DO EPISTEMOLOGICAL BELIEFS AND WAYS OF KNOWING PREDICT REACTIONS TO A CHILD WITH ASPERGER SYNDROME?

A Thesis By
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DO EPISTEMOLOGICAL BELIEFS AND WAYS OF KNOWING PREDICT REACTIONS TO A CHILD WITH ASPERGER SYNDROME?

The following faculty members have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Education with a major in Educational Psychology.

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ABSTRACT

This study explored the relationship between epistemological beliefs, ways of knowing, parenting styles, and how one reacts to a child with Asperger Syndrome acting out in public. The purpose was to determine whether or not epistemological beliefs, ways of knowing, and parenting style could be used to predict how an individual would respond in such a situation. The epistemological beliefs looked at were certain knowledge and omniscient authority. Ways of knowing were classified as connected knowing and separate knowing. Parenting styles were categorized as authoritarian, authoritative, and permissive. Two hundred and nine college students between the ages of 19 and 55 participated in the study, coming from both a medium-sized metropolitan university in the Midwest and a medium-sized university on the west coast. The participants completed the Epistemic Beliefs Inventory questions pertaining to certain knowledge and omniscient authority (Schraw, Bendixen, & Dunkle, 2002), the Attitudes Toward Thinking and Learning Survey (Galotti, Clinchy, Ainsworth, Lavin, & Mansfield, 1999), the Parental Authority Questionnaire – Revised (Reitman, Rhode, Hupp, & Altobello, 2002), demographic questions, and responded to a scenario involving a child with Asperger Syndrome. People who gave appropriate advice had higher scores in connected knowing than people who gave inappropriate advice, suggesting that higher levels of connected knowing lead to more appropriate reactions to such situations. An ancillary analysis revealed that authoritative parenting, separate knowing, and certain knowledge are related to connected knowing. Future research is suggested to explore those relationships.
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CHAPTER 1
INTRODUCTION

Rationale

Epistemological beliefs, which are those beliefs an individual holds about the nature of knowledge and the source of knowledge, have been demonstrated to have an impact on many aspects of a person’s life. In epistemological beliefs research, it has been shown that there is a progression from a certainty of knowledge and the primary knowledge source being authority figures, to a recognition of uncertainty and knowledge as a construction, to the use of evidence and reason in making judgments and re-evaluating those judgments (King & Kitchener, 2004; Perry, 1968).

The Epistemological Belief System theory has been an important piece of the research into epistemological beliefs since its introduction in the late 1980s (Schommer, 1990, 1994; Schommer-Aikins, 2004). She described a set of continuums or frequency distributions of knowledge and learning characteristics, including source of knowledge, structure of knowledge, and stability of knowledge, ability to learn, speed of learning. A progression along each of these belief structures represents movement from a naïve belief to a more sophisticated one.

Belenky’s research, starting from Perry’s original work on epistemological beliefs, was a longitudinal study of women that resulted in a description of a progression of five perspectives that women exhibit. One of the perspectives, procedural knowing, was characterized by the idea that knowledge is not black and white, but that truth requires observation and analysis. Her perspectives were termed ways of knowing. Within the procedural perspective, two forms of ways of knowing were identified. These orientations were termed separate knowing and
connected knowing to reflect the relationship between the knower and the object or subject of knowing (Belenky et al., 1968).

Schommer-Aikins and Easter (2006) studied the relationship between epistemological beliefs and ways of knowing as put forth by Belenky et al. Their analysis demonstrated that stronger beliefs in separate or connected knowing correlated to stronger beliefs that learning takes time and that learning is a constructive process. Their study also demonstrated that epistemological beliefs can be a predictor of academic performance; those with stronger beliefs that knowledge is certain are less likely to think deeply and are more likely to misinterpret tentative information.

Studies have also shown a relationship between epistemological beliefs and parenting style. Baumrind (1967, 1971) defined parenting style in terms of parental control patterns and defined control as the parents’ use of demanding behavioral compliance as a method to integrate the child into the family and society. She defined three styles of parenting: authoritarian, authoritative, and permissive. Authoritative parents controlled in a nurturing manner, with clear communication; authoritarian parents controlled with little nurturing and unclear communication; and permissive parents were less controlling, with lower levels of nurturing and clarity of communication. Ricco and Rodriguez (2006) showed that in general the higher level epistemological beliefs including a complex view of learning and a constructivist belief of learning, were exclusively associated with an authoritative parenting style. Bond and Burns (2006) also showed that an increase in complex epistemological beliefs led to more authoritative parenting strategies. Such parents were more likely to consider the context in which a child’s behavior occurs and take that into consideration for their response.
Asperger Syndrome (AS) is a pervasive developmental disorder on the autism spectrum (American Psychiatric Association, 2000). The primary deficits in AS are the lack of social skills, difficulties with pragmatics in language, and fixation on topics of special interest. Executive functioning deficits such as in inhibition of responses are also seen (Atwood, 2007). AS is a disability of particular concern in schools due to its rising rate of occurrence and the impact that its particular deficits have in the school setting. The Centers for Disease Control and Prevention declared in 2007 that the prevalence of autism in the United States had risen to one in 150, and in boys to almost one in 94. In high-stress or highly demanding social situations, such as in school, AS students may behave in inappropriate ways, which can lead to a highly negative perception and treatment of them.

Research has been conducted on how people perceive those with disabilities and on how they react to them (Brady & Woolfson, 2008; Campbell, 2007; Chambres, Auxiette, Vansingle & Gil, 2008; Gus, 2000; Jastrowski, Berlin, Sato & Davies, 2007; Swaim & Morgan, 2001). The research on people with so-called invisible disabilities, particularly those that cause behavioral problems with no apparent cause, has focused primarily on Attention Deficit Disorder and been concerned with whether a revelation of the disorder would cause others to view the person more favorably. There has been only one study involving people with AS (Chambres et al., 2008), and there has not been an attempt to relate the reactions to the epistemological beliefs held by the observer.

**Purpose**

The purpose of this study was to explore the relationships among epistemological beliefs, ways of knowing, and a person’s response to a child with AS behaving inappropriately in a public situation. Parenting styles are related to both epistemological beliefs and ways of knowing
and thus may also have an impact on the reaction that should be accounted for. An association between these beliefs and the response may indicate a predictive ability to determine those who might respond best to AS children and thus be best suited to work with them in the educational system.

**Overview**

This study involves an investigation of the theory and research into epistemological beliefs and ways of knowing and how they are related to each other and to parenting styles. Chapter two first discusses how people with disabilities, particularly non-physical disabilities such as AS, are perceived by society and whether or not knowledge of the disability impacts how someone reacts to a person with it. The primary question for this study is whether or not a person’s epistemological beliefs and ways of knowing act on that to impact how they will react. Chapter two then presents the research into epistemological beliefs and discusses the ways of knowing theory (Belenky et al., 1968) as it evolved from that research, and continues with a presentation of the research into epistemological beliefs and Schommer-Aikins’ Epistemological Belief System theory (Schommer, 1990, 1994; Schommer-Aikins, 2004). It then continues with a discussion of the research into parenting styles begun by Baumrind (1967, 1971) and how an authoritative parenting style is related to more mature epistemological beliefs (Ricco & Rodriguez, 2006). Finally, the characteristics of AS are presented.

