen as "abnormal discourse" that achieve dissensus. In terms of setting up peer interaction, Trimbur's notions of dissensus would have us actively include mental difference in "normal" discourse. In addressing the framework within which peers interact, Price (2011) and Brueggemann (2002)

suggest that including mental difference and dis/ability issues in course content is an effective way to help facilitate diverse presences in classroom discourse. However, a theoretical complication arises: as the bastion of a neurotypical academic discourse community, the instructor's presence does require attention.

The negotiation between the often "silent" group member, the teacher, and students' evaluations of each others' texts naturally tends to favor the teacher, since he or she is the gatekeeper of the academic discourse community into which students are attempting to enter (Bartholomae 1985). Spiegelman (2000) discussed one such example, where students admonish each other's writing based on earlier lectures and critiques by the instructor, though the instructor was not present (p. 80). Extending Price's (2011) argument regarding classroom spaces made for and by mentally 'normal' people to the context Spiegelman discussed, instructor presence may help maintain a sense of equilibrium for autistic students, due to their predilection toward systems with stable sets of rules, otherwise known as a "systematizing" preference (Baron-Cohen, 2002).

Because of such cognitive strategies, autistic people tend to favor less dynamic contexts and more restricted sets of choices, reflecting a constant effort to make an incoherent perception of reality coherent (Baron-Cohen, 2002). As such, autistic students may prefer structured peer response activities with clear guidelines and clearly delineated responsibilities—and may favor teacher presence instead of student presence. Such preferences, however, are not exclusive to autistic students since many basic writers and first-year students doubt their peers' ability to provide useful feedback (Jesnek, 2000). The question still remains, however, regarding the level

of presence of autistic students' voices in peer response groups: is it possible that teacher presence holds autistic students to neuronormative[5] conventions?

Because ownership of and "auth-ority" over students' texts is a social construction (Spigelman, 2000), people who perceive social interaction differently may view the ways in which authority is negotiated differently as well. Both writing center and college classroom environments include such efforts at negotiation, though the power gap between teachers and students (and writing tutors and students, for that matter) is wider and thus makes a different social context.

Spigelman's concerns about the authenticity of student ownership take on new meaning when considered in a classroom context formed by neuronormative assumptions regarding social communication, roles, and negotiation of authority. Often, those with mental differences are viewed as needing a diagnosis and consequently healing—a framework Rose (1989) explored in regard to writing errors—but the ways in which autistic students may participate in peer response groups reflect difference, not disease (Price, 2011, p. 52). Even the assumptions informing the early stages of this study originate from a similar stance, upholding assumptions that students with mental differences tend to be seen only as having or posing problems, as much of the extant literature on autism reveals. On the surface, therefore, peer review activities do bear some general similarities to writing in collaborative groups, in terms of the social activities of social engagement, reciprocity, authority negotiation, and instructor-led consensus. Two genealogies of peer group work reveal some of the social strands of peer review that shape our notions of peer response groups.

[5] 'Neuronormative/ity' is a recently coined neologism that, parallel to heteronormativity, points to the hegemonic structures— and efforts to create and maintain those structures—that enforce norms of neurological sameness, much like heteronormative structures enforce straightness as the normal mode of human behavior.

Gere (1987) traced the origin of peer response groups to two historical movements in the 18th and 19th Centuries: academic literary societies and student writing clubs that were eventually appropriated by teachers and nonacademic mutual improvement societies. According to Gere, writing groups, under which she included peer response and related activities, are fundamentally social: "In all their manifestations…writing groups conceive of writing in social terms" (p. 10). For example, Gere argued that writing groups, and thus peer response, involve reciprocity between author and reader. Peer response can make readers more concrete for authors, but what does such a benefit actually mean for someone whose empathic reasoning is different than the students with whom he or she is working? Under Gere's analysis, peer response groups show traces of a lineage of teacher authority and mutually negotiated goals, suggesting the importance of critically engaging with the assumptions that form peer group participation to this day.

Ching (2007) provided an "alternate genealogy" to Gere's, looking beyond the historical context Gere analyzed, discovering a different set of theories and assumptions at work than only those that justified the collaborative learning push of the 1980s. Ching found that the alternative roots of peer response lay in overworked teachers seeking to lessen their burden of grading assignments, and the pedagogical assumption of the day that "students…learn how to write by being corrected" (p. 312). The latter assumption was shaped by a consistent impulse to encourage students to mimic what the academic community deemed as strong writing.

Looking at Gere's (1987) and Ching's (2007) arguments, it appears that two sets of assumptions and conclusions have shaped peer response activities: an impulse leading writing groups away from teacher authority toward the formation of more independent collaborative writing communities; and rote learning and mimetic pedagogy, emphasizing the correction of error, and the distribution of responsibility.

McAlexander's (2000) study illustrates some of the more observable ways in which the social dimension of experience permeates peer review. McAlexander's study found that large groups of students have a particular social dynamic, or personality, as a whole, and that social dynamic affects how students experience peer response activities. Using Hamacheck (1995) to frame her conclusions, McAlexander suggested that each class develops its own personality based on the "interrelationships" between the students and "the intellectual environment spawned from their interactions" (qtd. in Hamacheck, 1995, p. 534). Framing her own study, McAlexander explained that the class personality resultant from these interactions further depends on "a number of interrelated factors…[such as] individual students' backgrounds; their ability and interest in writing; the social relationships among the students, which were shaped in part by individual members' introversion and extroversion; and attitudes and opinions expressed by students during class" (p. 7). As Ching (2007) explained, students engaging in peer review are "coparticipants with the teacher and other students in the overall aims of writing instruction" (p. 314). Thus, cooperation and collaboration, though not eminently present, do permeate all manifestations of peer review.

## Types of Peer Response

There exist many forms of peer review activities: varied manifestations of collaborative, social activities for which autistic students may show equally varied preferences and ways of participating. General kinds of peer review include activities conducted in person with students reading partners' papers and then providing oral feedback for each other; reading and then providing written feedback in person or via a computer synchronously (such as instant messaging or Google Docs) and asynchronously (such as e-mail); peer review can be done with partners looking at one paper each, or in groups where students receive feedback from multiple

students. Further, peer response can take place at any stage of the writing process, but appears to take place at or after the first draft, generally. Such are the general features of peer response activities for writing assignments as we know them, though, as Brammer and Rees (2007) illustrated, there are many different kinds of peer response exhibiting nuanced differences. It is these general features of peer response that informed questions 5 and 9 of the questions of the survey.

In terms of context of use, peer response can be separated into a two broad categories: face-to-face and computer-mediated. In terms of medium, those two categories can be made even more discrete or even overlap: peer response can be written, oral, or a mix of the two; conducted by partners or small groups; can be led by the teacher or by students or a mix of the two; can take place at one stage or multiple stages of the writing process. As Brammer and Rees (2007) suggested, the amount of research on different methods of how to conduct peer response suggests that peer response is a flexible and yet complex pedagogical tool, with various prescriptive practices and unique manifestations (p. 72-73).

Computer-mediated peer response is burgeoning with the increase of the Internet as a medium for writing classes. While Flynn (2011) suggested that there have been more peer response studies in L2 contexts in recent years, she briefly reviewed some of the literature on the growing computer-mediation research in L1 contexts. Some of the types of computer mediated peer response she discussed include online response groups; and calibrated peer review, in which students work within a highly structured evaluation process, grading example essays and later other students' essays.

The extant research involving computer-mediated peer interaction and autistic people, though centering on primary and secondary school settings or nonacademic settings, suggests

that autistic people do prefer computer-mediated to face-to-face social interaction (DiSalvo and Oswald, 2002; Hetzroni and Tannous, 2004; Owen-DeSchryver, Carr, Cale and Blakely-Smith, 2000). For example, Hetzroni and Tannous (2004) found benefits of computer-mediated interventions with school-age autistic children and their peers that simulated activities later to be used in classrooms. Though computer-mediated interventions were efficacious, they were paired with similar activities in face-to-face learning environments; technology worked as a way to scaffold instruction for this group of students—not as a replacement.

Therefore, autistic students may prefer computer-mediated peer review. However, at least two studies suggest revision to previous research, at least insomuch as they call into question assumptions regarding autistic students' peer review medium preference. While Wyatt (2010) centered on online course design with peer review as a minor, momentary consideration, his findings may suggest a caution regarding assumptions that computer mediation automatically improves conditions for autistic students. Wyatt (2010) discovered that, due to flawed design, many online courses resulted in autistic students experiencing confusion and social alienation, suggesting that computer mediation alone is insufficient for adapting to autistic students' needs in online technical courses. In particular, some pedagogical interventions, such as the inclusion of Second Life, a virtual environment in which synchronous exchange is conducted between people playing as avatars of themselves in various simulated environments (Wyatt, p. 19), in online classes, contribute to sensory overload for some autistic students, including Wyatt himself (p. 272).

The second study that may give us pause regarding computer-mediated peer review is Burke, Kraut, and Williams's (2010) efforts regarding computer-mediated-communication (CMC) and social activities of autistic adults. Many of the study's participants valued in-person

socialization for definitive reasons, despite the immediate (yet evanescent) benefits of CMC. Of the reasons participants provided, the most pertinent to peer review is the preference for synchronous feedback: specifically, immediate, reciprocal instruction on how to interpret social cues, facial gestures, etc. While the pedagogical function of peer review is not to aid autistic students in honing their social communication, Burke, Kraut, and Williams's (2010) study does illustrate the possibility that face-to-face peer review may be valued by autistic students as well, because some participants for this study valued the synchronous give and take of communication that enabled them to clarify their partners' feedback.

If we can tentatively generalize Wyatt's, and Burke, Kraut, and Williams's studies for a moment, it seems that, as assumed in the formation of this study, CMC can offer a revised approach to peer review, yet autistic students and other adults appear to have ambivalent perspectives regarding CMC. Regarding Wyatt's (2010) research, while some autistic students may prefer a mixture of channels of social communication, computer-mediated peer review may have not been inclusively designed for autistic students, as were the online courses Wyatt described. Another simple reason could be that the autistic participants in Wyatt's study have not been given the opportunity to participate in computer-mediated peer review. Either way, it appears that, according to Flynn (2011), most peer review activities are still being conducted in face-to-face situations, though her literature review also suggests that we are on the cusp of seeing computer-mediated peer review become the standard rather than the exception. With inclusive education slowly becoming a staple of composition pedagogy, a growing advocacy for and by autistic people, and what appears to be a dynamic turn in the media in which peer review is conducted, the college composition is poised to begin to critically engage with its peer review practices regarding autistic students.

In examining the literature on peer review for this study, I engaged with it under the framework of what 'neuronormative' assumptions it may reveal, and the social, collaborative essence it creates in classroom contexts. Peer review activities often comprise a useful stage of the writing process for both teachers and students, but the assumptions that form them stem from neuronormative conventions of socialization and learning. The foundations, types of peer review, and dense social operations working within peer review activities are likely to provide contexts in which autistic students may find difficulty, and poses a challenge as unique and intense as their variance from those contexts.

## Autism Theory and Peer Review

Of the extant research on autism, the following nodes shaped the survey's content: autistic perception, social interaction, noverbal communication, language, and writing. Since peer review activities may be used in several different ways, involving different media and levels of social interaction, research on autism does not lend itself to a stable framework for peer review activities. However, revisiting the notion that peer review is fundamentally social and that autism is and was diagnosed by observable social behaviors (Jurecic, 2006, p. 5) offers a preliminary framework for understanding autism as a rhetorical construct; that is not to say that the neurobiological condition itself is a rhetorical construct, but that it is a concept shaped by certain neuronormative attitudes, as well as autism as "a way of being," or a mode of identity, in other words (Heilker and Yergeau, 2011, p. 489).

