Quiet Students' Experiences with Collaborative Learning at the Postsecondary Level

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Abstract

Collaborative learning, in which small groups of two or more students are used to achieve common learning outcomes, has become an increasingly popular pedagogical strategy in postsecondary classes in the United States. Despite numerous studies reporting the benefits of collaboration for learning, many students have reported difficulties with it. At the same time, students who have quiet personalities are sometimes misunderstood in the college classroom, with their quietness often interpreted as a lack of engagement in their courses. This phenomenological study sought to understand the collaborative learning experiences of self-identified quiet undergraduate college students through an analysis of their first-hand accounts of their experiences, in which they described their thoughts, feelings, and perceptions regarding their own learning. This study followed 10 upper-division college students over the course of a single semester, collecting data about their experiences through the use of three interview sessions and brief written reflections. Analysis revealed that quiet students' experiences of collaborative learning were greatly influenced by the larger academic context in which these interactions occurred, demonstrating four themes regarding their overall participation in classes: (a) quiet students made distinct choices about how to navigate through a social academic environment, (b) they experienced difficulties in meeting their instructors' expectations for speaking aloud in classes, (c) they struggled with tensions between perceptions of unengagement and feelings of engagement, and (d) their learning experiences exhibited particular characteristics. This academic context consequently influenced how they participated in collaborations with other students. Four themes regarding their experiences of collaborative learning were revealed: (a) quiet students often engaged in a
performance of sociality that could be anxiety inducing, (b) they experienced tensions between speaking and silence when communicating in groups, (c) they experienced negative emotions in groups that often interfered with their learning, and (d) they learned with others in specific types of collaborative scenarios. Quiet students' experiences indicated that they valued preparation, reflection, control, and independent thought and discovery, and they perceived that these values often were not reinforced in their learning environments and in collaborative learning situations. Quiet students' experiences also suggest ways that classroom participation in general and collaborative learning situations in particular can be reconsidered and redesigned to enhance the learning experiences for these students.
## Table of Contents

Abstract .................................................................................................................. i
Table of Contents ................................................................................................... iii
List of Tables .......................................................................................................... v

Chapter I: Introduction ............................................................................................ 1
  Statement of the Problem ...................................................................................... 7
  Purpose of the Study .............................................................................................. 8
  Research Design ................................................................................................... 9
  Limitations ........................................................................................................... 10
  Delimitations ....................................................................................................... 10
  Significance of the Study ...................................................................................... 11
  Definitions ........................................................................................................... 12

Chapter II: Literature Review .................................................................................. 16
  Theoretical Approaches to Collaborative Learning ............................................... 17
  Collaborative Learning Research in Postsecondary Settings .................................. 28
  Collaborative Learning and Personality ................................................................. 40
    Solitary and Cooperative Learners ...................................................................... 42
    Introverted and Extraverted Students .................................................................. 44
    Quiet and Talkative Students ............................................................................. 49
  Summary ............................................................................................................... 58

Chapter III: Methodology ......................................................................................... 60
  Research Design .................................................................................................. 61
  Data Sources ....................................................................................................... 67
    Interviews ......................................................................................................... 67
    Participant Reflections ....................................................................................... 69
    Course Syllabi .................................................................................................... 70
  Participants .......................................................................................................... 70
  Data Collection .................................................................................................... 74
  Data Analysis ...................................................................................................... 75
  Summary ............................................................................................................... 78

Chapter IV: Quiet Students’ Participation in Classes .................................................. 79
Navigating through a Social Academic Environment .................................................. 82
Difficulties of Meeting Expectations for Speaking Aloud ........................................... 90
Perceptions of Engagement and Unengagement ....................................................... 97
Learning Characteristics of Quiet Students .............................................................. 101
Summary .................................................................................................................. 106
Chapter V: Quiet Students' Participation in Collaborative Learning ....................... 108
Performing Sociality ................................................................................................. 109
Tensions between Speaking and Silence ..................................................................... 116
Negative Emotions Interfere with Learning ............................................................... 125
Learning with Others as a Quiet Person ................................................................. 132
Summary .................................................................................................................. 141
Chapter VI: Discussion and Conclusion .................................................................... 143
Discussion .................................................................................................................. 143
Implications for Practice ......................................................................................... 155
Redefining Class Participation .................................................................................. 156
Rethinking Collaborative Learning Activities ......................................................... 160
Recommendations for Future Research ................................................................. 167
Conclusion ................................................................................................................ 168
References ................................................................................................................. 171
Appendix A: First Interview Questions ........................................................................ 191
Appendix B: Second Interview Questions ................................................................... 194
Appendix C: Third Interview Questions ...................................................................... 196
Appendix D: Personal Report of Communication Apprehension ............................... 198
Appendix E: Personal Report of Communication Apprehension Scoring ................. 200
Appendix F: Recruitment Script .................................................................................. 201
Appendix G: Student Contact Information for Interested Students ......................... 203
Appendix H: Student Data Sheet for Recruited Students .......................................... 204
Appendix I: Consent Form ......................................................................................... 205
List of Tables