Chapter three presents the methodology that was used in this study. Descriptions of all the instruments are presented, and the procedures for collecting the data and analyzing it are provided. Chapter four contains the results obtained in the study, and chapter five contains the discussion of the results, with the implications of the results and the possibilities for future research.
Research Problem

This study proposes the following hypotheses about the relationship among epistemological beliefs, ways of knowing, parenting styles, and reaction to a child with AS:

a) People with stronger beliefs in the certainty of knowledge and omniscient authority will be more likely to give inappropriate advice regarding a situation in which a child with AS is having an outburst in a public place.

b) People with a higher connected knowing score will be more likely to give appropriate advice.

c) People with higher authoritative parenting scores will be more likely to give appropriate advice.
CHAPTER 2

LITERATURE REVIEW

Many factors play a role in how a person with a disability is treated by society and by those who encounter them in the educational system (Brady & Woolfson, 2008; Campbell, 2007; Chambres et al., 2008; Gus, 2000; Jastrowski et al., 2007; Swaim & Morgan, 2001). The visibility of the disability, the familiarity with the disability and its deficits, and the situation in which it is encountered all play a role. In our society, visible physical disabilities tend to produce sympathy and more tolerance for shortcomings, whereas mental disabilities may be perceived less benignly unless a physical trait indicates a cause for the mental deficit. So-called ‘invisible’ disabilities, such as autism or attention-deficit disorder, may produce a complete lack of tolerance because the presence of the disability is not apparent to the casual observer.

Studies have been done on the impact of the revelation of such disabilities and whether or not disclosure results in more positive perception of those with such disabilities. In many cases, disclosure does produce a more favorable perception (Chambres et al., 2008; Gus, 2000; Jastrowski et al., 2007). In some situations, however, disclosure has no impact on the perception, or has a negative impact, depending on the type of information disclosed and the audience (Brady & Woolfson, 2008; Campbell, 2007; Swaim & Morgan, 2001). A question remains, however, regarding why some individuals are more prone to tolerance: Is there something in their belief system or in the way they view the world around them that pre-disposes them to a less critical position? One possibility is that a person’s epistemological beliefs, which have been shown to have an influence on their learning, comprehension, and interpretation of text (Duell & Schommer-Aikins, 2001), may also have an impact on how they perceive people with such
invisible disabilities. Other factors such as parenting style may play a role in their response and also need to be taken into account (Baumrind, 1967).

**Epistemological Beliefs and Ways of Knowing**

Epistemological beliefs are those beliefs an individual holds about the nature of knowledge and the source of knowledge. Studies of epistemological beliefs have their basis in the work of Perry (1968) whose work resulted in the development of a scheme of intellectual and ethical development in college students. Perry theorized a scheme of continual refinement and reorganization of the making of meaning. He began his study to demonstrate the differences in students’ responses to the intellectual and moral relativism that they were exposed to in the university setting. In the course of his study, he hypothesized that there was a common sequence of challenges which each student approached in his own way, and these formed a pattern that could be traced through their educational experience.

Perry’s (1968) scheme was composed of nine positions, commonly clustered into four sequential stages. His concept of development through a standard sequence is patterned after Piaget’s developmental theories. The basic scheme traces development through the stages of dualism, multiplicity, relativism, and commitment within relativism. The first, or least sophisticated stage of dualism, is characterized by an absolutist black and white view of the world, in which authority figures know the truth and are the source of that truth to learners. The stage of multiplicity begins the recognition of uncertainty and the possibility that there are no right answers, as well as the thought that each learner is entitled to his own opinion. With relativism there is a shift to the recognition of the self as an active participant and maker of meaning. Finally in the commitment stage, the student realizes and makes commitments to values with a focus on personal responsibility and engagement.
Building on Perry’s work and that of others, King and Kitchener (2004) developed their reflective judgment model (RJM) to provide a framework for understanding their observations about how people deal with ill-structured problems. These are controversial problems that cannot be defined completely, nor solved with a high degree of certainty. There are large differences in individuals’ assumptions about knowledge, and those differences are related to how individuals justify their own judgments. Furthermore, there is a developmental sequence in the patterns and responses. The RJM has seven major steps reflecting the development of reflective thinking, with each step representing a different epistemological perspective. These steps are grouped into three levels encompassing pre-reflective thinking, quasi-reflective thinking, and reflective thinking. Much like Perry’s work, the progression goes from a certainty of knowledge and the primary knowledge source being authority figures to recognition of uncertainty and knowledge as a construction, to the use of evidence and reason in making judgments and re-evaluating those judgments.

Also following up on Perry’s work, Belenky, Clinchy, Goldberger, and Tarule (1968) did an extensive study on women’s intellectual and epistemological development. Concerned by the lack of data on women in most studies to that point and attempting to explain the consistent patterns of thought they saw in female college students, they conducted a longitudinal study that resulted in a description of five perspectives that women exhibit. Similar to others’ work on epistemological beliefs, these five perspectives follow a progression. The first stage is silence, where women feel that they not only do not know, but that they cannot learn. This is followed by received knowing, where knowledge is perceived to come from listening to others, and knowledge is thought to be concrete and black and white. This perspective strongly reflects Perry’s stage of dualism. The next stage is subjective knowing, where the dualistic view that
there is a single right answer still prevails, but the source of that knowledge is now within the knower, rather than an external source. *Procedural knowing* is characterized by the idea that knowledge is not black and white, but that truth requires observation and analysis. There is an emphasis on how a decision is made, rather than the actual decision. Finally in *constructed knowing* is the belief that all knowledge is constructed and that the knower is an active participant in that construction (Belenky et al., 1968). Although Belenky et al.’s work is epistemological in nature, the perspectives came to be known as ways of knowing.

Within the procedural perspective, two forms of ways of knowing were identified (Belenky et al., 1968). These orientations were termed separate knowing and connected knowing to reflect the relationship between the knower and the object or subject of knowing. Separate knowing is akin to the work of developmentalists such as Piaget, Kohlberg, and Perry and has at its heart the idea of critical thinking. The individual looks for truth by trying to prove it wrong; constantly taking a “devil’s advocate” approach. The separate knower demands that proof be given before something is accepted as true. Objectivity to a separate knower means taking a neutral position because feelings cloud thought, and validity of arguments are their most important quality. Contrasted with separate knowing, connected knowing begins from a stance of agreement rather than disagreement, from a position of sharing the possibility of others’ realities rather than requiring proof of them. Objectivity to a connected knower means taking the other person’s perspective. Empathy is also important to this perspective.

Although these two orientations may seem diametrically opposed, they are not mutually exclusive and can exist in varying degrees in the same person. Although they appear to be gender-related, with more women than men being primarily connected knowers and vice-versa, they are not gender-specific, nor is one necessarily better than the other. The effectiveness is
dependent on the situation, hence both skills are important. Constructed knowing gives a glimpse of what form integrating the two perspectives might take (Clinchy, 2002). The constructed knower embraces complex and ambiguous knowledge and entails the use of both connected and separate knowing by empathy with others as well as the ability to distance oneself from the situation and require evidence (Schommer-Aikins & Easter, 2006).

Many researchers followed in the footsteps of Perry and Belenky, but a new approach was envisioned by Schommer-Aikins (Schommer, 1990, 1994; Schommer-Aikins, 2004) with her epistemological beliefs system. Beginning with her initial hypothesis of personal epistemology as a system of independent beliefs, she described a set of continuums or frequency distributions of knowledge and learning characteristics, including source of knowledge, structure of knowledge, and stability of knowledge, ability to learn, and speed of learning. Similar to the progressions seen in Perry’s scheme, as well as that of King and Kitchener and Belenky and her colleagues, a progression along each of these belief structures represents movement from a naïve concept to a more sophisticated one.