While the recently published edition of the American Psychiatric Association's *Diagnostic and statistical manual* offers a tighter focus of diagnostic criteria based on developments in autism research since the *DSM-IV,* most, if not all, of the study's participants were diagnosed according to the previous edition's criteria. According to the *DSM-IV,* autism

and related conditions are diagnosed based on a triad of social behavior observable by the professional tasked with diagnosis. However, diagnosis is based on perception of outward behavior and not the internal reality of the person being diagnosed. While the literature on autism and college composition describes autistic students by their social behaviors, if we want to have a more useful framework with which to begin to understand our autistic students, we need to look more at the inner life of the individual. Therefore, I begin by discussing autistic perception and move to social behaviors that may become manifest in peer review activities.

**Autistic Perception and Interpreting Nonverbal Social Behavior in Peer Review**

Many types and levels of social interaction can occur in peer review, such as providing written, oral, or a mix of feedback types; providing feedback based on a worksheet; peer review whose instructor presence is visible or invisible, and more. When autistic students engage in a social situation, such as peer review, they do so in a system with its own rules, assumptions, social roles, and levels of authority regarding their writing and their peers' writing. Revisiting autistic perception as it pertains to social interaction underlines key differences in the way our autistic students may participate, understood from a 'ground-up' approach.

Bogdashina (2005) explained that perception is a process by which the brain processes sensory input. The brain uses memories of experiences to sort through and make sense of the sensory world. Infants, for example, are constantly bombarded by sensory input because they lack the experience necessary to make meaning. This primary or literal level of processing differs from verbal processing, the stage of processing where language intervenes, making meaning out of sensory input. One feature of the autistic brain, Bogdashina explained, is that verbal processing is delayed: thus delayed, autistic people consciously make meaning out of

stimuli. Autist[6] and autism advocate Donna Williams explained the levels of processing in her autobiography as "on a sensory level, nature comes first, pattern comes second and function comes last" (Bogdashina, 2005, qtd. in Williams, 1999, p. 99).

Autistic sensory processing differences result in autistic social differences. Testimony from another autist, Lucy Blackman, a former university student who earned her Master's degree in Literary Studies, helps depict sensory processing as it happens in social contexts:

> Other people learn to make instinctive social judgments from ongoing and consistent stimuli. I have not been able to make instinctive social judgments based on prior experience in a reliable way, because incoming signals were switched often enough that I did not learn to untangle those shadowed moving faces and their inconsistent voices (qtd in Bogdashina, 2005, p. 75).

In many peer review contexts, therefore, many autistic students may experience a physical and social environment that provides physiological and mental challenges unknown to nonautistic instructors and students. However, as illustrated by Blackman (2001) and various contributors to Prince-Hughes's (2002) anthology, many autistic students succeed in spite of (or because of?) their unique neurological makeup.

With their perceptual filters working in such disparate ways, autistic people often do not know which sensory stimuli on which to focus, particularly in situations where it is very difficult to differentiate sensory stimuli, such as socialization. Any collaborative work, especially that which occurs in face-to-face contexts, necessitates the exchange of emotional and other

[6] The autistic community uses the term *autist* to signify a person in the singular (or variously an autistic artist). I will use the term in the latter way. Further, 'autist' is generally used in the context of advocacy to indicate an autistic person who is advocating for themselves and other autistic people. For example, Temple Grandin, who is autistic herself and is an autism advocate, would be referred to as an autist, as opposed to Tony Attwood, who is neurotypical and therefore not an autist, and thus would be known only as an autism advocate.

nonverbal information. While each autistic individual has his or her own unique way of interpreting the world, autistic individuals, as a group sharing a set of neurological differences, tend to interpret emotion and other non-verbal behavior from an intellectual, rather than intuitive, approach, yet express emotions in a way that may seem odd or intense to others (Attwood, 2008, p. 134).

While autistic people experience a delay in processing holistic situations, they can and often do notice things others do not (Bogdashina, 2005, p. 57). In a peer review situation, noticing unique details might include grammatical issues and highlighting the omission of neglected research in another student's argument. It is therefore possible, even within contexts defined by neuronormative assumptions, autistic students may engage in social exchanges in ways neurotypical teachers and students already value. The mechanics of such exchanges rely on empathic reasoning, or Theory of Mind (ToM), in part.

**Taking the Perspective of Others (Theory of Mind) in Peer Review**

Peer review requires empathy, as do any activities within a community. In a community of readers and writers that comprise traditional or virtual classrooms, peer review can function to balance students' "own purposes as writers with the expectations of their readers," heightening "writers' awareness of the balance their texts must strike between their own intentions and their readers' expectations" (Nystrand, 1990, p. 17). In one use of peer review, therefore, considering the perspective of another person is essential to the rhetorical education of students.

While Theory of Mind has recently come under much criticism from the autism community (Zurcher, 2012), it has provided the basis for some of the scant literature on autism and writing. With that in mind, I proceed carefully regarding assumptions of autistic students' empathic abilities. Theory of Mind, as explained by Jurecic (2007), refers to taking the

perspective of another person, or "predict[ing] the thinking of a unfamiliar mind" (p. 426), an attribute germane to writing (p. 427) and, by inclusion, peer review. Current understandings of autism in relation to ToM generally do not maintain that autistic people *cannot* empathize (Jurecic , 2007, p. 426), but that autistic people must consciously process empathic information, as opposed to neurotypicals, who process empathic information intuitively in most social situations (Spek, Scholte, & Van Berckelaer-Onnes, 2010, p. 280). Such delayed processing causes autistic people to experience what appears to be a social disconnection from the milieu of which they are physically a part.

However, a recent theory of autism, "Intense World Syndrome" (Markam and Markam, 2010), attempts to unify other neurobiological theories of autism, and appears to be the theory of autism most accepted by the autism community[7] (Holman 2013). The researchers posited that, due to the unique structure of neuronal networks in autistics' brains, under- and overconnectivity during the act of processing sensory stimuli occur. Having to sort through a barrage of sensory stimuli on a significantly less automatic or conscious level than neurptypicals, autistic people 'hyperfocus' on certain stimuli, but with the brain's resources being limited, also compensate by 'hypofocusing,' or screening out, other stimuli (Markam & Markam 2010, p. 10, 20, 25). In this way, suggest the researchers, autistic people may not experience a deficiency in empathy as is commonly thought, but instead *hyper*empathize: their brains may be overly attendant to stimuli in social environments, thus resulting in an overload of empathic information. Regardless of whether autistic students hypo- or hyperempathize in social contexts, research does suggest that they experience the common element of social reciprocity very differently than their neurotypical peers, likely affecting the way they, autistic students, negotiate roles and participate.

[7] While some to many in the autism community embrace Intense World Synrdome's explanations, it has recently come under criticism (Remington and Firth, 2014)

### Systematizing Preferences: Criticism, Enhanced Logic, and Clear Activity Guidelines

Autistic students' tendency to favor stable systems with predictable rules, a systematizing preference, may affect their ability to deal with spontaneous change in social contexts and the way they give criticism and respond to it. Systematizing, or "Extreme Male Brain Theory," according to Baron-Cohen's (2002) description, indicates a logical preference in thinking, determining the correlations between disparate constituents in a defined system (p. 248). In other words, many autistic people turn to coherent, clearly defined systems to make an incoherent world coherent. When an autistic person perceives a threat to that coherence, even if it arrives in the form of constructive criticism, he or she may divert from the task at hand. As such, autistic students may prefer structured peer response activities with clear guidelines and clearly delineated responsibilities. The predilection toward systematizing also helps many autistic people achieve a strong sense of logic, something that many college students enter our classrooms lacking.

### Special Interests: Motivating Participation in Peer Review

Since stable perception of social situations relies so much on the ability to infer meaning from stimuli, autistic people experience a constantly changing and thus fragmented social reality. As Attwood (2008) explained, autistic people find much motivation when engaging in special interests. According to the authors of "Intense World Theory," autism itself does not cause the observable autistic qualities we see, but instills in autistic people coping mechanisms that they "develop …to actively avoid the intensity and pain [of overstimulation]" (Holman, 2013). Dealing with what is often a painful sensory world, autistic people find respite in their special interests.

Special interests can provide autistic people with gateway into the academic world, such as Prince-Hughes (2002) and one of the contributors to her anthology, Jim, illustrate. If an instructor enables an autistic student to either write about his or her special interest and, better yet, pair with another student who is also working with a similar topic, it is likely that the autistic student will be more intrinsically motivated to participate in peer review. While special interests often represent a very powerful source of pleasure (among other things), they sometimes occur to the detriment of other activities (Attwood, 2008, p. 198-199). In peer review situations involving, for example, either an assignment or partner's piece of writing outside the student's range of special interests, autistic students may need extra help in becoming and staying motivated. Special interests can thus divorce autistic students from activities, but at the same time, autistic students may find strong ways of participating if given the opportunity.

**Executive Function Differences and Attention Pace in Time-Constrained Contexts**

Special interests help autistic people ignore bothersome stimuli, and they often focus intensely on the task at hand when engaging in their special interests. While autistic students do not necessarily require special interests in order to focus on an activity (this varies from individual to individual), in contexts governed by socially negotiated tempos, such as peer review set in a certain timeframe, autistic students often require more time to process information. Attention differences in any student may impact, for example, how thoroughly the student attends to peer review tasks and whether or not the student completes in-class peer review, thus affecting the quality of the feedback given to his or her peer review partner(s).

The term from the psychiatric and neurological fields concerning the brain's allotment of mental resources, Executive Function, helps explain such things as different cognitive tempo, difficulty with allotting and focusing attention, and planning and prioritizing tasks. Of the six

Executive Functions, people with ASD tend to experience the strongest differences with working memory (short term memory), cognitive flexibility, self-reflection and self-monitoring, and time-management and task planning (Attwood, 2008, p. 235-236). Executive Function variances also account partly for the autistic population who, as a whole, often exhibit ADHD symptoms or diagnoses (Attwood, 2008, p. 232-233), as well as different processing speeds.

In addressing autism research, it has become apparent that no one theory accounts for autism while autistic people are perfectly capable of accounting for themselves. I belabor the obvious to make a point: our understanding of autism and peer review will be much richer if we balance neurological and psychological research with the voices of autistic people.

A review of the autism research most salient to peer review reveals that autism is a neurological difference that causes autistic people to process sensory information in a fundamentally different way than nonautistics. The autism section of the literature review is not intended to provide a profile of autistic students. Using the *DSM-IV's* diagnostic as a preliminary framework, it is possible to think of each of our autistic students as exhibiting a combination of the above list of ways of experiencing peer review. They also experience peer review in unique ways as well, since they experience the world in unique ways, ways that our neurotypical students and we may not recognize and value as intrinsically valid. Such concerns provided a framework within which I employed methods, methodology, and created and distributed instruments for this study.

# CHAPTER THREE: METHODS

The governing educational purpose of this study was to provide information for college composition instructors so that they can better understand how autistic students experience peer review activities, and therefore work toward inclusive pedagogy, including more 'autism friendly' peer review activities in their courses, as well as ways in which autistic students may actively participate. Three specific research goals therefore included: 1) to describe a range of experiences that autistic students encounter when engaged in peer review; 2) to describe a range of strengths and skills autistic students bring to peer revision activities; and 3) to describe patterns regarding which types of peer review situations autistic students find educationally useful, and, by contrast, describe a pattern of peer review activities that autistic students do not find useful.

## Two Phases of the Study

In an effort to increase the validity of the data, under the advisement of a faculty member ancillary to the committee[8], I determined that a pilot survey would be necessary to determine the survey's usability because autistic students may perceive written and visual information at variance with the neuronormative assumptions that shaped the design of the study's instruments. I also determined that a pilot survey was necessary for neurotypical participants as well, because my phrasing of some questions may have seemed overly complex to some participants who have not had extensive reading experience, such as first-year college students.

In May, I distributed the pilot survey, identical to the survey used for the main study except for the fact that it had two open-ended usability questions at the end, via Facebook community pages with the permission of the pages' administrators, and via the departmental

[8] Thanks to Dr. Nathan Wood of NDSU for his help and suggestions regarding material design and participant access.

listervs of a midsize upper Midwestern American university. I selected listservs based on the college departments most likely used by autistic students, such as mathematics and computer science (Grandin, 2006). The neurotypical group pilot survey was distributed through three different departments' listservs, departments that autistic students historically are not likely to use, such as sociology and English. Participants from both groups were asked to take the survey and then provide input about the usability of the survey. The remainder of the methods section refers only to the main study, except where noted.