Table 1 ..........................................................................................................................72
Chapter I: Introduction

Collaborative learning (CL), or the use of small groups of two or more students to achieve common learning outcomes, has become increasingly prevalent in recent decades in a variety of educational settings (Barkley, Major, & Cross, 2013). Collaborative learning became popular in the United States in K-12 classrooms in the 1980s and soon spread to higher education (Johnson & Johnson, 2005, 2009). Today CL is routinely used across all levels and disciplines, from kindergarten to graduate school and from the humanities to the science, technology, engineering, and mathematics (STEM) fields (Barkley et al., 2013; Johnson & Johnson, 2005). Hundreds of studies conducted at the postsecondary level have shown that CL is effective not only for teaching discipline-specific content but also for cultivating skills and dispositions that are applicable across a variety of settings; these include teamwork, critical thinking, problem solving, learning transfer abilities, positive attitudes toward learning, and appreciation for diverse points of view (Cabrera et al., 2002; Johnson & Johnson, 2005; Johnson, Johnson, & Smith, 2007; Pai, Sears, & Maeda, 2015; Roberts, 2005; Sellitto, 2011; Springer, Stanne, & Donovan, 1999).

Collaborative learning is championed as a student-centered active learning practice that de-emphasizes the "sage on the stage" model of teaching, through which instructors transmit knowledge to students primarily through lectures (King, 1993, p. 30). Collaborative learning emphasizes the importance of engaging students in the learning process through active participation in a shared activity rather than passive listening to a instructor's lecture. Not only do advocates of CL propose it as a powerful way to increase student engagement in the learning process, but they also observe that CL has a strong
theoretical foundation in social constructivist pedagogy (Barkley et al., 2013; O’Donnell & Hmelo-Silver, 2013; Roberts, 2005; Stacey, 2005). Constructivist learning theory describes how students learn not by acquiring existing knowledge but by actively constructing knowledge through the process of interpreting ideas and events encountered through interaction with the environment, and by incorporating new ideas into prior understandings (King, 1993; O’Donnell & Hmelo-Silver, 2013; Stacey, 2005). To constructivist learning theory, social constructivism adds the notion that knowledge is culturally dependent and learning is inherently social. Students learn through interactions with others in which they create meaning and knowledge together (Barkley et al., 2013; Hmelo-Silver, 2009; Stacey, 2005). Social constructivism provides a theoretical basis for CL because, when working together in a group, students bring different sets of experiences which they can draw upon to help each other learn and grow (Barkley et al., 2013; DeCosta, Clifton, & Roen, 2010; John-Steiner & Mahn, 1996; Webb, 2013).

Despite a strong theoretical and research basis, CL has been criticized for being too broadly applied to all learning situations and all learner types (Hopper, 2003). Students repeatedly complain about group assignments, and many have strongly negative experiences with CL (Forrest & Miller, 2003; Gillespie, Rosamond, & Thomas, 2006; Sweeney, Weaven, & Herington, 2008). Collaborative learning may not be the most appropriate choice for all types of learning tasks, and group composition and circumstances often prevent students from learning as much as they could when working in CL situations (Hopper, 2003; Levine, Resnick, & Higgins, 1993). In addition, an over-emphasis on CL may disadvantage certain types of students, particularly those with more quiet or introverted personalities (Walker, 2007).
The plight of quiet students in school settings has received recent attention in the popular press, partly in response to the success of Cain's (2012) bestseller *Quiet: The Power of Introverts in a World that Can't Stop Talking*. Cain argued that schools and other social institutions in the United States increasingly promote and reward extraverted behaviors. Schools often cater to the needs of extraverts at the expense of introverts, and quiet learning is increasingly de-valued. Cain explained that part of the roots of this practice is the increasingly accepted belief that extraverted behaviors are critical for success in society and business, often to the detriment of other qualities. She reported how this is reflected in schools through the comment of a fifth-grade teacher, who said that "This [CL] style of teaching reflects the business community . . . where people's respect for others is based on their verbal abilities, not their originality or insight" (Cain, 2012, p. 77).