The knowledge beliefs reflect the work of those researchers before her (Schommer-Aikins, 2004). The three beliefs about knowledge were influenced by Perry’s (1968) and Belenky et al.’s (1968) work. The source of knowledge ranges from the naïve belief in an external source (all knowledge must come from experts, as in the beginning stages of Perry and Belenky’s work), to the advanced belief in the self as the source or constructor of knowledge. The structure of knowledge ranges from the idea that knowledge exists as isolated bits of information to the higher concept that knowledge must be integrated to be useful. The stability of knowledge also reflects the progression seen in previous work, from knowledge is fixed and definite to the extreme that all knowledge is tentative and changing, with no fixed absolutes.
The two beliefs about knowledge acquisition were influenced by the work of Schoenfeld (1983) and Dweck (1988). The first is the ability to learn belief, ranging from the idea that one’s ability to learn is fixed at birth, to the sophisticated belief that learning ability can be increased throughout one’s life. The second is the speed of learning belief, which ranges from the belief that learning either comes quickly or not at all, to the acknowledgement that some concepts and ideas may take longer than others to grasp. Beliefs in the ability to learn have been shown to be critical to the learning process (Schommer-Aikins, 2004); when faced with difficult tasks those who believe that learning ability is fixed at birth will display learned helplessness and not even attempt the task, whereas those who believe that this ability can be improved will persist and attempt different strategies. Similarly, those with a belief that learning is either fast or does not happen at all will not persist in difficult tasks or will believe that they have reached a higher level of comprehension than they actually have.

Another distinguishing characteristic of Schommer-Aikins’ (2004) theory is that development may be asynchronous across the different beliefs. Someone may hold a relatively naïve belief about the stability of knowledge at the same time they believe that the structure of knowledge is very complex and integrated. Balance is also a critical factor in the definition of sophisticated epistemological beliefs; an extreme in any area could be problematic. This applies to extreme beliefs at either end of the belief ranges; believing that all knowledge is fixed and unchanging can create problems in a world of rapid change in technology, but a belief that all knowledge is tentative could make them unable to actually hold a point of view of their own.

Schommer-Aikins and Easter (2006) studied the relationship between epistemological beliefs and ways of knowing as put forth by Belenky et al. (1968). Given that connected and separate knowing, as different facets of procedural knowing, both represent critical thinking and
higher order learning, it would be reasonable to assume that they are correlated with higher order epistemological beliefs. Their analysis demonstrated that stronger beliefs in separate or connected knowing did correlate to stronger beliefs that learning takes time and the belief that learning is a constructive process. Their study also demonstrated that epistemological beliefs can be a predictor of academic performance; those with stronger beliefs in quick learning are less likely to perform well in reading; and those with stronger beliefs that knowledge is certain are less likely to think deeply and are more likely to misinterpret tentative information.

As more mature epistemological beliefs lead to deeper thinking and a more constructivist mindset, it is not unreasonable to suggest that such beliefs may lead to more tolerance of differences, including invisible disabilities. The same belief that learning can take time and that knowledge can be uncertain may help a person have a more open mind to the limitations seen in another. In addition, the connected knower pattern could be more receptive to the idea that someone with an invisible disability may have reasons for their behavior that if known, would mitigate its negative impact on the observer.

**Parenting Style**

Baumrind’s (1967, 1971) research into parenting styles acknowledged that the parenting style used had an impact on the social, emotional, and cognitive development of the child. She defined three styles of parenting: authoritarian, authoritative, and permissive. Baumrind defined parenting style as fitting one of three types of parental control patterns, each being qualitatively different. She defined control as the parents’ use of demanding behavioral compliance as a method to integrate the child into the family and society. Authoritative parents controlled in a nurturing manner, with clear communication. Authoritarian parents controlled with little nurturing and unclear communication. Finally, permissive parents were less controlling and had
lower levels of nurturing and clarity of communication. Baumrind also showed that parents were consistent in their overall approach to communication, nurturance, and maturity demands with their primary parenting style.

Studies have shown a relationship between epistemological beliefs and parenting style. Ricco and Rodriguez (2006) proposed that authoritative parenting, which supports a child’s autonomy and decision-making, is based in epistemological beliefs that learning is complex and under one’s control, and knowledge is theoretical, personally constructed, and evolving. Their study did show that in general the higher level epistemological beliefs including a complex view of learning and a constructivist belief of learning, were exclusively associated with an authoritative parenting style. Their work showed a relationship between simpler epistemological beliefs and authoritarian or permissive styles of parenting and relatively more complex epistemological beliefs with authoritative styles of parenting.

Bond and Burns (2006) also showed that an increase in complex epistemological beliefs led to more authoritative parenting strategies and that such parents were more likely to view child development and behavior in a less categorical manner. As a result, they were more likely to consider the context in which a child’s behavior occurs and take that into consideration for their response.

Asperger Syndrome

Asperger Syndrome (AS) is a disability of particular concern in the education world due to both its increased prevalence and its lack of visible markers. Originally thought to affect one in 10,000, the Centers for Disease Control and Prevention declared in 2007 that the prevalence of autism in the United States had risen to one in 150, and in boys, to almost one in 94 (Centers for Disease Control, 2007). Unless in a high stress situation, those with AS generally appear much
the same as their non-AS counterparts, and, in fact, many go through life undiagnosed, merely perceived as a bit peculiar (Attwood, 2007). This can cause a highly negative perception of them when their behavior fails to meet society’s norms. Less desirable behavior is frequently elicited when individuals with AS are in new, stressful, or even ordinary social situations.

Asperger Syndrome is a pervasive developmental disorder on the autistic spectrum. The current release of the Diagnostic and Statistical Manual of Mental Disorders, the DSM-IV (TR) distinguishes AS from autism as having no significant cognitive or speech delays (American Psychiatric Association, 2000), and, in practice, most clinicians give a diagnosis of AS to children with IQs at or above 100 who meet the other criteria for autism, and a diagnosis of high-functioning autism, or HFA, to those with IQ’s between 70 and 100. The primary deficits in AS are the lack of social skills, difficulties with pragmatics in language, and fixation on topics of special interest (Attwood, 2007). As defined by Hans Asperger, children with AS must learn the social skills by rote that other children automatically pick up from their surroundings (Asperger, 1991).

Pragmatics refers to the use of language to communicate socially; issues in adapting conversation to another’s responses, turn-taking, and knowing what the other person wants from a conversation are all seen (Prior & Ozonoff, 2007). The rules for using language in social situations often are at odds with the direct style of a person with AS and hence are ignored. Unusual prosody, or vocal quality, intonation, and stress patterns are also present in about half the cases (Paul, 2007).

Executive functioning deficits (cognitive flexibility, visual working memory, planning, verbal fluency, and inhibition of responses) are also seen (Verte, Guerts, Roeyers, Oosterlaan & Sergeant, 2006). Many children with AS are not diagnosed until after they are in school, and
some are initially diagnosed with other disorders such as ADHD. Their high level of vocabulary and ability to retain vast quantities of data on topics of interest, combined with a frequent high ability in one or more academic areas, makes it easy to misattribute difficulties to willfulness or lack of effort (Attwood, 2007). In addition, their knowledge remains fragmented; rather than putting experience together with their rote knowledge to make sense of the world, each piece remains separate and therefore less useful. This also creates difficulties when it comes to generalization of knowledge and skills across areas (Frith, 1991).

Problem-solving skills may be very advanced in the AS student’s area of interest, but very rudimentary in other areas. Frequently, the child sticks with one strategy even when it does not work, either because he only knows the one, or because he cannot access the information about other strategies when under the stress of the failure of the initial one (Myles & Adreon, 2001). This persistence can lead to “meltdowns” or outbursts due to the frustration caused by the use of the wrong strategy. By the time the child realizes that there is a problem, they are already so confused they cannot retrieve alternate strategies even if they have them. Due to the nature of the underlying neurological disorder in AS, a child is less able to inhibit emotional urges when under stress and may be unable to retrieve particular learned behaviors (such as self-calming or leaving a stressful situation) because that part of his or her brain is not as active when under stress (Myles & Southwick, 2005).