Both autistic and comparison group participants were able to finish the pilot and final survey. For the final results, I did not use responses to any pilot survey questions other than those regarding usability, because the research sites used for both phases of the study may have drawn the same participants. The usability question responses revealed questions and survey design. One respondent commented, for example, that the survey should phrase Likert scale questions consistently, and an experimental group participant suggested eliminating the repetition of question 16 (an unintended error in the survey's Internet delivery). I made minor changes to wording of questions based on participants' feedback where possible, and then re-submitted the edited, final version of the survey to the participants through the various aforementioned research sites.

In the pilot study, the phrasing of question 9 was ambiguous. The original version asked, "As someone who has received peer feedback, how helpful do you think the following types of peer review were for your writing?" and described a type as "Peer review with discussion." Since autistic people experience context differently, it is important to write as specifically as possible to help them understand the intent behind the message. As such, the question above does not specify with whom or by whom the peer review would have been discussed; therefore, I changed

it accordingly. Other minor wording changes, for example, included changing "verbal" feedback in some of the questions to "oral" feedback, to help participants distinguish the types of feedback mentioned. Due to the number of participants able to complete all questions on the final survey, 29 for the experimental group and 44 for the comparison group, the survey's design, at least for this preliminary study, proved at least somewhat usable.

## Participants

I sought the same types of participants, autistic and neurotypical college students, for both the pilot and main phase of the study.To achieve its objectives, this study sought, through an online survey, quantitative and qualitative data regarding how autistic students experience peer response activities in writing assignments for college classes. The survey is presented in full in appendix A. The group of autistic student participants constituted the study's experimental group. In addition to the experimental group, the study sought comparison group participants to help ensure the data's validity. By comparing the data from both groups, I would be able to reduce the possibility, for example, of misinterpreting autistic students' perspectives as exclusive to that population. The comparison group consisted of college students *not* diagnosed with autism spectrum disorder, or conditions previously distinguished and diagnosed as Asperger's Syndrome, High Functioning Autism, or Pervasive Developmental Disorder Not Otherwise Specified.

The survey for each group had a filtering device embedded. For the experimental group survey, any participant answering "no" to the question asking whether he or she had an autism spectrum disorder (ASD) was taken automatically to a message thanking him or her for his or her participation. Likewise, for the control group, anyone who responded that she or he was diagnosed with ASD was automatically taken to the end of the survey and taken to the same

message. Participants were to be over 18 years of age and currently enrolled in college; the survey stopped anyone answering that he or she was less than18 years old by redirecting him or her to a message thanking him or her for his or her participation. Therefore, the survey design helped ensure that all participants were adults.

Experimental group participants were difficult to access because autistic students are considered by some to be a vulnerable population (see paragraph below), have fewer numbers than neurotypical students, and have been over-accessed in many contexts. Autism Facebook groups, such as Adults with Asperger Syndrome, for example, have been asked so frequently to host surveys that group administrators have begun to deny requests to use their groups as research sites.

Further, autistic students may be regarded as a vulnerable population. Wyatt (2010) revealed that the University of Minnesota deemed college students with autism spectrum disorders a vulnerable population, though he did not specify the university's criteria for that decision (p. 44). It is likely that the university made this decision due to autistic participants' different ways of perceiving the world; namely, their tendency to often misunderstand social cues. Regardless, the University of Minnesota's decision does have implications on this study, not only in accessing participants (autistic participants were extremely difficult to access), but also revealing the need to consider the unique needs many, if not all, autistic participants require.

## Research Sites

The research sites for the pilot study resembled those of the main study. Originally I chose four upper Midwestern universities as research sites for the main phase of the study, planning to contact the selected universities to garner permission to distribute the survey via either the main student listservs or departmental listservs. However, none of the universities

contacted for the main study were willing to distribute the survey via their listserv. The study therefore utilized a different mid-sized upper Midwestern university as well as social media to access participants.

As mentioned, the other research sites included social media; in particular, I accessed most of the autistic participants via Facebook autism and Asperger's Syndrome groups, with page administrators' permission. I accessed some autistic participants via the Global Regional Asperger's Partnership organization website as well, with organization representatives' permission.

In the interest of future research of vulnerable populations via social media research sites, it is worth noting that even Facebook groups for neurodiverse populations may be becoming inundated with requests for research, and therefore may not be viable sites for research much longer. In fact, the administrators of one Facebook group denied my request to re-post the survey link because they, the administrators, were becoming inundated with research requests.

**Survey Distribution**

With listserv managers' permission, both the control and experimental group pilot study were distributed to the listservs of various departments of a mid-sized upper Midwestern American university; participants from both groups were accessed via the social media website, Facebook, as well as other social media. Doing so enabled me to access approximately half of the comparison group participants, and the other half I accessed via the listservs of the aforementioned mid-sized upper Midwestern university. Both surveys asked participants whether they had an autism spectrum disorder. Such diagnoses must also be kept confidential in keeping with the Americans with Disabilities Act and the Health Insurance Portability and Accountability Act of 1996. None of the survey questions asked participants to provide any

information that could be used to personally identify participants, such as name, location, etc. I selected the snowball method to add assurance that the participants' identities were not known to the researchers.

I used the 'snowball method,' otherwise known as chain distribution method, to not only help ensure participants' anonymity, but to increase access to participants as well. In research, a snowball letter is one that asks participants to forward the survey with pertinent information to other email listservs or social media sites. Snowball letters have been used, as with other chain distribution methods, to access populations that are difficult to access, such as homeless people or AIDS victims, though they are usually used for populations with strong communal ties in which participants knowing one another (Heckathorn, 2002). Students who are members of academic groups or other departments with listservs, or those who are members of other social media groups, can initiate distribution, thus increasing the distribution of the survey while maintaining confidentiality.

## Instruments

The instrument for this study was an online self-report survey composed of a mix of close-ended questions, Likert scale questions, and open-ended questions. I created the survey with the assistance of Linda Carlton-Gunderson, of the North Dakota State University's Group Decision Center. We distributed via email listservs and Facebook community pages and interest groups over a period of four months. As mentioned, I conducted the survey in two phases, a pilot study that sought data regarding usability and a main phase that sought data to answer the study's research questions.

Because one of this study's goals was to gather data regarding autistic students' perspectives of and ways of participating in peer review, I employed a survey as the main data-

gathering implement: surveys provide "a quantitative or numeric description of trends, attitudes, or opinions of a population" that have not been studied in depth (Cresswell 2009, p. 145). Further, this study employed an online survey because such a medium allows the survey to be easily distributed to many participants, who then may provide responses at their convenience.

Because the target group for the study is neurologically different than the participants for all other empirical studies regarding peer review, it was essential to revisit a strand of the argument regarding pluralist methodology put forth by Kirsch (1992). Pluralist methodology, as described by Kirsch, advocates multiple methodologies so that one does not take precedence over the other, limiting the knowledge created or discovered by research; the context of research should generate its methodology (p. 258). Though Kirsch's article referred mainly to liberating feminist research methodologies from empirical, positivist research paradigms entrenched in the composition field at the time of its writing, the gist of her article can be used to frame this study's methodology. The context of this research consists of three general features that necessitate specific methodological considerations: a lack of research in the area of peer response and autistic students, and neuronormative institutional and classroom social contexts, the perceptual differences autistic students experience.

The first feature of context bearing on this study's methodology, that the subject of autistic students and peer review has not yet been researched, can be addressed primarily by the choice of instrument (Cresswell, 2009). The second contextual feature necessitates an examination of the research space in which participants' engaged with the instruments. Price (2011) described most academic spaces in higher education— and by extension, research spaces— as spaces created and maintained out of a neuronormative bias. She termed such space as "kairotic space," the "less formal, often unnoticed, areas of academe where knowledge is

produced and power is exchanged" (p. 22). In a system whose bias favors mentally 'normal' students, those who are mentally different may experience difficulty as a result of that space's dynamics. According to Price, even spaces that allow for greater flexibility for some types of mental difference, such as online classes, still can pose difficulties in "ways that" autistic students "move," because such spaces preserve some of the normative strategies inherent in face-to-face contexts, such as the assumption that for instructors to value participation, participation must be visible (p. 76-78).

Price's concerns may extend to autistic participants' access of the study's instruments. While Price discussed *kairotic space* mostly in relation to teachers and their classrooms, in regard to this study's methodology, her concept of *kairotic space* lends itself to examining autistic participants' ways of interacting with computer (or phone, as the case may be) interface and survey design. *Kairotic space*, according to Price, moves past its classical rhetoric inspiration, *kairos*— the appropriateness or exigency of the timing of a rhetorical act—to include the "real-time unfolding of events"; impromptu communication that is required or encouraged; in-person contact; a strong social element; [and] high stakes social engagements" ( p. 60). Citing Sheard (1993), Price further explained that *kairotic space* incorporates "physical space," and "attitudes." In sum, *kairotic space* refers to the moment of interaction in a space, as affected by its historical and social context, which Price illustrated with student-teacher conferences, academic conferences, and peer-response activities (p. 60-62). In the contexts this study considers, for example, autistic participants interact with a computer or even iPhone screen that displays a survey comprised of several textual elements constructed under neuronormative—assumptions of design and interaction that may not hold true in the autistic participant's experience, hence the aforementioned need to include a pilot phase in executing the survey.

With that in mind, I must point out two things. The data's reliability may thus have been affected. For example, one autistic participant may not have been able to process all of the directions. He completed the survey, but revealed in his response to question 13 that he had never gone to college or participated in any peer response activities (such data was omitted from the results). While it is not the goal of this study to criticize or evaluate research spaces, I examined the *kairotic* spaces in which autistic participants might be interacting to help shape the study's approach and instruments.

The survey was not fundamentally redesigned to accommodate autistic perception, but I, with the help of Linda Charlton-Gunderson, made small changes to make the survey design so that it was more usable and possibly less overstimulating for participants. We made design changes to limit the number of pages participants had to navigate, simplifying the survey process. Other design changes included putting all of the non-demographic questions on the same page; breaking up the longer sets of questions, such as question 9 (which had 21 Likert scale questions) with page breaks; and increasing the amount of white space between questions on the same page.

The survey form itself may be more usable for autistic participants because of the way many autistic people experience face-to-face interaction. As Prince-Hughes (2002) explained, many autistic people prefer writing for various reasons, but first and foremost is that writing allows them to communicate free from the intensity of face-to-face interaction (xiii). The electronic survey removes the autistic participant mostly, but not wholly, from what he or she may have found to be overstimulating in other, more socially intense forms of interaction.

The hyperlinked survey presented questions in a series of pages accessed either via email or from a social media or other webpage. The first questions asked participants to reveal

demographic information regarding gender and the amount of time they have spent in college. Gender may influence how female autistic students experience peer response activities as opposed to male autistic students, because studies have found some behavioral and perceptual differences in autism that are likely based in gender (Attwood, 2008; Attwood et. al, 2009; Simone, 2010; Lai et al, 2011); gender has also been shown to have an impact on how all students perceive and participate in peer response (Tomlison, 2009). Years of experience in college have also been determined to affect perceptions of peer response for students, though those discussed in Jesnek (2000) were not differentiated between autistic and nonautistic. The rest of the survey consisted of 10 questions in total: a mix of multiple choice Likert scale questions and open-ended questions.

In measuring questions seeking attitudes and opinions, researchers often use Likert questions (Adams and Cox, 2008). Because autistic people often experience delayed processing of abstraction and generalized information and process specific information more efficiently (Attwood, 2008), I included an array of 54 Likert scale items total so that autistic participants, while navigating the survey, might find the notion of peer review activities more concrete and thus provide more reliable data. Additionally, the more detailed array of Likert items was designed to facilitate the memory of experiencing peer review activities in all participants so they could provide more detailed responses to open-ended questions.