A few other writers in the popular press have followed upon Cain's critique, noting the pervasive misunderstanding that exists about both the meaning of introversion and the value of solitary thought for learning. In *The Atlantic's* "When Schools Overlook Introverts," Godsey (2015) critiqued postsecondary educators who have described the need for CL as a technique to be used for getting students to step "out of their comfort zones" by teaching students to self-advocate and forcing students to avoid passive behaviors (n.p.). In the *Times Higher Education's* "No Place for Introverts in the Academy," MacFarlane (2014) criticized this academic trend toward constant interaction, stating that "university students are no longer allowed to be shy. . . . Students must ask questions, express opinions, lead oral presentations and participate enthusiastically in community projects. To collaborate is sacrosanct" (n.p.). With such an intense and urgent
emphasis placed on CL in schools at all levels, the needs of quiet students may be ignored. MacFarlane (2014) observed that "Respecting diversity' is a rhetorical boast in the higher education sector but, in reality, there is a collective failure to respect the fact that not all students have the same personality traits" (n.p.).

For instructors who value CL and see it as an important aspect of their pedagogy, silence in the classroom may be somewhat unsettling. Dialogue is an important part of the interactive, problem-posing approach to education advocated by Brazilian educator Paulo Freire (2000). In his *Pedagogy of the Oppressed*, Freire explained that dialogue is a means through which students learn to critically analyze their social and economic situations, question authority, evaluate long-held assumptions, recognize transformative possibilities, and help each other learn. Dialogue is also an essential component of CL, not just because it is a method for enabling students to work together, but because CL is premised on the notion that students learn through talk (Stacey, 2005). Thus, quiet students may be a source of unease for teachers who value CL and who believe in the importance of dialogue for learning. In a study of quiet behaviors in a college composition classroom, Reda (2009) acknowledged that teachers may not know how to deal with their quiet students:

Those quiet students constitute a central classroom tension for many teachers—those who have a theoretical grounding in dialogic and collaborative learning; those who value it on a practical or experiential level; and those who construct themselves as simply wanting to hear the voices of their students. (p. 5)

Janet Collins (1996), a teacher who conducted a study of quiet middle school students, stated that she found quiet students to be particularly problematic because of her belief
that conversation is essential for learning: "I knew talk was central to children's cognitive and emotional development and that children developed their perceptions of themselves and their world through talk" (p. 2). This tension may lead teachers to characterize—perhaps unconsciously—their quiet students in a negative light (Reda, 2009). Teachers who value social interaction and discussion may do so at the expense of students who learn best through quiet, solitude, and order because it is at odds with their fundamental beliefs about learning (Hopper, 2003). Teachers may view a quiet class as unsuccessful and their quiet students as failures. A factor that is important here is the notion of appearances. For teachers who value CL, quiet children appear to be passive and voiceless because they do not demonstrate the outward signs of engagement according to standards set by the teacher and by an educational system that increasingly values social behaviors (Reda, 2009). Many students who are quiet or solitary may not appear to be as engaged as talkative students when they are actually quite mentally active. Hopper (2003) observed that "There are many students . . . who may appear to be disengaged, even catatonic, when they are in fact silently but vigorously grappling with a concept or problem" (p. 25). This suggests that there is an element of performance that comes with participating in CL, and students who do not suitably perform their engagement are likely to be viewed with disapproval. MacFarlane (2014) observed that Like all forms of performativity, applicable to academics and students alike, only things that are observable count. Only what is visible is audited. This is why there is no place in the new regime of student engagement for shy students who might
participate in less obvious ways through active listening, making eye contact, taking good notes and even, dare I say, thinking. (n.p.)