Asperger Syndrome is primarily a social disorder; yet unlike other children on the autistic spectrum, AS children are interested in interacting with other children. When they do try to interact with others, however, their misunderstanding of the rules of social behavior such as eye contact, personal space, touch, and others causes social isolation. They are also prone to lacking common sense and misinterpreting social cues and standards and display a wide variety of
socially unacceptable behaviors, which also leads to their social isolation (Myles & Simpson, 2002). Tony Attwood (2000) also pointed out the difficulty that AS children have in understanding the thoughts and feelings of other people, which has an impact on their social reasoning skills and behavior. Many of the behavioral issues observed in AS children are connected to the inability to function in a world that they perceive as unpredictable and threatening. Without an innate understanding of social rules or how their behavior impacts how others perceive them, and with problems inferring the intentions of others, the world is often a hostile place (Myles & Southwick, 2005).

The particular deficits in AS, especially with regards to social behavior and executive control, make it a disability that can create a serious negative perception in observers without any mitigating physical signs that could soften the judgments being made. The deficits in prosody can have a negative effect on the listener’s perception of the AS child’s competence (Paul, 2007). The overall behavior of a person with AS can lead to the perception that something is not quite right, but with no visible signs as to what to attribute the difficulties to, the observers are left to draw their own conclusions (Shore, 2003).

Epistemological beliefs affect the critical interpretation of knowledge; when unfamiliar information is encountered, a person with a strong belief in the certainty of knowledge is likely to distort the information in order to make it fit with their beliefs (Schommer, 1990). It is quite possible then, that a person with those same less-sophisticated beliefs may behave similarly when confronted with unfamiliar or unexpected behavior by a person with AS; they must make it fit into their belief system, and therefore they attribute it to willful behavior rather than any sort of disability. If epistemological beliefs and ways of knowing can be shown to be related to a person’s attitudes towards someone with AS, then it may be possible to not only predict best fits
with those chosen to work with these individuals, but also what needs to be addressed to help others in becoming more tolerant and able to assist.

The study being proposed looks at the relationship between individuals’ epistemological beliefs and ways of knowing and their interpretation and response to a child with AS exhibiting a reaction to a stressor. Although research has been conducted on the effect that knowledge of a disability has on reactions to the disabled person, none of this research has been done with people with AS. Because these students are frequently found in regular education settings, it is important to study what factors might improve the chances for their success in such a social atmosphere. Research has also been done on the correlation between epistemological beliefs and success in school and epistemological beliefs and ways of knowing (Schommer-Aikins & Easter, 2006), but not on the correlation between these and attitudes towards people with disabilities. Understanding this relationship, if it exists, can help improve the school environment for AS students by knowing who is most likely to deal more effectively with them. Because a common reaction to stress or the unexpected is a meltdown or major behavioral outburst, which generally provokes a negative response from onlookers, it is important to determine who would more likely display a helpful response. By looking at the reactions of people to such a student, both before and after the condition is revealed and determining their epistemological beliefs and ways of knowing profile, we can further determine who would be most likely to deal well with them.

The research on epistemological beliefs, ways of knowing, and AS lead to several hypotheses about the interaction of epistemological beliefs and ways of knowing and an encounter with a child with AS. The reaction of a person to such a student will be quantified by the classification of the advice they give to the parents of the child. For the purposes of this study, the advice given by a participant prior to being made aware of the AS is considered initial
advice; the advice given after being made aware of the AS is referred to as informed advice. In this study, it is hypothesized that people with stronger beliefs in the certainty of knowledge and omniscient authority will be more likely to give inappropriate advice. It is also hypothesized that people with a higher connected knowing score will be more likely to give appropriate advice. Finally, it is hypothesized that individuals with higher authoritative parenting scores will be more likely to give appropriate advice. Because prior knowledge of AS and whether or not the participant is a parent may be confounding factors in an individual’s response to such situations, this will be identified and controlled for in the study.
CHAPTER 3
METHODS

Participants

Two hundred and nine students from two universities participated in this study. Of these, 112 were students at a medium-sized university in the Midwest, and 97 were students at a medium-sized university on the west coast. The group consisted of 128 women and 81 men, with 133 identified as Caucasian, 38 Asian, 20 Hispanic, 11 mixed race, two African-American, one Native-American and four “other.” Forty-nine participants reported that they were first-generation Americans, and 43 reported that English was not their first language.

The age range of the participants reporting age (204 of the 209 participants) was from 19 to 55, with a mean of 27.1 and a standard deviation of 7.09. Six of the students were sophomores, 62 juniors, 69 seniors and 72 were graduate students. Sixty-four of the participants were parents, and 145 were not.

Instruments

Epistemological beliefs measure. Students’ epistemological beliefs were measured using Schraw’s Epistemic Beliefs Inventory (EBI) (Schraw et al., 2002). The EBI is based on Schommer-Aikins’ theory of an epistemological beliefs system and her Epistemological Beliefs Questionnaire.

The EBI consists of 28 items, with each a specific example of one belief in the epistemological belief system theory. It measures five epistemological beliefs: omniscient authority, certain knowledge, quick learning, simple knowledge, and innate ability. Each epistemological belief is represented by five of the 28 items with the remaining questions acting as distractor items. An example of a question addressing belief in the certainty of knowledge is
“What is true today will be true tomorrow.” An example of one addressing belief in omniscient authority is “Parents should teach their children all there is to know about life.” Responses are given on a five-point Likert scale, ranging from one for “strongly disagree” to five for “strongly agree.” Based on the hypotheses being tested, only the items concerning certain knowledge and omniscient authority were used. The questions used from the EBI are in Appendix A.

Schraw et al. (2002) reported test-retest reliability of $r = 0.81$ for the scale measuring certain knowledge and $r = 0.66$ for the scale measuring omniscient authority. Cronbach’s alpha was .63 for certain knowledge and .65 for omniscient authority.

In this study, the EBI was scored by categorizing each item into the epistemological belief it measures. Some of the items were written so that a higher score indicated a higher level of the naive belief being measured, such as certainty of knowledge, and others were written so that the higher score indicated a lower level of naiveté. In order to allow the scores to be summed, the items were re-coded as necessary to ensure that a higher score always meant a higher level of the naïve belief being measured. Then the items for each of the two epistemological beliefs being measured were totaled to give a score for each.

**Ways of knowing measure.** Students’ tendencies towards connected or separate knowing were measured using the short version of Galotti’s Attitudes Toward Thinking and Learning Survey (ATTLS) (Galotti et al., 1999). The ATTLS is based on Belenky et al.’s theory of ways of knowing. Galotti et al. (1999) reported internal reliabilities for the shortened version of .83 for the connected knowing scale and .77 for the separate knowing scale.

The short version of the ATTLS contains 20 items, ten for connected knowing and ten for separate knowing. Each statement is rated on a seven-point Likert scale, ranging from a one, indicating “strongly disagree,” to seven, for “strongly agree.” An example of an item measuring
connected knowing is “I can obtain insight into opinions that differ from mine through empathy.” An item measuring separate knowing is “I have certain criteria I use in evaluating arguments.” The ATTLS can be found in Appendix B.

The ATTLS was scored by categorizing each item into the way of knowing it measures. The items for each of the ways of knowing were totaled to give a score for each.

*Parenting style.* Since the parenting style of an individual, current or anticipated, could impact reactions to a child’s behavior, this was also evaluated in order to account for its impact. The Parental Authority Questionnaire – Revised (PAQ-R) (Reitman et al., 2002) was used. The PAQ-R is a 30-item instrument assessing several features of Baumrind’s (1967) parenting control patterns. Control was defined as the parents’ attempt to integrate the child into the family and into society as a whole, by way of demanding behavioral compliance. Parents labeled as authoritative had a control pattern of nurturing and clear communication. Parents labeled as authoritarian had a control pattern of little nurturance and unclear communication. Finally, permissive parents demanded lower levels of control with less nurturance and communication.