All Likert items and open-ended survey questions were designed to address research question one, "how do autistic students experience peer review in college writing classrooms?" three, "are there any patterns regarding which types of peer revision situations autistic students prefer," and four, "how may college writing instructors create inclusive peer response activities," except survey questions 7 and 8, which addressed research question two, "what strengths and

skills to autistic students bring to peer review activities in college writing classrooms?" Survey questions ask for Likert or open-ended response data that show participants' experiences and ways of participating in peer response activities; further, all data thereby elicited helps us understand autistic students' perspectives somewhat better, and thus, how to adapt peer review activities to such students' needs.

Likert type questions 5, 7, 9, and 11 posed one main question accompanied by a list of peer response types, attributes, or ways of participating that respondents rated according to Likert-type response options. These types, qualities, or methods each accompanied a six-item scale (except question 9, which used a seven-item scale), including null response options (such as "I have not been given this kind of feedback"), neutral options, and two degrees each of positive and negative attitude options (very unhelpful, unhelpful; and helpful, very helpful, for example). Questions 6, 8, 10, 12, and 13 sought open-ended responses. Further, all open-ended questions except for 13 were extensions of questions seeking Likert-type scale data; each of these pairs constitutes a question set. Appendix A shows the full layout and array of the survey's questions.

Responses to Likert-type questions provide the bulk of the data gathered. By assessing participants' ratings of options presented, we can approximate how they value and participate in peer response. I must clarify that the objective of this study is not to present an exhaustive or even concrete and generalizable account of autistic students' experience of peer response activities, but rather to provide an impression of autistic students' experiences of, preferences fpr, and ways of participating in peer review activities. Composition instructors may thus use this data to affect more inclusive peer response activities, and perhaps even more important, the data illustrates the need for future research.

Three types of Likert-type response options helped eliminate responses that may have been threats to validity: an option allowing participants to respond that they had not experienced a particular kind or aspect of peer review, an option allowing participants to respond that they did not understand what that particular question asked, and neutral Likert responses, such as neither important or unimportant, which allowed participants to indicate that they did not have an opinion regarding the particular item offered. Only Likert question responses considered in coding data were those that indicated that the respondent held a definite opinion regarding the item.

In addition to the screening items, the other Likert items were listed on a scale of one to five; for example: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. The questions therefore sought perspectives on the helpfulness of peer feedback types; the helpfulness or unhelpfulness of various kinds or species of peer response activities; the helpfulness or unhelpfulness of various aspects of peer response activities; participants' descriptions of and opinions regarding the helpfulness of their most recent peer response activity; and ways in which participants felt they helped their partners.

## Methods for Analyzing Data

After the surveys closed, I analyzed the data to better understand how autistic students experience and participate in peer response activities, and how we may create inclusive peer review activities. I organized and condensed the quantitative data from the questions seeking Likert scale responses to show the clearest representation of strong trends. Though the simple method of tallying percentages based on Likert-type question responses is often used, it does represent a threat to validity (Adams and Cox, 2008). However, making precise measurements of attitudes lies outside the scope of this study, owing to the fact that it seeks preliminary

impressions of autistic students perceptions of and ways of participating in peer review. I therefore condensed both the negative and positive ranges of Likert options into one each, following the precedent stated in Allen and Seaman (2007).

To show the strongest impression of trends in the data, I totaled the number of responses for each Likert scale option, and combined categories of similar response ranges into one response range. For example, I combined responses indicating peer review as showing very unhelpful and unhelpful into one category of responses: unhelpful. Once this was done, I calculated the percentage of responses for the autistic and neurotypical group. For example, 53% of the autistic group and 87% of the neurotypical group felt that handwritten feedback was helpful (again, responses indicating that such a type of feedback was helpful and very helpful were condensed).

I calculated percentages by comparing the total number of a group's respondents for one Likert scale option with the total number who responded to the question. For example, 32 autistic participants responded to the Likert scale option "typed feedback," under question 5, "As someone who has received peer feedback for writing assignments, how helpful were the following kinds of feedback that you have received in the past?" 16 of that number of respondents indicated that typed feedback was in the helpful range; therefore, I arrived at 50%. I used a very simple criterion to determine whether the number of responses was significant: a basic statistical majority. To specify, while every sample group has a majority, the term here indicates not merely the bulk of a population, but a filter by which only the strongest trends emerge as those that suggest the highest correlation of responses. While this method does not provide the finer, more conclusive analysis that statistical methods allow, it does provide breadth, an impression of autistic students' perspectives and ways of participating (my approach

changed regarding research questions one and two, discussed in the results and analysis section). As such, any response rate over 50% is considered significant when analyzing participants' perspectives and preferences. Further, I compared the data with each other, noting significant differences between the two groups. I consider only differences of 15% or greater significant for this study, because of the small number of participants in each group.

To analyze the small amount of qualitative data, I performed a simple process of coding, first paraphrasing and then summarizing each response to open-ended questions (6, 8,10, 12 and 13), and from that grouped responses according to theme. In analyzing the data, I generated thematic categories based on a combination of autism theory and the narratives of autistic people. Since autism research indicates that social and environmental contexts are likely to have the most impact on autistic students' perception of and participation in peer review, I used those two items as coding categories. Additionally, since peer review involves working with the textual context of another student's writing, textual context comprised the third category.

Here, the theme of social context refers to respondents centering on the social elements of the peer review activity in their responses. For example, if a respondent discussed the benefits of the "give and take" of face-to-face peer discussion, or emphasized the importance of having a "nice partner," I coded his or her response as social context. If a respondent focused on the importance of the medium of peer response delivery, such as recorded audio, or the content of feedback as preferring to peers to describe to him or her exactly what he or she "did wrong," I coded his or her response as involving textual context. Finally, if a respondent expressed concerns about something involving the physical environment, such as noise levels, I coded his or her response as falling under the environmental context category. While much finer distinctions can definitely be made, doing so with such a small sample may prove redundant.

Of these contexts, social context in particular can help address the question regarding autistic students' experience in peer review, considering that most differences autistic students experience are social in nature. Granted, all aspects of peer review are social to one extent or another, but in order to answer the research question, how do autistic students experience peer review, I created a comparison between less explicitly social and more explicitly social contexts. The methods used to elicit and analyze the quantitative and qualitative data revealed some general and some minor findings.

# CHAPTER FOUR: RESULTS AND ANALYSIS

This study gathered data to answer four research questions involving autistic students' experience of peer review, the ways in which they augment peer review, how they value peer review, and how we composition instructors can create inclusive peer review activities. The survey used elicited much quantitative data and some qualitative data. In reporting the data, I exclude the comparison group because the function of gathering such data was only to help ensure that I did not misinterpret autistic participants' data as exclusive to that group. The method of comparing two groups' data served its function.

During the process of reporting and analyzing the results, it became apparent that my approach did not address some of the research questions as directly as intended. In regard to the first research question, "how do autistic students experience peer review in college writing classrooms," the instruments used did not align with achieving a greater sense of autistic students' perception because the Likert survey used measured participants' evaluations of types of peer review. A method such as a narrative or case study provides richer qualitative data (Cresswell, 2009) from which we could infer a deeper sense of ways in which some autistic students experience peer review. Therefore, in answering the first research question, the data serves to provide a preliminary impression of autistic students' experience in peer review.

In regard to research question two, "what strengths and skills do autistic students bring to peer review activities in college writing classrooms," has and will not appear to be dealt with directly as it was originally worded, for a similar reason. I frame the discussion concerning research question two in terms of ways of participating, not adding strengths and skills to peer review activities. The reason for such a change is simple: the general context in which autistic students engage with peer review is still colored by neuronormative assumptions of participation

(discussed in greater length in the conclusions section). Therefore, we can better understand the participants' data regarding research question two if we examine it under the rubric of critically engaging with the notion of neuronormativity in classroom contexts.

The quantitative and qualitative data, however, did directly address research questions three and four, "are there any patterns regarding which types of peer revision situations autistic students prefer?" and "how may college writing instructors create inclusive peer response activities" respectively. Regardless of the degree of directness or indirectness to which the study answered its research questions, the data gathered represents the first of its kind in college composition studies, and still offers us a chance to glean useful information about impressions of autistic students' experience and participation that were not available before.

## Quantitative Data

The data gathered for the main study neither provided a strong confirmation of the research hypotheses nor strong negation of them. In regards to the numbers of participants who provided data, 29 participants identifying themselves as having autism spectrum disorder finished all Likert-type questions; 44 participants identifying themselves as not having autism spectrum disorder finished all Likert-type questions. Slightly higher numbers of both groups answered some, but not all, questions seeking Likert-type responses, and significantly higher numbers of each group answered only questions one or two of the survey and stopped there. Various numbers of respondents in both groups chose to answer the open-ended questions, though much fewer participants responded to open-ended questions than Likert-type questions. Though I originally hoped that more autistic participants would respond, that the nonautistic group has more participants gives a better sample by which we can compare the autistic group's responses.

To help answer the first and third research question regarding autistic students' experience and patterns of preference, respectively, question 5 of the survey listed 10 general types of peer feedback and asked participants to rate them. As illustrated in table B1, a majority of autistic participants indicated that the following types of feedback were helpful or very helpful: typed, handwritten, balanced feedback about the writing's strengths and weaknesses, and feedback as a list. As illustrated in table B2, a majority, or close to majority, of autistic participants indicated that they found the following feedback types unhelpful or very unhelpful: feedback as a grade given to them by their peer review partners, feedback based on a grading rubric, and feedback either about their writing's strengths or weaknesses.

Comparing the percentages between both groups for question 5 of the survey, shown in greater detail on table B3, suggests some additional findings. While only the four abovementioned types of peer feedback elicited a majority of positive responses from autistic participants, the comparison group showed a greater preference for all four activities: typed feedback, 76%; handwritten feedback, 87%; balanced feedback, 98%; and feedback as a list, 80%. Further, at least 20% more comparison group participants indicated positive preferences for all but two types of peer feedback: feedback in paragraph form and feedback about only the writer's strengths. Finally, while autistic participants did not respond in majority indicating that peer feedback regarding only their writing's weaknesses was unhelpful and very unhelpful, a 35% greater number than the comparison group indicated negative preferences. That the comparison group, composed of neurotypical students, indicated much stronger preferences for eight types of peer feedback suggests that autistic students may experience peer review activities as less useful or positive experiences than their neurotypical peers.

To answer the second research question regarding autistic participation, question 7 of the survey provided participants with a list of 11 ways people may augment peer review activities and asked them to rate the degree to which they agreed that they contributed. The majority of autistic participants responded that they either agreed or strongly agreed that they contributed to peer review activities in the ways listed on the survey.

The activities listed that elicited the largest numbers of autistic participants consisted of the following, illustrated in table B4: helping partners with grammar and punctuation; helping partners explain their writing in clearer ways; helping partners understand concepts; helping partners ensure that they followed assignment directions; helping partners make more logical connections in their arguments; providing detailed, clear feedback; and most autistic participants believed that they generally gave helpful peer review feedback. The comparison group showed similar numbers overall, except in regard to one way of participating in peer review. 93% of nonautistic participants reported proclivity for helping partners follow assignment directions, as opposed to 73% of autistic participants, but a significantly lower percentage of comparison group participants reported proclivity for helping their partners understand concepts: 80% of the autistic group as opposed to 63% of the neurotypical group.

The activities listed that elicited the smallest numbers of positive responses from autistic participants, illustrated in table B5, consisted of the following: helping partners stay on task; helping partners make citations more accurate according to stylistic guidelines; helping partners improve formatting in writing; and helping partners feel good about their writing. While each group of responses constitutes a statistical majority, they barely exceed it. Responses to these questions were not balanced by large numbers of autistic participants reporting that they felt strong disagreement, but distributed relatively evenly throughout the continuum of Likert-type

options. For example, while 53% of autistic participants indicated that they agreed that they help their partners with citation issues, 10% indicated that they were not sure what such an activity consisted of, 23% indicated that they disagreed or strongly disagreed, and 20% indicated that they neither agreed nor disagreed.