The use of CL has also been criticized for giving rise to groupthink, which occurs when group cohesion and harmony are valued over critical thinking and creativity (Cain, 2012; Hopper, 2003; Janis, 1972; Levine et al., 1993). Hopper (2003) warned of a "darker side" of CL, cautioning that it is "appropriate for some learners, in some contexts" but that educators should still prioritize the development of independent thinkers and learners "who do not require the consensus of a group to know what they know, and who will stand firm, even alone, against a flood tide of wrongheadedness" (pp. 24–28). Hopper cited models of independent learners such as Abraham Lincoln, Albert Einstein, and Winston Churchill who "tended to keep their own counsel and trust their own minds" (p. 27). In an analysis of the lack of solitude in educational institutions, Senechal (2012) warned that in the quest for cohesion, CL groups "may disregard ideas that seem too complicated or challenging. Group work, even when conducted well, tends to bring the members toward the middle; it takes an extraordinary group to do otherwise" (p. 201).

Finally, some scholars have observed that the virtues of solitude are increasingly devalued and de-emphasized in American educational institutions. Although many people are at their most productive and their most creative when they are solitary, many teachers treat the state of being alone as if it is something shameful and sad (Galanaki, 2005). While the easy availability of technology has given rise to a culture in which students are always connected to the internet and each other, many times schools fail to provide a refuge from this constant connectedness by helping students to understand the importance of solitude for learning and growth (Senechal, 2012). In many cases, students who learn
better from quiet or solitary learning situations are deprived of the opportunity to do so. Cain (2012) wrote that CL is so pervasive in elementary schools that "Even subjects like math and creative writing, which would seem to depend on solo flights of thought, are often taught as group projects" (p. 77). If CL is employed without critical attention to its suitability for different types of learning situations and different types of learners, then students may be not be learning as much as they could (Walker, 2007).

**Statement of the Problem**

As suggested by the works cited above, a disconnect may exist between the heavy use of CL in school settings and the temperaments of quiet students. Some studies have examined the behaviors of quiet students in different kinds of learning contexts by attempting to characterize their participation in learning situations at a variety of levels (Barker, 2011; Collins, 1996; Coplan, Hughes, Bosacki, & Rose-Krasnor, 2011; Reda, 2009; Schultz, 2010; Thompson & Bell, 2011). Others have focused on the links between students' preferences for solitary or cooperative learning situations and their academic performance (Dunn et al., 1990; Hutchinson & Gul, 1997; Ke & Carr-Chellman, 2006; Okebukola, 1986; Webb & Palincsar, 1996). Many research studies—mostly from the psychology and business literature—have focused on the ways that people with introverted personalities behave in small groups settings (e.g., Barry & Stewart, 1997; Kozlowski & Bell, 2013; LePine, Buckman, Crawford, & Methot, 2011; Peeters, Van Tuijl, Rutte, & Reymen, 2006); however, few studies have focused specifically on the behaviors of quiet and introverted students in learning groups. Of these, most have used a quantitative approach to measure student attitudes, student performance, or both.
(Forrester & Tashchian, 2010; Lakhal, Sévigny, & Frenette, 2015; Marashi & Dibah, 2013; Persky, Henry, & Campbell, 2015; Walker, 2007).

While it is not unreasonable to assume that quiet students may feel uncomfortable when participating in CL, there is a lack of research that explores this question from students' own points of view. More detailed information is needed about the ways that these students feel about learning in groups, how they understand their behaviors in CL situations, and how they understand CL in relation to their own learning preferences and strengths. More research into this area may help instructors to better understand students' experiences, which can affect how they conceive of classroom participation and design learning activities and assignments.

**Purpose of the Study**

The purpose of this study was to understand the CL experiences of self-identified quiet undergraduate college students. This study used students' first-hand accounts of CL while they were undergoing these experiences to better understand their thoughts, feelings, perceptions, and beliefs in regard to their own learning. This study was designed to answer the following research question:

- How do self-identified quiet students experience CL at the college level?

Three additional questions were used to help clarify the focus of this research:

- What factors contribute to the ways that self-identified quiet college students experience CL?
- How do self-identified quiet college students' larger patterns of academic participation influence their experiences of CL?
• How do self-identified quiet college students understand the meaning of CL in terms of how they learn?