An example of an item measuring the authoritarian scale is “I often tell my children exactly what I want them to do and how I expect them to do it.” An item measuring the authoritative scale is “I have clear standards of behavior for my children, but I am willing to change these standards to meet the needs of the child.” Finally, an example of an item measuring the permissive scale is “I do not think of myself as responsible for telling my children what to do.” The PAQ-R can be found in Appendix C.

The PAQ-R has three scales corresponding to the three control patterns. Authoritative style has an emphasis on parental use of reason and explanation and rational guidance and structure for children; the scale has an alpha of .82. The authoritarian style emphasizes the parent
as the decision maker and the use of power to compel obedience; this scale has an alpha of .77.

Finally, the permissive style emphasizes parental non-interference and children’s autonomy; this scale has an alpha of .73 (Reitman et al., 2002).

Responses on the PAQ-R are given on a five-point Likert scale, ranging from “strongly agree” to “strongly disagree.” Each item was categorized by the parenting style it measures, and the scores were totaled for each scale to give a score for authoritarian, authoritative, and permissive parenting styles.

Reaction to Asperger Syndrome. In dealing with any upset child, there are some responses that are more helpful, and therefore appropriate, than others. This is especially true when dealing with children with AS, because they have trouble regulating their emotions and behavior, and many responses will exacerbate their distress rather than alleviate it and allow them to calm down. As Myles (Myles, 2005; Myles & Southwick, 1999) has illustrated, “meltdowns” tend to follow a pattern, proceeding through three stages from rumbling, to rage and finally recovery. Ideally as a parent or teacher, the signs of the rumbling stage are perceived so that appropriate measures can be taken to head off the meltdown. Most people with AS will exhibit signs revealing their building stress, which they may not be aware of themselves; these may include fidgeting, changes in voice patterns, withdrawing emotionally or physically, or attempting to engage in a power struggle. When caught at this stage, distraction or redirecting, proximity, non-verbal signals, or assistance with self-calming can all be effective methods of preventing the full-blown meltdown.

For those meltdowns that are not caught before they progress to the rage stage, it is vitally important that an appropriate response be chosen, to avoid escalating the rage, to shorten its duration, and to possibly protect the child, onlookers, and surroundings. Although the rage
must usually be allowed to run its course, because the child is not reachable cognitively at this stage, some actions are still preferable to others in order to minimize the impact to the child and those around him. Talking to the child may be helpful, if the conversation consists of acknowledging the distress, offering assistance to go to a quiet place, or possibly previously learned calming words. It is not helpful to yell at the child, belittle him, argue with him, or try to reason with the child in this stage (Myles, 2005). In a rage, the appropriate response is to deal with the emotion, rather than trying to reason with the child or trying to teach him or her to behave more appropriately (Baker, 2008). Some children react positively to being held, as they find the pressure calming, whereas many are likely to lash out or try and flee because they do not like being touched in such a sensitive state. Trying to forcibly remove the child from the scene is inadvisable, unless there is a present physical danger (Myles, 2005).

In order to test reactions to a child with AS, the participants read a vignette describing a situation in which a child is progressing through the stages of a meltdown. The vignette can be found in Appendix D. They were then asked why they thought the child was behaving in the manner described and what actions they would recommend the parent of the child to take in the situation. They were then given a description of Asperger Syndrome, and told that the child in the vignette has this condition; this description may be found in Appendix E. Finally, they were asked if, in light of this information, they would change their recommendations, and, if so, what the changes would be.

In order to obtain a true picture of what participants believe and avoid giving them options they would not have thought of themselves, the study had the participants give their recommendations as a response to an open-ended question, rather than a selection of options. Answers were classified as positive, or appropriate, and negative, or inappropriate. Some
possible responses that were classified as appropriate were “(gently) remove the child from the restaurant,” “talk quietly to the child to calm him down,” “give the child a hug if that doesn’t upset him further,” or “try and distract the child with something.” All of these responses are in line with trying to de-escalate the situation and calm the child down, not necessarily responding to what appears to be a temper tantrum, or trying to discipline the child. Another possible appropriate response, particularly after reading the definition of Asperger Syndrome and for those who know nothing about AS, would be “I don’t know,” which would also indicate flexibility in thinking and probable willingness to learn. Responses that could be given that were classified as negative or inappropriate included things such as “yell at the child,” “tell the child to stop whining,” “spank the child,” “take the frosty away from the child,” or even “completely ignore the child.” Although ignoring the child is actually a positive strategy in a private place, this scenario took place in a restaurant, so behavior affects other patrons, and it may not be safe to let a rage run its course there. A suggestion of getting the child out of the restaurant and then ignoring the behavior was considered appropriate.

Demographics. Questions were asked to gather demographic information, including age, sex, year in school, major, any previous majors if applicable, ethnic background, whether or not the participant is a first-generation American, and whether or not English is the participant’s first language. Gender, year in school, ethnic background, and the questions about being a first-generation American and English as the first language were presented with a selection of answers to choose from; the other questions were free-form responses.

Prior knowledge of Asperger Syndrome. As part of the demographics questionnaire, participants were asked if they had prior knowledge about AS before reading the description following the vignette. Answer selections provided were 1 (nothing), 2 (just a little, had heard of
it), 3 (a great deal) and 4 (personal experience with someone with it.) Participants were also given the opportunity to provide more detailed information if they chose.

**Procedures**

Each participant was asked to sign an informed consent prior to beginning the study. A copy of the informed consent can be found in Appendix F. Once the consent form was received, each participant was given a link to the study information and instruments online, which included the directions and study description. Participants were divided into two groups based on the month they were born in. One group of the participants answered the questions on omniscient authority and certain knowledge from the EBI, followed by the ATTLS to determine the strength of the ways of knowing for the participant. These participants then read the vignette describing a child’s behavior in a public place and gave their opinion on the cause of the situation and their recommendations for the parents’ reaction. Then the description of AS was presented, and the participant was asked if they had any revisions to their recommendations. They then answered the PAQ-R questions to assess parenting style, and several demographic questions, questions about prior knowledge of AS and parenting experience to identify possible confounding variables. These demographic and prior knowledge questions can be found in Appendix G.

The second group of participants had the vignette presented first and answered the questions regarding their interpretation of the child’s behavior and their recommendations for the parent, followed by the explanation of AS and the opportunity to revise their recommendation. These were followed by the other instruments. The two different sequences of tasks used served to counterbalance the possibility of the order having an effect on the participants’ responses.
**Data Analysis**

The initial response and informed response were coded separately as being appropriate or inappropriate. A list of coding criteria was created along with examples, and provided to another coder. Reliability of the rating method was checked by having the second coder classify 25 of the responses, yielding an inter-rater reliability of 92%.

Responses that were aimed at removing the child from the situation, or working with him to calm himself, were classified as appropriate. These included responses such as “leave,” and “I would recommend the parents to first take him out of the restaurant and bring him away from a stressful environment that caused him to throw a tantrum.” and “Remove the child from the situation, and once he has calmed down, talk to him about appropriate behavior in that type of situation.”

Responses that were aimed at disciplining the child on the spot or responding to the emotional outburst, were classified as inappropriate. These included responses such as “Don’t let the child get away with throwing fits. Make it to where there are some sort of consequences when he acts immature and disrespectful. He should be thankful for what he is getting, and he needs to learn how to act in public, which consequences hopefully will start to show him that it is not the right way to get his way,” and “his parent should scold him about what he did wrong.”