As tables B4 and B5 illustrate, neither group differed to a significant degree regarding the data, suggesting that the autistic and nonautistic students surveyed participate in similar ways. The data therefore suggests that peer review activities designed to include attributes many autistic students exhibit, such as being detail-oriented, intelligent, logical, systematic, and insistence on adhering to correctness and preciseness (about definitions, explanation, ideas, etc.), may enhance peer review experiences for all students.

Survey question 9 helped address the study's second and third research questions regarding autistic students' experience and patterns of preference for peer review, respectively. The survey asked participants to rate certain kinds of peer review activities. Participants were given 21 types of peer review activities to rate. Of those questions, the majority of autistic participants indicated a positive experience, helpful or very helpful, for only five types, as illustrated in table B6: peer review with discussion; peer review activities that take place early in the writing process; peer review with one partner; peer review activities that take place outside of class; and reading their partner's paper silently. Most notable, according to autistic theory, are the autistic students' indicated preferences for activities that take place outside of class, and for small group size. If peer review is removed from a social environment, then it comes as no surprise that someone who finds social environments overstimulating prefers such a context. And because autistic people tend to become more anxious and overstimulated in groups (Wolf, Brown, & Bork 2009, p. 95-96; Harpur, Lawlor, & Fitzgerald 2004, p. 63-64), it is also

unsurprising that participants preferred a smaller group size. While some of the above findings fall in line with expectations set by autism theory, more comparison group participants indicated helpfulness in all of the above types of activities, suggesting as did the data for survey question 5 that neurotypical students show some degree of greater preference for peer review in general. While neither group showed a majority indicating that any one of the 21 types of feedback listed were helpful or unhelpful, in the interest of creating peer review that is helpful for all students, it is worth noting that the types of peer review that garnered the most unhelpful range of responses were peer review with less structure, peer review with more than one partner, and peer review with detailed oral instructions given by instructors, as illustrated in table B6.

While autistic students indicated a preference for peer review outside of the classroom, they did not indicate a discernible preference for any of the three questions involving computer-mediated peer review, with between 19-29% indicating a preference for computer-mediate peer review. However, many responded that they had not participated in such types of peer review, 44-65%, suggesting the need for future research involving computer-mediated peer review and autistic students. Similar percentages of neurotypical participants responded in kind, suggesting that students simply have not been exposed to computer-mediated peer review, or perhaps were not familiar with the terminology used in the survey.

Survey question 11 helped answer the second and third research questions as well: it provided 13 aspects of peer review and asked participants to rate how important or unimportant such aspects were. A majority of autistic participants indicated that all but one feature of peer review were important, groups of 3 or more people, as illustrated by table B7. A correspondingly low percentage of nonautistic participants also rated large group size as important, and nearly 50% of both groups indicated that large group size was unimportant. Of the peer review features

that autistic participants rated as important, based on an autism theoretical framework, it is unsurprising that the highest percentages of responses related to interest level in the assignment; clarity of partner's feedback; distraction-free environment; clarity and thoroughness of the activity directions; and pace at which partner(s) work. People who may experience the sensory world of classroom environments differently, often as overstimulating, people who may interpret social cues and the authorial presence of others differently, find such aspects of peer review that address such contextual elements important. Further, many autistic people tend to find the most motivation in their special interests, so it is also unsurprising that they indicate that interest level in the assignment is important.

Regardless, as with the data for question 7, neurotypical students showed similar preferences for all features of peer review that autistic participants considered important, except for one. Only 57% of autistic participants thought the amount of time to complete peer review was important, while 91% of the neurotypical group indicated its importance. The majority of neither group showed a neutral position regarding such features. Autism theory indicates that autistic students need more time to process information especially in face-to-face contexts (Attwood, 2008, p. 122), so it is somewhat surprising that more autistic participants did not respond in kind. Possibly, autistic participants found the wording of the question ambiguous, or perhaps the notion of time to complete peer review activities is abstract, and in future studies of this kind, the category could be expressed in finer distinctions.

All survey questions were designed to elicit data helping answer the first research question, "how do autistic students experience peer review in college writing classrooms?" The quantitative data suggests that autistic students do not experience peer response activities in a fundamentally different way than neurotypical students, though, according to the data, autistic

students may feel less enthusiastic about the efficacy of peer review activities. However, given that the data regarding autistic students' experiences and preferences is not very distinct from neurotypicals', the data also suggests that creating peer review activities that are inclusive of autistic students may not require many substantive adjustments, though autism theory suggests otherwise. Further, the data also suggests that autistic students, for the most part, do believe they help their peer response partners and help them in similar ways as do neurotypical students and have the ability to augment peer review activities.

## Qualitative Data

While Likert responses do help assess attitudes and therefore perception, participants' responses to open-ended questions augment quantitative data by providing an impression of the attitudes tested cast in participants' own words. As with the quantitative data, there appeared only minor differences between autistic participants and neurotypical participants' responses, the same consistent difference being that neurotypical participants tended to value peer review more than autistic participants.

To address research question two, regarding autistic participation, survey question 8 of the survey asked participants to describe additional ways in which they help their peer review partner(s). Some participants show sensitivity to their peer review partners that, given the stereotypes surrounding people on the autism spectrum, may be surprising. 3 out of 9 participants, for example, wrote that they use strategies that directly or indirectly help their partners accept feedback well, such as 'sandwiching' negative feedback between positive feedback. Another participant responded that he detaches himself emotionally from the situation so he can focus on tasks pertinent to helping his partner. While this may seem unsympathetic, the participant did think that his adherence to logic helped provide more useful feedback for his

partners, showing that he considers his role as peer review partner seriously. Similarly, another participant wrote that he asks his partners to clarify their intentions in their writing. Three commented on strategies that involved repetition, specificity, grammar, and factual issues, unsurprising given the existing theories of autism. Finally, two participants wrote that they found it difficult to contribute to peer review because they felt they were always ignored. According to the framework provided by autism theory and Price (2011), these participants' remarks likely result from their, the participants', social differences. While only nine participants provided usable data for this question, their varied responses do show that autistic students do have varied strategies and attributes that can augment peer review.

In the qualitative data used to help answer research questions regarding how autistic students perceive peer response activities and which kinds they value, some more distinct patterns emerged, thematically. As mentioned in the methods section, I coded responses to open-ended questions according to three different contextual categories that emerge from peer response activities: social, textual, and environmental. Autistic responses to survey question 6, "Are there any other kinds of peer response feedback that you consider especially helpful or unhelpful," involved mostly textual context and social context. The respondents who discussed textual concerns centered their comments mostly on the helpfulness or unhelpfulness of the content of feedback given to them, such as the ineffectiveness of feedback dealing only with superficial errors, or the helpfulness of precise peer feedback. Regarding social context, respondents commented mostly on partners' strategies and the benefit of social exchange for clarifying writing issues.

Question 10 of the survey, "are there other types of peer review activities that helped you," addresses research questions one and three regarding autistic students' peer review

experience and their preference, respectively. Only five autistic participants provided usable responses (the others responded but had either not attended college or had not participated in any peer review activities, thus negating their data for this study) to question 10; of those five, three commented on dynamics of social context regarding comfort level with partners, or a distaste for "peer projects" altogether. One participant wrote "it's important to be comfortable with the peers in question. otherwise [sic], it's too easy to shut out what may be valid observations." This participant's response suggests that comfort level with peers opens up greater avenues to feedback, a value of peer review that is possibly parallel to another participant's response that she preferred working with a friend who provided "ongoing explanations." The other respondent vaguely referred to an in-class recorded conversation, but did not elaborate on why he or she deemed it helpful. As discussed in the paper's conclusion, integrating disability discussion into the classroom community may be a way to address the threat of mentally different students being ignored.

Survey question 12, "are there any other aspects of peer review that you consider important," also addresses the study's first and third research questions. Most autistic participants discussed social context issues in response. While the same respondents that commented on comfort with peers carried over the same concerns, new social context concerns emerged, including peer competence. Textual concerns expressed described "flexible [assignment] topics" so the participant could be able to express his or her voice. Another commented on the importance of clarity and organization in the feedback one gives his or her partner.

Survey question 13, "Please describe your most recent experience with peer review for a writing assignment in a college class," addresses the first and third research questions. Autistic

respondents centered mostly on social context concerns in response to question 13. One respondent explained in detail that she uses a very thorough, structured process in giving feedback to peers because she has had negative experiences in peer review before. The participant described her approach to negative experiences as such: "Because I am aware of how difficult it can be to trust someone else with your writing and how disheartening it can be to get something back with only things that are wrong, I try to point out strengths." Interestingly, this participant appears to approach the issue from an empathic perspective, at least describing her reciprocity, perhaps disrupting some assumptions about autism.

Other autistic participants described peer review activities in which the reciprocal give-and-take of knowledge and skills helped them improve their writing and writing habits. Still others commented on the necessity of trusting peer relationships. Three respondents indicated that they did not find the most recent peer review activity helpful at all, either because they prefer to work alone, or because of poor peer feedback. One respondent commented on environmental context, saying that the amount of background noise prevented him from providing useful feedback for his partner.

Likely due to the fact that peer review is highly social, most autistic participants' open-ended responses involved social context. Below is a list of the themes that emerged from the autistic participants' responses grouped according to concerns and qualities regarding social context:

- Group size
- Participant's understanding of how to implement feedback received
- Reciprocal clarification of feedback
- Peers' level of motivation
- Comfort level with peers
- Interest in assignment/ability to choose topic
- Participant's understanding of role, directions, etc. for peer review activities
- Preference for not working with peers
- Importance of preparation for peer response activities
- Frustration with peers' lack of knowledge or understanding of writing, concepts, etc.

Many neurotypical participants' comments emerged under social context as well, which smacks of some of the research on peer review. For example, Jesnek (2000) discussed peers' levels of understanding of writing, topic knowledge, motivation, and some students' preferences for not working with peers, and Flynn (1984) discussed peers' understanding and motivation as factors that affect how students perceive and value peer review. The data is, again, somewhat inconclusive because there emerged no consistently strong, distinct pattern regarding preferred peer review types or aspects exclusive to autistic participants.

The list below depicts at least a statistical majority of responses from both groups to survey questions 5, 9, 11, and 13, suggesting that they valued the following peer response activity types and features:

- Feedback in list or paragraph form
- Written or audio record of feedback
- Feedback about both strengths and weaknesses
- Peer review activities that occur outside of class
- Peer review with some sort of discussion
- Peer review in which students read their partner's paper silently
- Peer review with only one partner
- Peer review that occurs earlier in the writing process
- Peer review activities that occur outside of class
- Ample time to complete peer review activities
- Being allowed to read partner's paper silently
- A distraction-free environment
- An interest in the assignment
- Smaller groups (1-3 people)
- Clarity of activity directions
- Similar working pace as partner(s)
- Certainty about what to write for feedback
- Clarity of feedback received
- Type of peer review activity
- Peer review activities that occur earlier in the writing process.
- Experience with peer review

As the reader can see, some of the items listed above come to no surprise as activities or features that most students would value in peer review, such as clarity of directions, feeling confident in understanding what to write for partners' feedback, and that peer feedback should be recorded

for later use. Further, it is illuminating that the majority of participants preferred peer review earlier in the writing process, peer review outside of class, and smaller group sizes, showing that peer review activities structured along these lines may be more useful for students. There was no one aspect of peer review or type of activity that drew responses from the majority of both groups regarding its unhelpfulness.

While it is noteworthy that autistic participants commented on issues regarding social context, according to some studies (Flynn, 1984; McAlexander, 2000; Jesnek, 2000), issues with motivation, class personality, concerns with peer knowledge, etc., suggest that such concerns are not exclusive to autistic students. In sum, then, there appear no starkly unique sets of concerns expressed by autistic participants, though two did express vehemently that they found peer review useless (no neurotypical participants commented similarly).