**Research Design**

This study used a phenomenological research design to study how quiet students perceived their experiences with CL. A type of qualitative research, phenomenology uses participants' first-hand accounts of their experiences to understand the essence of a particular phenomenon (Moustakas, 1994; van Manen, 1990). This study provides detailed descriptions of quiet students' CL experiences and an interpretation of what these experiences meant in the context of their lives and learning.

Participants in this study consisted of ten upper-division undergraduate students from a variety of majors at a state university in the western United States. Participants self-identified as students who were quiet, but they considered themselves to have quiet personalities for any number of reasons (e.g., shyness, social anxiety, or introversion). Selected participants experienced at least one CL assignment over the course of a semester, but most experienced many more. Because students with larger course loads tend to participate in more CL, participants were enrolled in a minimum of 12 class hours during the semester that this study was conducted. Finally, participants were students in their junior or senior years of study because they may have had more experience with CL at the postsecondary level and likely had more time to develop an understanding of their strengths and preferences as learners than lower-division students.

Students participated in this study over the course of a complete semester, and data were collected through the use of semi-structured interviews, participant reflections, and course syllabi. Participants were interviewed three times—at the beginning, middle,
and end of the semester—to learn about how they were experiencing CL while it was happening. In addition, participants reflected upon their experiences immediately following participation in CL situations, and recorded their feelings and reactions. Finally, syllabi containing descriptions of CL in their classes were reviewed to establish the context in which CL was occurring and to facilitate the interviews. All interview and reflection data were coded and analyzed thematically.

**Limitations**

One limitation of this study was the small sample size. Because of the depth of the data collection and analysis, only ten students participated in the study. A larger sample size might have provided greater insight into the ways that quiet students experience this phenomenon. Another limitation concerns the types of assignments received by students from different majors. Variation in the types of assignments given in different disciplines could have potentially resulted in students having different responses regarding CL. A final potential limitation concerns the interests of the researcher as a quiet person herself. Owing to the researcher's own past experiences as a quiet student, care was taken to ensure that any previously held opinions and biases did not interfere with the data analysis and interpretation.

**Delimitations**

This study used a phenomenological approach to explore students' perceptions of their own experiences. As such, it not only relied upon students' recollections of their thoughts and feelings, but it embraced the notion that these recollections serve as the primary means through which students interpret and make meaning from their experiences.
Participants in this study consisted of undergraduate students from different majors so as to collect a variety of student perspectives regarding different types of CL situations. Undergraduate students were chosen as the focus of this study not only because CL is pervasive in undergraduate education but because there is increasing pressure for undergraduate institutions to use active learning pedagogies to ensure that students are engaged in the learning process. Finally, participants were asked to self-identify as quiet students because this study focused on their perceptions of themselves and their learning. Therefore, as long as students considered themselves to have a quiet personality, then their responses were of value.

**Significance of the Study**

In recent years there have been greater calls for accountability in public higher education, with state legislatures and non-profit organizations citing low graduation rates, rising costs, unsatisfactory levels of student achievement, and a lack of workforce preparedness (Arum & Roksa, 2011; Brown & Megan, 2015; Carey, 2016; Fain, 2016; Hart Research Associates, 2015). Many institutions could do more to improve the quality of their instruction, to use rigorous assessment measures that ensure that students are learning necessary content, and to create more engaging and enriching educational environments (Brown & Megan, 2015; Kuh et al., 2015; Kuh, Kinzie, Schuh, & Whitt, 2010). One component of efforts to improve teaching and learning involves a recognition of the needs of different students. Because theirs are not the loudest voices, quiet students may fly under the radar, forced to adjust to an educational system that places a high value on extraverted types of behaviors (Cain, 2012; MacFarlane, 2014).
In an effort to promote practices that have a significant impact on student learning, the Association of American Colleges and Universities (n.d.) has advocated the adoption of a number of high-impact practices that are advantageous for college students from a variety of backgrounds and that may lead to higher retention and increased engagement. Collaborative learning is included among them. Because CL is now so widely advocated, college instructors would do well to consider the types of learners and learning situations for which it is best applied. Without a greater understanding of how best to implement CL, the result may be that it does not have the promised positive impact on all students, or indeed, that it could even have a negative impact. This study provides insight into this common educational practice by using students' perspectives about their own experiences.