In many cases, responses were mixed, in that they had components that would be classified as both appropriate and those that would be inappropriate. If the primary component was to leave the restaurant, then the response was classified as appropriate; an example of such a response was “Have the father take the child outside, calm him down or threaten to punish him if he keeps it up. However the parents handle it, they obviously need to take the situation outside.”

Finally, in some cases, the response did not really give advice for the immediate situation. In this
case, if the advice was to seek professional help or counseling, then it was classified as appropriate. Some examples of this type of response were “See a shrink,” and “If they hadn't already taken him to some kind of doctor, I would recommend that they do that, so they can learn strategies to help deal with his behavior/disability.”

In order to test the three hypotheses, a multivariate analysis of covariance (MANCOVA) was conducted for each set of dependent variables; epistemological beliefs, ways of knowing, and parenting style. The advice (initial or informed) and parental status were the independent variables in each MANCOVA, and prior knowledge of AS was a covariate on each.
Three overarching areas were addressed by this study. First, does the advice given by the participants relate to their epistemological beliefs with regard to omniscient authority and certain beliefs? Second, does the advice given by the participants relate to ways of knowing (i.e., to their degree of separate or connected knowing)? And finally, does the advice given relate to their parenting style? Three specific hypotheses were proposed for this purpose: (a) stronger beliefs in certainty of knowledge and omniscient authority will be associated with either initial or informed inappropriate advice, (b) connected knowing will be associated with either initial or informed appropriate advice, and (c) authoritative parenting will be associated with either initial or informed appropriate advice.

Descriptive Statistics

A general overview of the data was obtained by generating descriptive statistics for all of the variables. Table 4.1 shows the response classification (appropriate vs. inappropriate) as the independent variable, and Table 4.2 shows parental status (yes or no) as the independent variable.
Table 4.1

*Response Classification – Means with SDs in parentheses*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Initial Response</th>
<th>Informed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inappropriate</td>
<td>Appropriate</td>
</tr>
<tr>
<td></td>
<td>$n=104$</td>
<td>$n = 105$</td>
</tr>
<tr>
<td>Certain Knowledge</td>
<td>2.49 (.59)</td>
<td>2.45 (.62)</td>
</tr>
<tr>
<td>Omniscient Authority</td>
<td>2.99 (.58)</td>
<td>2.88 (.53)</td>
</tr>
<tr>
<td>Connected Knowing</td>
<td>5.13 (.85)</td>
<td>5.30 (.78)</td>
</tr>
<tr>
<td>Separate Knowing</td>
<td>4.36 (.84)</td>
<td>4.29 (.85)</td>
</tr>
<tr>
<td>Authoritarian Parenting</td>
<td>3.19 (.56)</td>
<td>3.02 (.55)</td>
</tr>
<tr>
<td>Authoritative Parenting</td>
<td>4.20 (.45)</td>
<td>4.29 (.45)</td>
</tr>
<tr>
<td>Permissive Parenting</td>
<td>2.30 (.48)</td>
<td>2.41 (.61)</td>
</tr>
</tbody>
</table>

*higher scores indicate a higher degree of the characteristic measured

Table 4.2

*Parental Status – Means with SDs in parentheses**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Parent $n=64$</th>
<th>Non-Parent $n = 145$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certain Knowledge</td>
<td>2.54 (.56)</td>
<td>2.44 (.63)</td>
</tr>
<tr>
<td>Omniscient Authority</td>
<td>3.02 (.61)</td>
<td>2.90 (.53)</td>
</tr>
<tr>
<td>Connected Knowing</td>
<td>5.14 (.88)</td>
<td>5.24 (.79)</td>
</tr>
<tr>
<td>Separate Knowing</td>
<td>4.25 (.87)</td>
<td>4.36 (.83)</td>
</tr>
<tr>
<td>Authoritarian Parenting</td>
<td>3.11 (.66)</td>
<td>3.10 (.51)</td>
</tr>
<tr>
<td>Authoritative Parenting</td>
<td>4.25 (.46)</td>
<td>4.25 (.45)</td>
</tr>
<tr>
<td>Permissive Parenting</td>
<td>2.27 (.46)</td>
<td>2.39 (.58)</td>
</tr>
</tbody>
</table>

**higher scores indicate a higher degree of the characteristic measured
Testing the Three Main Hypotheses

In order to address each hypothesis, a MANCOVA was conducted for each set of dependent variables, with initial advice and parental status as independent variables and prior knowledge of AS as a covariate. A second MANCOVA was run for each set of dependent variables, with informed advice and parental status as independent variables and prior knowledge of AS as a covariate.

The first hypothesis tested the relationship between type of advice, parental status, and epistemological beliefs. The multivariate statistic of Wilks’ Lambda was not significant, therefore no univariate follow-up analyses were conducted. The results were consistent for both the initial advice and the informed advice.

The second hypothesis tested the relationship between type of advice, parental status, and ways of knowing. The multivariate statistic of Wilks’ Lambda was significant for connected knowing: $F(2, 188) = 3.11, p < .05$, eta squared = .03. Follow-up univariate tests indicated that type of advice was associated with connected knowing. This was true for the initial advice: $F(1, 189) = 4.74, p < .05$, eta squared = .02, and was also true for the informed advice: $F(1, 204) = 6.15, p < .05$, eta squared = .03. People who gave appropriate advice had higher scores in connected knowing than people who gave inappropriate advice. Type of advice and separate knowing were not significantly related, nor were type of advice and parental status significantly related.

The third hypothesis tested the relationship between type of advice, parental status, and parenting style. The multivariate statistic of Wilks’ Lambda was not significant, therefore no univariate follow-up analyses were conducted. The results were consistent for both the initial advice and the informed advice.
**Exploratory Ancillary Analysis**

Connected knowing is related to a type of advice. It is possible that some of the other variables of interest may have an indirect relationship with type of advice that may be mediated by connected knowing. An ancillary analysis was conducted to provide results for future researchers to consider. A step-wise multiple regression was conducted with connected knowing as the criterion variable and the remaining variables in the study as predictor variables (separate knowing, certain knowledge, omniscient authority, authoritative parenting, authoritarian parenting, and permissive parenting, prior knowledge of AS, parental status, and age). In step-wise regression, predictor variables compete for entry with the variable accounting for the most variance entering first, and in the next step the variable accounting for the most variance enters, and so forth. Only variables significant at the .05 level were allowed to enter the equation.

Three variables were significant: authoritative parenting style, (F(1, 203) = 22.95, p < .01, R-square = .10, b = .58), separate knowing (F(1, 202) = 7.63, p < .01, R-square = .03, b = .18), and certain knowledge (F(1, 201) = 4.03, p < .05, R-square = .02, b = -.18). Higher scores in authoritative parenting and higher scores in separate knowing were related to higher scores in connected knowing, and lower scores in certain knowledge were related to higher scores in connected knowing. The correlational matrix is shown in Appendix H.
CHAPTER 5
DISCUSSION

Summary of the Study

This study was designed to examine potential factors that may influence a person’s reaction to a child misbehaving in public due to a developmental disorder, Asperger Syndrome (AS). There are many factors that play a role in how someone perceives and reacts to such a situation. In our society, ‘invisible’ disabilities, or those without a clear physical marker, tend to be less accepted or even less tolerated than physical handicaps (Campbell, 2007). Disabilities such as AS or Attention Deficit Disorder may cause a person, particularly a child, to have developed few socially acceptable ways of dealing with frustration or stress, and behavioral outbursts are common (Myles & Southwick, 2005). For those having to deal with such children in the educational system as well as in public, there may be several factors that affect how they will respond. As the number of children with these disorders increases, so does the importance of finding the best advocates, teachers, and others to work with them.