Yet the data shows some degree of ambivalence. While autistic participants valued the above types and aspects of peer response, many kinds of peer review and peer review features drew a comparatively smaller response rate regarding their helpfulness, such as feedback based on a rubric or activities with less structure. Whether this can be attributed to the unique neurology of the participants or to the limitations of the study is not known. Yet it does suggest the need for future research in the area of autism-inclusive peer review, since the pool of autistic participants did indicate a generally less enthusiastic preference for peer review.

# CHAPTER FIVE: DISCUSSION

While the data did provide some insight into the ways autistic students may experience, value, and contribute to peer review, it definitely illustrates the need for further research. As emphasized in the introduction, teaching inclusively is important not because of numbers but because of the lives impacted. The fact remains that autistic students perceive the world in fundamentally different ways, and the best way to help them improve their educational experience in writing classrooms is a constant effort in understanding such students. This study makes an effort to provide relevant data. Below, I discuss some distinctions and interesting overlap between the groups' data to help mediate autistic participants' responses.

The study revealed that the there are two pointed differences in preferences between the groups' data. In response to question 5, autistic students indicated that they find feedback about only their writing's weaknesses or strengths unhelpful, as well as feedback as a grade given by partners. Such a finding does fall in line with autism research claiming that autistic students may be sensitive to criticism (Attwood, 2008). While some of the literature on peer review does center on issues of authorship and student authority (Gere, 1987; Spigelman, 2000), there was little in the data to show that the autistic participants felt authority was being subsumed by their instructor or peer review partner; if anything, the small amount of data that does deal with authorship and negotiated roles indicates autistic participants' preference for instructor or writing center tutors as partners, not class peers. Autistic participants' tendency to reject a form of feedback for which teachers have traditionally been responsible indicates that autistic students may feel that teachers, not peers, can assume such an authoritative role, especially considering the notion that autistic people tend to rely on a rigid method of understanding of social systems in order to navigate them (Baron-Cohen and Wheelright, 2004). Autistic participants' resistance

to unbalanced criticism may suggest that they have been exposed to a great deal of negative criticism throughout their life, as is unfortunately often the case (Attwood 2008, p. 68; Mann, 2011, p. 59). It may also be likely that autistic participants indicated their resistance to criticism; such is a feature of many autistic people (Autism-World, 2007; Attwood, 2008). Either possibility may be true, but the latter can tell us more regarding a general sense of authorship and how it is negotiated in classroom contexts.

Autistic people perceive an influx of disparate information, and construct their realities accordingly, and as such, their sense of reality tends to not be as stable as neurotypicals'. As an assistive strategy, autistic people rely on rigid senses of systems to stabilize reality. Thus, when that sense of reality is threatened, say, through criticism, it can be very unsettling and frightening for the autistic person. Resistance to criticism, therefore, tends to not involve egotism but the fear of threat to the 'authorship' of their reality. Criticism from teachers may be more tolerable to some autistic students because teacher criticism is part of the system that they have accepted, but criticism by peers may, accordingly, be perceived as more of a threat. No doubt my assumption takes in too many complex variables to be entertained as a definite argument; instead, I mean it as a suggestion to be entertained. Since many autistic people do show some resistance to criticism, as Attwood (2008) and the small amount of data from this study suggest, then a helpful pedagogical practice may be to include explicit discussion of the value of peer criticism and shared authority in the curriculum, increasing the available material with which students can share with each other, teaching each other.

In the qualitative data, some minor differences appeared between the groups' data, though the limited amount of data present did not support a wholly unique set of autistic concerns or perceptions. While all participants expressed concerns about various aspects of peer

review, autistic participants focused more on the social context of peer review, notably, the tone of their relationship with partners, and feedback. Autistic participants also expressed the most vehement objections to peer review, though such responses represented a small minority. Such findings are generally supported by the literature on autism.

As mentioned in the previous chapter, autistic participants relayed consistently lower ratings of the helpfulness of peer review activities than did neurotypical participants. Interestingly, no major differences were present in the unhelpful or unimportant ranges, or the neither helpful/unhelpful or neither important/unimportant ranges of responses, to survey questions 5, 9, and 11. Further, while the qualitative data depicts a slightly fuller impression of autistic participants' experience and peer review preferences, most of the data showed no distinct differences. In regard to an overall impression of autistic students' perceptions and preferences based on the quantitative and qualitative data elicited by this study, there appears no dramatic difference between autistic and neurotypical perception, preferences, and ways of participating in peer review. Yet the study gathered no conclusive data in regards to neurotypical students, either, due to the small sample size of the data.

What has been established is that at least some autistic students feel confident enough about their skills and abilities in peer review to interpret some of their abilities, skills, and activities in peer review as ways they help their partners. Directly related to the fourth research question involving the creation and maintenance of inclusive peer review activities, the data provided by autistic participants suggests that autistic students are *not* merely a problem to be addressed, but capable students with both unique abilities and abilities common to neurotypical students, and can participate in and augment peer review activities—if given a chance. It appears

that two participants, however, perceived that they were not given that chance and were often ignored.

One respondent wrote, "I try to help by getting involved in the discussions but when I give my ideas I am simply ignored." The respondent's testimony suggests that she worked in small groups: with more voices in the conversation, it seems that she may have been ignored more readily than, say, interacting with just one partner. Unfortunately, it is common for autistic students to have negative experiences in collaborative work (Wolf, Brown, and Bork, 2008, p. 44). It is worth considering ways in which students can be encouraged away from ignoring each other, but doing so based solely on this study's data is difficult without specific details from the contexts the participants mentioned. Regardless, instructors can help address the issue by providing a framework within which perceived difference in participation is valued. Autism need not be singled out, but included, or better yet, integrated, in a discussion of how silence, "odd" suggestions, or other non-neuronormative ways of participating can be included and valued in other class activities, thus providing a model for peer response. Since most autistic and nonautistic participants indicated that working with fewer peer review partners was more helpful, reducing the number of students in peer review groups may be an inclusive strategy that helps autistic voices be heard.

## Suggestions for Future Research

The study elicited some useful data, leading to some useful, if not dramatic, conclusions. While the data suggests that autistic students have less of a preference for peer review than their neurotypical peers, as well as some specific preferences, the data leads only to preliminary impressions, as it was intended to do. As such, there exists much room for future research in the area of autistic students and peer review activities for writing assignments. Below is a list of

specific research directions emerging from my interaction with the data, followed by discussions of more general areas of inquiry that would benefit from research.

First, the study's scope itself provides a framework for future research. As mentioned in the limitations section below, testing a specific aspect of peer review, such as types of feedback, may be not only more helpful in reducing sensory overload for autistic participants, but may provide participants with the opportunity to provide more focused and possibly richer responses to such things as open-ended questions.

Second, a survey reaching an even greater number of autistic participants may enable us to generalize data to a greater degree. Generalizable data may enable us to deepen our critical engagement with contexts defined and maintained by neuronormative conventions. And while the survey method was the most appropriate method for this study, future studies that seek to yield richer data, especially those concerning broader and deeper contexts such as ways of autistic participation in academic contexts, could benefit from different research methods.

Third, interviews may garner richer qualitative data because such methods have the potential to provide more detailed data (Cresswell, 2009). One specific method of interviewing that seems appropriate both in terms of a less stimulating context and protecting a vulnerable population may be something such as interviewing autistic participants via synchronous electronic communication, such as instant messaging via Facebook or other social media websites. For example, researchers may send an email to a university listserv or post a message to a Facebook group containing instructions by which potential autistic participants would create a fake, anonymous Facebook account with which the participants would then initiate contact with the researchers. The researcher may thus interview participants via a less stimulating interface than in-person communication, with the participants able to cease communication at

any time. While my suggestion is elaborate and may prove impractical, it does exemplify the need for creativity in research methods for such a population.

As mentioned in the methods section, during the course of collecting data for this study, it became apparent that accessing autistic survey participants may be difficult to access via social media websites such as Facebook Asperger's and autism groups, due to an inundation of research requests. The concern still remains, however, that autistic students may be considered a vulnerable population, as they were for Wyatt's (2010) dissertation study. Specifically, Wyatt intended to conduct face-to-face interviews in order to access richer data, but due to the University of Minnesota's IRB decision, was forced to employ a survey instead. Therefore, based on Wyatt's study and this study, two factors affect accessing autistic participants: that they may be determined a vulnerable population and that they are susceptible to sensory overload from face-to-face interaction and electronic interfaces.

Accessing vulnerable populations does pose some difficulty, especially when that population has been inundated with requests to participate in research. Negotiating with a population's gatekeepers is a complex process, since gatekeepers have an ethical duty to protect members from discomfort and harm, but some may be "paternalistic and tokenistic, preventing participants from speaking for themselves or exercising agency in their own right" (Walker and Read, 2011, p. 18). While I hesitate to accuse any of the gatekeepers with whom I communicated of being tokenistic or paternalistic, the fact remains that I had very limited access to participants who stand to benefit from fuller efforts at inclusive pedagogy. However, one gatekeeper who denied access to a large Asperger's Facebook group due to inundation of research requests, did give permission for me to access similar yet smaller groups of which he was also an

administrator. Therefore, compromise regarding sample size may be efficacious in future research situations.

The problem of autistic participants' vulnerability to sensory overload remains. One immediate suggestion, considering the scope of peer review research conducted via survey, comes to mind: testing isolated sets of peer review qualities, feedback, ways in which students participate, etc. It remains important to provide autistic participants with something concrete and specific, but a survey with too many items with which participants try to interact via an electronic interface may be excessive, but a survey with, for example, 10 items may be something with which participants find much easier to interact. Further, future research contexts may necessitate methods that elicit richer data, such as case studies, ethnographies, or interviews. Brownlow (2010) found rich data by accessing online discussion forums managed by and featuring autistic adults. But for something such as peer review, or for that matter, anything involving composition classrooms, preexisting discussion forums are impractical.

Fourth, regarding case studies, because autistic students are under no obligation to disclose their diagnoses—and may not be aware that they are on the autism spectrum, composition instructors have a very restricted pool from which to access students for case studies, though some instructors have conducted case studies with their own autistic students, such as Wills (2011), Freeman (2011), and McClinton-Temple (2011), contributors to Gerstle and Walsh's (2011) anthology, *Autism spectrum disorders in the college composition classroom.* However, none of the contributors appeared to have conducted IRB approved research; their articles, while imminently helpful due to the dearth of composition literature involving autistic students, convey the appearance of detailed anecdotes. One such method may be to gather students' feedback regarding peer review over the course of a semester. However, participant

accessibility and their possibly being determined a vulnerable population may make case studies problematic.

Autistic students represent one node of a neurodiverse population with which we engage in our diurnal classroom activities. However much this study may have achieved in etching away at the gap between the realities our autistic students experience and our understanding of them, some additional questions emerged. If autistic students experience social contexts so differently, then what ways can we critically engage with current collaborative pedagogies and collaborative writing activities? Further, if autistic people tend to find the synchronicity of face-to-face communication necessary yet the context potentially overstimulating, in what ways could we implement technological interventions to ameliorate such contexts? After looking at the data, I wonder at what our autistic students' experiences must be like. What we know about autism and autistic people strongly suggests that anything involving socialization immerses autistic people in a sensory-laden context that is often difficult to navigate. Moreover, because of vastly different interpretational frameworks autistic students have as a result of their perceptual differences, how can we begin to discover common ways of understanding the social contexts of college classrooms in order to better see autistic perspectives not as alien, but those that require a different approach? Surely, we do not imagine ourselves as being unable to understand autistic students' ways of seeing the world, and we do not see ourselves as educators who think their students are irrevocably mysterious. Yet the generalness of the question and the slippery tenuousness of any immediate answer speak to the need to ask ourselves continually: are we assuming too much on behalf of those that are neurologically different than us?

### Autistic Students' Ways of Participating

In previous sections and in the conclusion section below, I have discussed the need for critically engaging with neuronormative assumptions of classroom participation, based mostly on Price's (2011) critiques of such assumptions. Extending such critical engagement can therefore benefit not only autistic students but any group of students whose mental difference(s) do not conform to neuronormative modes of discourse. Perhaps the revision of approach mentioned in the results and analysis section, that I opted for a more general framework with which to interpret the data regarding how autistic students augment peer review, indicates the need for us to return to and examine some of the basic tenets of classroom participation. I imagine that at some point in that conversation, we will be better equipped to approach understanding what autistic participants mean when they write that they believe they help their peer review partners in certain ways, for example. Until that time, however, theory and data regarding students with mental differences does suggest the possibility for quite a large area of inquiry.