Epistemological beliefs, or the beliefs an individual holds about the nature and source of knowledge, have been shown to have an influence on their learning and comprehension (Schommer-Aikins & Easter, 2006). Connected and separate knowing, as expressions of the distance a person puts between themselves and the knowledge they are trying to understand, are forms of more sophisticated epistemological beliefs. In particular, connected knowing, characterized by a more empathetic viewpoint, may lead a person to be more receptive to exploring reasons for unexpected behaviors (Belenky et al., 1968). Finally, parenting style, particularly authoritative parenting, is based on more sophisticated epistemological beliefs,
(Bond & Burns, 2006) and also may lead to a more open view of someone with an invisible disability.

Three hypotheses were tested in this study to try and understand which factors may have an impact on reactions to a child with AS. First, it was hypothesized that beliefs in the certainty of knowledge and omniscient authority, characterized as less mature epistemological beliefs, would result in less appropriate reactions to the child. Second, it was hypothesized that connected knowing, with its empathetic viewpoint, would result in more appropriate reactions to the child. Finally, it was hypothesized that an authoritative parenting style, linked to more sophisticated epistemological beliefs, would also result in more appropriate reactions to the child. A MANCOVA was run for each hypothesis, and a higher score for connected knowing was significantly associated with an appropriate response to the child’s outburst. An exploratory regression analysis was also run to determine if other relationships might exist warranting future study.

Findings and Their Implications

The hypothesis that people with higher connected knowing scores would be more likely to give appropriate advice was supported by the results of this study. Participants with higher connected knowing scores were significantly more likely to give appropriate advice, both with and without knowledge of how AS affected the situation. Connected knowing is defined as beginning from a stance of agreement rather than disagreement and from a position of sharing the possibility of others’ realities. Taking the other person’s perspective is how a connected knower forms an opinion, and empathy is an important part of this (Belenky et al., 1968). This willingness to take the perspective of the other party opens a person to accepting the possibility of acceptable explanations for generally unacceptable behaviors. This openness is particularly
important in the case of ‘invisible’ disabilities, where the child and even their parents frequently find themselves the target of negative opinions, stereotyping, and even punishment for behavior that the child is not able to control.

None of the other variables were shown to be significant, and therefore the other two hypotheses were not supported by the results of this study. High scores in belief in certainty of knowledge and omniscient authority were hypothesized to predict inappropriate advice. Based on the idea that these epistemological beliefs are related to more concrete thinking, and less flexibility in where knowledge would be taken from, it was theorized that people with high scores in these areas would be less likely to be flexible in their approach to what appeared to be simply “bad” behavior. This did not prove to be the case, because these epistemological beliefs were not significant factors in either the initial or informed advice given.

It was also hypothesized that a high score on the authoritative parenting scale would result in giving more appropriate advice. Authoritative parenting, with a control pattern of nurturing and clear communication, willingness to listen to the child’s point of view, and association with higher order epistemological beliefs, was theorized to have more flexibility in dealing with children, and therefore a higher likelihood of giving appropriate advice. None of the parenting styles, however, were significant factors in either the initial or informed advice given.

A possibility not initially considered was that some variables might have an indirect effect on the appropriateness of the advice given. To explore that possibility, a step-wise multiple regression was conducted after the initial analyses to see if any of the other variables had an indirect effect on the one variable, connected knowing, that was shown to be significant. With connected knowing as the criterion variable, and separate knowing, certain knowledge, omniscient authority, authoritative parenting, authoritarian parenting, permissive parenting, prior
knowledge of AS, parental status and age as predictor variables, three variables were significant at the .05 level. These were authoritative parenting style, separate knowing, and certain knowledge (which had a negative correlation.) The relationship of these three variables to connected knowing opens the door for future researchers to consider both direct and indirect effects. The possibility that authoritative parenting style, separate knowing, and certain knowledge influence connected knowing, which, in turn, affects the advice given, is one that should be explored.

**Limitations of the Study**

This study has several limitations. The sample consisted entirely of students, and therefore may not be generalizable to a population consisting of non-students. Increasing the population sample beyond students, especially to those in the education field, most likely would yield better information as to how those dealing with AS children might respond. Related to this issue is the fact that almost three-fourths of the sample were not parents, which may have made the parenting style questionnaire results less credible. Even though the participants who were not parents were instructed to answer according to their beliefs about how children should be parented, this may not reflect their true beliefs once they become parents. It is unclear if this is a confounding issue; only future research will be able to determine this.

Another limitation is found in the open-ended nature of the vignette question. The open-ended question was used so as not to limit the range of responses available or cause participants to come up with ideas they would not have on their own. The free-form response, however, created the opportunity to give multiple responses, some of which were valid and some not, making it difficult to score.
Finally, the phrasing of the vignette question influenced some of the responses given. Some participants responded that they would never give advice to others in such a situation or replied in more general terms without actually giving advice. Rephrasing the question to remove the concern about offending the parents of the child would most likely produce better results.

**Future Research**

This study provides some direction for future research. First, it is important to include participants who are not students, so that the results may be generalizable to a wider population. The regression analysis results demonstrated that three of the variables were significantly related to connected knowing, authoritative parenting style, separate knowing, and a negative correlation with certain knowledge. This opens the door for future researchers to consider both direct and indirect effects on the quality of advice given. A tentative hypothesis to explore is that authoritative, separate knowing, and certain knowledge contribute to connected knowing, and connected knowing is directly linked to type of advice given.
REFERENCES


APPENDICES
APPENDIX A

EDUCATIONAL BELIEFS INVENTORY (KEY)

DIRECTIONS: Please indicate how much you agree or disagree with the following statements about learning and education. There are no right or wrong answers. We just want to know what you believe.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

CK_____1. What is true is a matter of opinion.

OA_____2. *There are times when people should not obey the law. (sophisticated)

CK_____3. Absolute moral truth does not exist. (sophisticated)

OA_____4. Parents should teach their children all there is to know about life.

_____5. Answer this item with number 4.

CK_____6. If two people are arguing about something, at least one of them is wrong.

OA_____7. Children should be allowed to question their parents’ authority. (sophisticated)

CK_____8. What is true today will be true tomorrow.

_____9. Leave this item blank.

OA_____10. When someone in authority tells me what to do, I usually do it.

OA_____11. People shouldn’t question authority.

CK_____12. Sometimes there are no right answers to life’s big problems. (sophisticated)

* Indicates the item was changed from Schraw’s original questionnaire.

CK = Certain Knowledge 5 items, 2 sophisticated
OA = Omniscient Authority 5 items, 2 sophisticated
APPENDIX B

ATTITUDES TOWARD THINKING AND LEARNING SURVEY

Directions: In this survey we are asking for your opinion about thinking and learning and how this relates to human interaction. Answer the questions based on your own opinion. Simply select the degree of agreement you have to each statement based on the following scale. Give the first response that comes to your mind.

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<th>Strongly Disagree</th>
<th>Somewhat Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Agree</th>
<th>Slightly Agree</th>
<th>Somewhat Agree</th>
<th>Strongly Agree</th>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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</table>

01 I like playing devil’s advocate—arguing the opposite of what someone is saying.
02 It’s important for me to remain as objective as possible when I analyze something.
03 When I encounter people whose opinions seem alien to me, I make a deliberate effort to extend myself into that person, to try to see how they could have those opinions.
04 I can obtain insight into opinions that differ from mine through empathy.
05 I tend to put myself in other people’s shoes when discussing controversial issues, to see why they think the way they do.
06 In evaluating what someone says, I focus on the quality of their argument, not on the person who’s presenting it.
07 I find that I can strengthen my own position through arguing with someone who disagrees with me.
08 I’m more likely to try to understand someone else’s opinion than to try to evaluate it.
09 I try to think with people instead of against them.
10 I feel that the best way for me to achieve my own identity is to interact with a variety of other people.
11 One could call my way of analyzing things putting them on trial, because of how careful I am to consider all of the evidence.
12 I often find myself arguing with the authors of books I read, trying to logically figure out why they’re wrong.
13 I have certain criteria I use in evaluating arguments.
14 I always am interested in knowing why people say and believe the things they do.
15 I enjoy hearing the opinions of people who come from backgrounds different from mine - it helps me understand how the same things can be seen in such different ways.
16 I try to point out weaknesses in other people’s thinking to help them clarify their arguments.
17 The most important part of my education has been learning to understand people who are very different from me.
18 I like to understand where other people are coming from, what experiences have led them to feel the way they do.
19 I value the use of logic and reason over the incorporation of my own concerns when solving problems.
20 I’ll look for something in a literary interpretation that isn’t argued well enough.
APPENDIX C

PARENTAL AUTHORITY QUESTIONNAIRE – REVISED

For each statement below, circle the answer that best describes your agreement with the statement on beliefs about parenting your child (if you are not currently a parent, select the answer that best describes your beliefs about how children should be parented.) There are no right or wrong answers. We are looking for your overall impression regarding each statement. The answers correspond as follows: SA = Strongly Agree, A = Agree, N = Neither Agree nor Disagree, D = Disagree, SD = Strongly Disagree

1. In a well-run home children should have their way as often as parents do. SA A N D SD
2. It is for my children’s own good to require them to do what I think is right, even if they don’t agree. SA A N D SD
3. When I ask my children to do something, I expect it to be done immediately without questions. SA A N D SD
4. Once family rules have been made, I discuss the reasons for the rules with my children. SA A N D SD
5. I always encourage discussion when my children feel family rules and restrictions are unfair. SA A N D SD
6. Children need to be free to make their own decisions about activities, even if this disagrees with what a parent might want to do. SA A N D SD
7. I do not allow my children to question the decisions that I make. SA A N D SD
8. I direct the activities and decision of my children by talking with them and using rewards and punishments. SA A N D SD
9. Other parents should use more force to get their children to behave. SA A N D SD
10. My children do not need to obey rules simply because people in authority have told them to. SA A N D SD
11. My children know what I expect from them, but feel free to talk with me if they feel my expectations are unfair. SA A N D SD
12. Smart parents should teach their children early exactly who is the boss in the family. SA A N D SD
13. I usually don’t set firm guidelines for my children’s behavior. SA A N D SD
14. Most of the time I do what my children want when making family decisions. SA A N D SD
15. I tell my children what they should do, but I explain why I want them to do it. SA A N D SD
16. I get very upset if my children try to disagree with me. SA A N D SD
17. Most problems in society would be solved if parents would let their children choose their activities, make their own decisions, follow their own desires when growing up. SA A N D SD
18. I let my children know what behavior is expected and if they don’t follow the rules they get punished. SA A N D SD
19. I allow my children to decide most things for themselves without a lot of help from me.  
20. I listen to my children when making decisions, but I do not decide something simply because my children want it.  
21. I do not think of myself as responsible for telling my children what to do.  
22. I have clear standards of behavior for my children, but I am willing to change these standards to meet the needs of the child.  
23. I expect my children to follow my directions, but I am always willing to listen to their concerns and discuss the rules with them.  
24. I allow my children to form their own opinions about family matters and let them make their own decisions about those matters.  
25. Most problems in society could be solved if parents were stricter when their children disobey.  
26. I often tell my children exactly what I want them to do and how I want them to do it.  
27. I set firm guidelines for my children but am understanding when they disagree with me.  
28. I do not direct the behaviors, activities or desires of my children.  
29. My children know what I expect of them and do what is asked simply out of respect for my authority.  
30. If I make a decision that hurts my children, I am willing to admit that I made a mistake.
APPENDIX D

VIGNETTE

You are at a local fast food restaurant eating your meal when you notice a family sit down in the booth next to you. The family consists of a mother, father, teenage daughter and a son who appears to be about twelve. They catch your eye because in spite of the warmth of the restaurant, the boy keeps his sweatshirt on, zipped up to his chin. As they are putting their food on the table, suddenly he starts to complain about the frosty, that it is too small. His mother tells him that it is the size that comes with the meal he ordered, but he insists in a louder and louder voice that it is not the right size, that it is too small to eat, and that he wants another one. His father tells him he can have another one if he eats that one, but he pushes it away, insisting again that it is too small. He tips the frosty over, and then begins to cry loudly, saying he is sorry, he didn’t mean to, and as his mother wipes up the mess, he just continues to cry and then starts repeating again that it was too small, and he wants a regular one. By this time he is loud enough that a number of people in the restaurant are looking, and yet he seems oblivious to the effect that he is having. Finally, his sister brings him another frosty, but by this time he is crying uncontrollably and pushing his mother away when she tries to calm him down.
APPENDIX E

DEFINITION OF ASPERGER SYNDROME

The child in the vignette you just read has a condition called Asperger Syndrome, which is a pervasive developmental disorder on the autistic spectrum. People with Asperger Syndrome have a difficult time with social interaction, frequently have problems with sensory input, and may not deal well with unexpected situations or changes in routine, especially as children. While their intelligence is frequently above average, they may lack the communication and problem solving skills to deal effectively with things that upset them, and under stress may respond with anger, melt-downs, or other inappropriate behaviors.
APPENDIX F

INFORMED CONSENT

You are invited to participate in a study on beliefs about learning and child care. Since ideas about education and child care may vary, true insight comes from obtaining many viewpoints. Your class was randomly selected as a source of possible participants in this study, since our goal is to understand the insights of students taking college classes.

If you decide to participate you will be asked to complete a survey that will take about 30 minutes to complete. The survey explores your thoughts on communication style, education, and dealing with children. Your responses will remain anonymous and confidential. This information will help us understand college students’ perspectives, which inform future college professors in their instruction.

No risks are anticipated in this study. We will be careful to separate peoples’ names from the data. All information will remain completely confidential and anonymous.

Participation in this study is entirely voluntary. Your decision on whether or not to participate will not affect your future relations with San Jose State University. If you agree to participate in this study, you are free to withdraw from the study at any time without affecting your status as a student.

If you have any questions about this research, please ask us. If you have additional questions during the study, we will be glad to answer them. You can contact us, Karin Cernik or Marlene Schommer-Aikins, at Wichita State University, Wichita, KS (316-978-3326). If you have questions pertaining to your rights as a research subject, or about research-related injury, you can contact the Office of Research Administration at Wichita State University, Wichita, KS 67260-0007, telephone 316-978-3285.

You will be offered a copy of this consent form to keep.

You are making a decision whether or not to participate. Your signature indicates that you have read the information provided above, and have voluntarily decided to participate.

________________________________________________                 _____________________
Signature of Research Participant       Date

________________________________________________                 _____________________
Signature of Investigator (Marlene Schommer-Aikins)    Date

________________________________________________                 _____________________
Signature of Investigator (Karin Cernik)      Date
APPENDIX G

DEMOGRAPHIC QUESTIONNAIRE

Please answer the following questions to help us classify and generalize the responses to our study. All responses are kept completely confidential, please answer honestly and completely. Please select the appropriate response or fill in the answer where needed.

Are you the parent or guardian of a child? Y N

What is your age? ________

Are you male or female? M F

Is English your first language? Y N

Are you a first generation American? Y N

What is your ethnicity? 1 2 3 4 5 6

1 = African American
2 = Asian
3 = Caucasian
4 = Hispanic
5 = Native American
6 = Mixed

What did you know about Asperger’s Syndrome before You read the definition given in this study? 1 2 3 4

1 = nothing
2 = just a little (had heard of it)
3 = a great deal
4 = personal experience with someone with it

What is your academic major? ________________________
## APPENDIX H

### CORRELATION MATRIX

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**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).