### Autism, Gender, and Peer Response

Another question that emerged from the literature—or lack of—regards the intersection between peer review, gender, and autism. While the ratio of female to male autistic participants for this study was roughly 3:1, no major or consistent differences exist in the data regarding gender. Issues regarding gender were not central to the research questions, but the research on autism and gender does point to the need for studies of autism, gender, and peer review. Attwood (2006; 2008) explained that many girls with Asperger Syndrome have been socialized differently and to greater degrees than autistic boys, because social expectations of girls are different than boys. Girls, explained Attwood, are thus more likely to display what are deemed 'normal'

behaviors, and thus display less noticeable 'autistic behaviors,' since autism spectrum disorder is a rhetorical construct created by observing social behavior (Jurecic 2006). By extension, autistic girls' social skills are likely to carry over into adulthood. Lai et al's (2011) study suggested that autistic women outwardly display fewer autistic features than autistic men but "perceive" more features, possibly because autistic women are adept at "masking" their autism (p. 6-7). Further, autist and autism advocate Simone (2010) related many characteristics common to many autistic women, such as greater willingness to discuss emotion than autistic men and greater interests in imaginative literature (p. 230-231).

Despite the (paucity of) research showing gender differences may be apparent in autistic students, this study's data does not show a strong difference in autism gender and perceptions of and participation in peer review. While the gender differences suggested by the literature are clearly not the case in every female autistic student, that these participants chose to discuss socially oriented ways of helping in peer review may account for the largely positive responses participants gave regarding the elements of peer review that were social. However, some of the participants' responses illustrate the need to be wary of generalizations: two of the most negative responses regarding peer review were written by female participants: "When a peer dislikes me, they always give me an F and say it's complete shit. I shouldn't have to suffer for someone else's personal issues," and "I hated it. It was not useful." The negativity of these responses suggests that a greater tendency toward socialization in autistic women does not automatically assume a more positive experience in social activities.

Because autism and gender has not been researched extensively in the psychology and neurology disciplines suggests that female autistic students may show uniqueness of experience to an even greater degree than male autistic students, and participate in peer review in ways that

the extant autism research does not help frame. While the research on autism and gender appears to be presently scant, turning to some of the literature on peer response and gender may help instructors frame approaches to understanding female autistic students and facilitating participation.

There has been some research conducted on peer review and gender regarding nonautistic students. Tomlinson's (2009) study suggested that gender often plays a role in the formation of and operations within peer response groups, supporting Roskelly's (2003) conclusions. Peer groups of mostly female students tend to be oriented toward cooperation and mostly male groups orient themselves to the task at hand. Further, gender-homogenous groups reported more success while groups of a more balanced gender mix reported less involvement, affecting both oral and written feedback. While the current study elicited no data revealing gender ratios in peer response groups, Tomlinson's study does point to the notion that peer response groups, when mostly female or male, operate according to the way females and males are socialized, respectively. Considering the research on peer review and gender and autism and gender, to better understand and thus help facilitate female autistic students' participation in peer review, more research into peer review, gender, and autism is needed.

**Autism and Computer-Mediated Peer Review**

While the extant research on facilitating social interaction in autistic children does suggest that computer-mediated peer response may be helpful for autistic college students, many of the participants in this study indicated that they had not been exposed to such a medium of peer review activities. Therefore, future studies of autistic students and peer response may benefit inclusion by focusing on computer-mediated response in comparison with face-to-face response.

**Limitations**

The study, while discovering data that shows some useful distinctions between the participants' experiences and ways of participation, by necessity remained general. This study is the first study to address concerns pertaining to autistic students and peer review in college writing classrooms, but the data elicited comes from a variety of different writing situations from participants who possibly live in different countries. The specific pedagogies, institutional contexts and classroom contexts, cultural attitudes toward disability that informed those contexts (if in different countries), have not been isolated. Future studies would do well to narrow the focus of context to show even clearer connections between participants' responses and those contexts.

I also have a concern that the survey perhaps provided too much information for participants to process. While autistic people tend to have a remarkable ability to focus on vast amounts of information, if they lack the intrinsic motivation or experience difficulty with Executive Functions (such as short-term memory), a survey composed of a combination of nearly 60 questions and Likert items may prove daunting; the fact that so few autistic participants completed the survey attests to my suspicion. In short, despite my initial efforts, the survey I created may not have been very autism-friendly.

With such limitations bearing importance on the data and the pedagogical concerns to which it speaks, the need for future research in autism and peer review activities—and many other activities involved with collaboration and writing—in college classrooms becomes that much more important.

## Recommendations for Implementing Inclusive Peer Review

Inclusive peer review activities are those peer review activities designed and executed according to Universal Design (described in greater detail in the conclusion section below), which refer to ways in which classroom activities can be designed and executed so they facilitate the learning of all types of students. With the data given, we can therefore infer some preliminary ways in which we can create peer review activities inclusive of our autistic students.

First, I suggest a general suggestion regarding training educators to prepare inlusive peer review activities. In preparation for teaching autistic students, educators might best be trained in attending to ways of autistic participation by attempts to understand autistic discourse. Much easier said than done, making the preliminary effort to simultaneously revise our understanding of neuronormative discourse remains essential. In the form of training, one might begin by examining autistic discourse, gleaning insight from the voices of autistic people in published anthologies such as Prince-Hughes (2002) or the many blogs written by autistic adults. Such insight may help frame ways of understanding autistic discourse as that which can challenge our assumptions regarding collaboration, social reciprocity, how we value certain forms of participation, how we understand resistance, and how our pedagogical practices may be experienced in vastly different ways than we anticipate.

Second, based on the data for this study, some qualities of peer review activities emerged that both autistic and neurotypical participants considered helpful. Beginning with activity design, structured activities with clear, detailed directions that help students understand what kind of feedback to offer each may help students better navigate the sometimes problematic activity, providing clearer, more useful feedback for their classmates. Perhaps grouping students who share mutual interest may also be helpful to increase autistic students' motivation (and that

of all students, for that matter). Peer review that occurs earlier, rather than later, in the writing process, may also be helpful, perhaps because students prefer initial feedback from peers and feedback regarding a more complete draft from the person who will be grading it. In terms of types of peer review activities preferred, even many autistic students indicated that peer review that occurs in class is helpful, because, as pointed out in some of the autistic group's qualitative data, the synchronous communication face-to-face contexts allow helps in clarifying feedback. Since participants also indicated that peer review outside of class is helpful, perhaps conducting peer review as beginning in class with time for students to finish at home would be inclusive of students who process at a different rate than others in class.

Depending on one's approach to peer review, the above suggestions may require little to much adaptation. Each autistic student interacts with his or her academic environment in a different way; each teacher has at least a slightly different variation on composition pedagogy. The one strategy that can help us work toward an inclusive pedagogy is to maintain a reciprocal dialogue with all of our students. While we cannot single out autistic students, keeping an active dialogue with our students enables us to listen to their neurodiverse voices nonetheless.

## Conclusion: Working toward Inclusive Pedagogy

Working toward inclusive pedagogy involves the development of teaching strategies that facilitate the learning of all types of learners. Similarly, what one might term 'inclusive methodology' or 'autism-friendly' research methodology should generate methods and instruments that enable participants to engage with the instruments in the least stressful way possible. However, it appears that the instruments for my study were somewhat inaccessible: of the 92 participants that began the survey indicating that they had autism spectrum disorder, only 29 completed all Likert scale questions, as compared to 44/92 comparison group participants

who completed the survey—22 versus 48 percent, respectively. While both groups apparently experienced some difficulty with the survey, the pronounced number of autistic participants that did not complete the survey is troubling. That the survey may have not been as usable for the very participants it was intended to study smacks of my own assumptions regarding the construction of texts. If the survey design contributes to visual sensory overload, then participants' inability to complete the survey does not show error on their part. Neuronormative assumptions regard autistic difference as deficient, disabled, erroneous. Rose (1985) discussed student error, or more generally paraphrased as differences between students' writing and the writing of academic disciplines perceived by teachers, under a medical, remediation model. The appeal of 'fixing' writing, he surmised, that influenced the notion of remediation was that students' errors could be quantified and thus contained (p. 595). Such quantification is, according to Rose, language entrapment. Further, the language of remediation reveals that remedial writers are "*suffering* from specifiable, locatable defects, deficits, and *handicaps* that can be localized, circumscribed, and remedied…[revealing] an atomistic, mechanistic-medical model of language" [italics mine] (p. 596). The medical model of remediation, by virtue of its serving to address error as a temporary phenomenon, contradicts what Rose describes both as the fundamental conception of writing and pedagogy of the university writing discipline, that writing should be conceived and taught as a dynamic, historically situated act that writers develop over a lifetime.

The "myth of transience"—what Rose explained as the overarching act of isolating, locating and error 'solving' impulse— dislocates teachers and students from full participation in the act of writing. He therefore advocated a pedagogical model suited to the task of helping integrate writers and their errors into not only the academic discourse community but writing throughout their lives as well: "the model we advance must honor the cognitive and emotional

and situational dimensions of language, be psycholinguistic as well as literary and rhetorical in its focus, and aid us in understanding what we can observe as well as what we can only infer" (p. 600). While Rose grounded his argument in concerns about textual differences, this research project concerned parallel perceptions regarding possible "errors" in students' social behavior in the context of how nonautistic teachers and students assume ways of participating and experiencing peer review.

The final research question, how can instructors create inclusive peer response activities for all students, has been addressed by the data as a whole. As mentioned above, there are several types and qualities of peer review that the majority of autistic and neurotypical participants deemed important. Autistic students, I have iterated and reiterated, do not comprise a problem. The problem is that the system in which we teach was designed by and for neurotypicals. In 1985, Mike Rose asked his audience of composition scholars to critically engage with assumptions that errors in writing necessitated remediation of what amounted to 'otherness' in discourse. Interestingly, he turned to an examination of medical-remedial language and its authority as appearing objective and scientific (p. 595). While there is no one feature of autistic discourse (though, as Grandin (2013) illustrates, common features such as incoherence may appear), autistic students do represent the neurological 'other.' From birth to death, they experience the world, especially the social world, in fundamentally different ways than neurotypicals. Considering Price's (2011) argument regarding academic contexts, to engage with the issue of pedagogical systems and environments that are based on neuronormative conventions, we must critically question our own notions of participation regarding others and their texts, the construction of peer review activities in *kairotic space*, and our engagement with all students, seeking their feedback. What we should avoid, as Liewecki-Wilson, Dolmage,

Heilker, and Jurecic (2008) point out, is diagnose our students as having this or that disorder, because students embody and experience complex "dynamic intersections" of not only neurological states of being but religion, sexuality, ethnicity, nationality, class, etc (p. 320). Criticizing Jurecic's remedial assumptions in her (2007) article, "Neurodiversity," the authors state that classrooms be designed to accommodate "many kinds of differently embodied learners" (p. 317). Universal Instructional Design, described below, offers a rubric with which teachers can begin to modify classroom contexts to facilitate the needs of all learners.

Universal Instructional Design (UID) "encourage[es] teachers to adjust their teaching strategies, where possible, to the learning styles, interests, and abilities not just of students with disabilities, but of every student" (McAlexander 2003, p. 108). Price (2011), while not working under the auspices of UID, advanced a set of guidelines in order to facilitate mentally different students' participation in academic *kairotic space*, acknowledging that feasibility is important to bear in mind when approaching modifications of classroom context. She first suggested including explicit policies regarding dis/ability in the course syllabus, extending the conversation into classroom discourse, explicitly discussing ways of participating, in order to build a framework for mentally different and mentally 'normal' students to better understand each other as capable classroom agents. Pertaining to peer review, an instructor may, for example, build up a framework thusly, using it to build a discussion around ways students may help each other more efficiently and effectively engage in peer review.

In accord with McAlexander's (2003) suggestions, Price suggested enabling different and "multiple channels" of feedback for students, increasing the availability of feedback media and types for different learners (p. 95-98). Similarly, McAlexander (2003) suggested employing teaching strategies that "appeal to various learning styles" (p. 110). Under the UID rubric the

authors provided, it appears that flexible approaches peer review activities, such as including different mediums and feedback types with which students engage, might be helpful for all students.

Autism may or may not be the defining element in an autistic student's life: each student determines the role of autism in his or her life differently. However, as well as critically engaging with the narratives of autistic people, autism theory provides some basis of understanding the experiences of autistic students, insomuch as it complements autistics' narratives and gives us, as composition instructors, a more general framework with which to approach experience and participation that comes from neurological difference. As the data for this study illustrates, autistic students do, in some ways, experience peer review differently than nonautistic students and therefore would benefit from pedagogical interventions designed toward autistic inclusion. The data also revealed that autistic students participate in and value peer review in similar ways as nonautistic students, suggesting that at least some autistic students are more than capable of and willing to work with complex and possibly problematic social activities such as peer review. Given the increased opportunities inclusive peer review stands to offer autistic as well as all students, we may be able to further facilitate autistic college students' success at least in our classrooms.

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APPENDIX A. THE INSTRUMENT

**Survey**

Note: Likert scale items were not numbered in the survey; they are numbered here for the reader's sake.

Question 1: Do you have an Autism Spectrum Disorder?

Question 2: This survey requires participants to be at least 18 years old. Are you at least 18 years old prior to completing this survey?

Question 3: What is your gender?

- Male
- Female

Question 4: What is the highest level of education you have completed?

- Graduated from high school or equivalent
- 1 year of college
- 2 years of college
- 3 years of college
- 4 or more years of college
- Some graduate school
- Completed graduate school

Question 5: As someone who has received peer feedback for writing assignments, how helpful were the following kinds of feedback you have received in the past?

| | I have not been given this kind of feedback. | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|
| 5a. Typed feedback | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5b. Handwritten feedback | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5c. Feedback about only my writing's strengths | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5d. Feedback about only my writing's weaknesses | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I have not been given this kind of feedback. | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|
| 5e. Feedback about both my writing's strengths and weaknesses | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5f. Feedback in paragraph form | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5j. Feedback as a list | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5k. Feedback based on a grading rubric | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5l. Feedback based on a worksheet | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 5m. Feedback as a grade my partner(s) give me | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Question 6: Are there any other kinds of peer response feedback that you consider especially helpful or unhelpful? Please explain.

Question 7: As someone responding to your partner(s)' writing assignments, in what way(s) have you helped your partner(s)?

| | I am not sure what this is | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 7a. I help my partner(s) stay on task | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7b. I help my partner(s) to make sure his or her paper follows the assignment directions | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7c. I help my partner(s) make more logical connections in his or her writing | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7d. I help my partner(s) improve his or her grammar, punctuation, and/or spelling | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I am not sure what this is | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| 7e. I help my partner(s) make his or her paper's citations more accurate according to stylistic guidelines (such as APA, MLA, Chicago, etc.) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7f. I help my partner(s) explain ideas in his or her writing in a clearer way | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7g. I help my partner(s) improve formatting in his or her writing | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7h. I help my partner(s) by explaining concepts to him or her that he or she may not understand | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7i. I help my partner(s) feel better about his or her writing | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7j. I write detailed and clear feedback for my partner | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 7k. The feedback I give my peer review partners is generally helpful | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Question 8: I help my peer review partner(s) in these additional way(s):

Question 9: As someone who has received peer feedback, how helpful do you think the following types of peer review were for your writing?

| | I did not participate in this kind of peer review. | I do not know how helpful this activity was | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|---|
| 9a. Peer review activities that take place during class time | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9b. Peer review activities that take place outside of class | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9c. Peer review with discussion | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9d. Peer review without discussion | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9e. Meeting with peer review partner(s) face-to-face | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9f. Computer mediated: Using the Internet or computer programs such as PeerScholar, Eli Review, etc., to review each other's assignments | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I did not participate in this kind of peer review. | I do not know how helpful this activity was | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|---|
| 9g. Using Google Drive to edit and revise each other's writing assignment | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9h. A mixture of computer-mediated and face-to-face peer review | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9i. Practicing or rehearsing peer review concepts and strategies in classes leading up to the actual peer review activity | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9j. Peer review based on detailed written instructions such as worksheets. | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9k. Oral detailed structure: the instructor provides detailed oral instructions | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I did not participate in this kind of peer review. | I do not know how helpful this activity was | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|---|
| 9l. Less structure: you and your partner(s) decide what to review in each other's writing assignments | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9m. Graded | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9n. Ungraded | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9o. Reading the paper silently | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9p. Reading the paper aloud | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9q. With one partner | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9r. With more than one partner | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9s. Early peer review activities that take place further from the assignment's due date | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 9t. Peer review activities that take place later in the assignment process, closer to the due date | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I did not participate in this kind of peer review. | I do not know how helpful this activity was | Very unhelpful | Unhelpful | Neither helpful or unhelpful | Helpful | Very helpful |
|---|---|---|---|---|---|---|---|
| 9u. Multiple peer review activities throughout the assignment process | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Question 10: Are there other type(s) of peer review activities that helped you? Please explain.

Question 11: As someone who has received peer feedback, please indicate how important the following general qualities of peer review are in your ability to be successful with a writing assignment.

| | I'm not sure what this is | Very unimportant | Somewhat unimportant | Neutral: Neither important nor unimportant | Somewhat important | Very important |
|---|---|---|---|---|---|---|
| 11a. Amount of time to complete peer review activity | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11b. An environment that is free of distractions and stimuli such as background noise, fluorescent lighting, etc. | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11c. My level of interest in the assignment | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11d. Small groups (1-3 people) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11e. Large groups (3 or more people) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

| | I'm not sure what this is | Very unimportant | Somewhat unimportant | Neutral: Neither important nor unimportant | Somewhat important | Very important |
|---|---|---|---|---|---|---|
| 11f. Clarity and thoroughness of activity directions | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11g. Pace at which my partner(s) work | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11h. Clarity of my partner(s)' feedback | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11i. Promptness of my partner(s)'s response(s) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11j. My certainty about what feedback to write for my partner(s) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11k. Type of peer review activity | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11l. Timing of peer review activity (early or late in the assignment, for example) | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |
| 11m . Number of times I have done the peer review activity before | ❍ | ❍ | ❍ | ❍ | ❍ | ❍ |

Question 12: Are there any other aspects of peer review that you consider important?

Question 13: Please describe your most recent experience with peer review for a writing assignment in a college class. Did you feel it was useful? Or did you think it was not as useful as it could have been? Please explain.

# APPENDIX B. TABLES

Table B1

*Largest Number of Autistic Participants' Responses Indicating Helpfulness of Peer Review Feedback Types in Response to Survey Question 5*

| Likert scale questions: | Experimental Group N=32 | | |
|---|---|---|---|
| | **Helpful** | Unhelpful | Neutral |
| 5e. Feedback about both my writing's strengths and weaknesses | **72%** | 22% | 12% |
| 5f. Feedback in paragraph form | **59%** | 28% | 9% |
| 5b. Handwritten feedback | **53%** | 25% | 16% |
| 5g. Feedback as a list | **53%** | 28% | 6% |
| 5a. Typed feedback | **50%** | 6% | 6% |

Table B2

*Strongest Autistic Responses Regarding Unhelpfulness of Peer Review Feedback Types in Response to Survey Question 5*

| Likert scale questions: | Experimental Group N=32 | | |
|---|---|---|---|
| | **Unhelpful** | Helpful | Neutral |
| 5j. Feedback as a grade my partner(s) give me | **56%** | 9% | 6% |
| 5 h. Feedback based on a grading rubric | **50%** | 3% | 16% |
| 5c. Feedback about only my writing's strengths | **50%** | 44% | 16% |
| 5d. Feedback about only my writing's weaknesses | **44%** | 37% | 12% |

Table B3

*Largest Numbers of Agreement to Responses to Survey Question 7*

| Likert questions: | Experimental N=30 | | |
|---|---|---|---|
| | **Agree** | Disagree | Neutral |
| 7d. I help my partner(s) improve his or her grammar, punctuation, and/or spelling | **83%** | 3% | 10% |
| 7f. I help my partner(s) explain his or her writing in a clearer way | **80%** | 7% | 10% |
| 7h. I help my partner(s) by explaining concepts to him or her that he or she may not understand | **80%** | 13% | 3% |
| 7k. The feedback I give my peer review partners is generally helpful | **80%** | 7% | 10% |
| 7c. I help my partner(s) make more logical connections in his or her writing | **77%** | 3% | 13% |
| 7b. I help my partner(s) to make sure his or her paper follows the assignment directions | **73%** | 17% | 3% |
| 7j. I write detailed and clear feedback for my partner | **70%** | 7% | 20% |

Table B4

*Smaller Numbers of Autistic Participants' Agreement to Responses to Survey Question 7*

| Likert questions: | Experimental N=30 | | |
|---|---|---|---|
| | **Agree** | Disagree | Neutral |
| 7e. I help my partner(s) make his or her citations more accurate according to stylistic guidelines (such as APA, MLA, Chicago, etc.) | 53% | 23% | 17% |
| 7i. I help my partner(s) feel better about his or her writing | 57% | 10% | 27% |
| 7a. I help my partner(s) stay on task | 60% | 23% | 10% |
| 7g. I help my partner(s) improve formatting in his or her writing | 63% | 13% | 6% |

Table B5

*Largest Number of Autistic Participants' Responses Regarding Helpfulness of Peer Review Activities in Response to Survey Question 9*

| Likert scale questions | Experimental group N=31 (* N=30, ** N=29) | | |
|---|---|---|---|
| | **Helpful** | Unhelpful | Neutral |
| 9c. Peer review with discussion | **64%** | 38% | 3% |
| 9s. Early peer review that takes place further from the assignment's due date | **55%** | 10% | 3% |
| 9q. With one partner | **53%*** | 10% | 13% |
| 9b. Peer review activities that take place outside of class | **52%** | 16% | 3% |
| 9o. Reading the paper silently | **50 %*** | 7% | 19% |

Table B6

*Peer Review Aspects Rated as Least Helpful by Autistic Participants in Response to Question 9*

| Likert scale questions: | Experimental group N=31 (* N=30, ** N=29) | | |
|---|---|---|---|
| | Unhelpful | Helpful | Neutral |
| 9l. Less structure: you and your partner(s) decide what to review in each other's writing assignments | **42%** | 19% | 10% |
| 9r. With more than one partner | **37%*** | 23%* | 10% |
| 9k. Oral detailed structure: the instructor provides detailed oral instructions | **32%** | 32% | 13% |
| 9d. Peer review without discussion | **29%** | 26% | 19% |
| 9p. Reading the paper aloud | **28%**** | 24%* | 13% |

Table B7

*Largest Number of Autistic Participants' Responses Regarding Importance of Peer Review Activities in Response to Survey Question 11*

| Likert scale questions: | Experimental group responses N=30 (* denotes N=29) | | |
|---|---|---|---|
| | **Important** | Unimportant | Neutral |
| 11c. My level of interest in the assignment | **87%** | 0% | 7% |
| 11h. Clarity of my partner(s)' feedback | **87%** | 3% | 3% |
| 11b. An environment that is free of distractions and stimuli such as background noise, fluorescent lighting, etc | **83%** | 3% | 7% |
| 11f. Clarity and thoroughness of activity directions | **83%** | 3% | 7% |
| 11g. Pace at which my partner(s) work | **79%*** | 3%* | 10% |
| 11k. Type of peer review activity | **77%** | 3% | 10% |
| 11i. Promptness of my partner(s)' responses | **73%** | 3% | 17% |
| 11j. My certainty about what feedback to write for my partners | **73%** | 7% | 10% |