**Definitions**

The following terms have been defined below as they will be used in this study.

1. **Collaborative learning:** Situations in which students work in small group configurations of two or more students to achieve common learning outcomes (Barkley et al., 2013; Hmelo-Silver, 2009). Collaborative learning activities are assigned as part of formal classroom instruction and do not include informal (i.e., non-course-related) types of learning or situations in which students are working in close proximity to other students but are not working on the same assignment. Collaborative learning activities may take place during class periods or outside of formal class time.
2. Communication apprehension: Anxiety associated with either real or anticipated communication with others (Richmond, Wrench, & McCroskey, 2013). Communication apprehension often results in quiet behaviors.

3. Criterion sampling: A method of purposive sampling in which study participants are selected on the basis of their ability to meet defined conditions (Creswell, 2013a; Patton, 2002).

4. Extraversion: A characteristic in which energy is directed toward the outer world of people and activity. Extraverts receive their energy from interactions with people and the environment. Extraverts are believed to have low levels of neural arousal, or physiological and chemical stimulation in the nervous system, and perform best in situations of high stimulation. Extraverts exhibit a tendency to be more social, talkative, outgoing, energetic, and friendly than introverts (Barry & Stewart, 1997; LePine et al., 2011; Little, 2014; Morris, 1980; Peeters et al., 2006; Quenk, 2000; Wilt & Revelle, 2009).

5. Introversion: A characteristic in which energy is directed toward the inner world of thoughts, ideas, and reflections. Introverts are thought to receive their energy from this inner realm. Introverts are believed to have high levels of neural arousal and perform best in situations of low stimulation. Introverts exhibit a greater tendency to be less social (but not anti-social), and more quiet, shy, reflective, reserved, and focused than extraverts. (Davidson, Gillies, & Pelletier, 2015; Little, 2014; Morris, 1980; Quenk, 2000; Wilt & Revelle, 2009).

6. Introverted students: Students who identify as having more introverted than extraverted characteristics.
7. Participant reflections: A form of documentation used in qualitative research in which participants record their thoughts and feelings about their experiences (Patton, 2002).

8. Personality: The qualities that describe an individual's typical patterns of thinking, feeling, and behaving (LePine et al., 2011).

9. Phenomenology: A qualitative approach to research design in which people's lived experiences of a particular phenomenon are studied from their own points of view to arrive at a deeper understanding of that phenomenon (Moustakas, 1994; van Manen, 1990).

10. Quiet students: Students who demonstrate a low willingness to communicate (Richmond et al., 2013). This term is an overarching one that includes students who are less talkative for any number of reasons, such as being introverted, having communication apprehension, being shy or uncomfortable in social situations, or having a general tendency toward behavior that may be considered more reserved in manner.

11. Semi-structured interviews: An interviewing technique that uses a combination of predetermined, open-ended questions with unplanned follow-up questions to explore a certain set of topics (Marshall & Rossman, 2016; Rubin & Rubin, 2011).

12. Social constructivism: A learning theory which maintains that students learn through interactions with others and that enables them to incorporate new material into their prior understandings and collectively create meaning and construct
knowledge (Barkley et al., 2013; Gredler, 2009; Hmelo-Silver, 2009; O’Donnell & Hmelo-Silver, 2013; Stacey, 2005).

13. Undergraduate college students: Students who are working toward the completion of bachelor degrees in a college or university setting.

14. Upper-division college students: Undergraduate college students with a declared major who are in their junior or senior level of postsecondary study as determined by the number of course credits completed.
Chapter II: Literature Review

While the word *collaborate* refers to any work that is done with others, the term *collaborative learning* (CL) is used to refer to situations in which students work in small group configurations of two or more students to achieve common learning outcomes (Barkley et al., 2013; Hmelo-Silver, 2009). Although some scholars have used the term collaborative learning to refer to a broad range of social learning situations, including in-class discussions and peer feedback, CL is most commonly used to refer to intentionally structured, classroom-assigned learning situations in which students work together and share work equally to learn academic content, cognitive strategies, social skills, and/or appreciation and respect for diversity (Barkley et al., 2013; Hmelo-Silver, 2009).

Collaborative learning is also commonly described by terms such as *team-based learning*, *group learning*, or *peer-assisted learning*, although these different terms may also be used with slightly different approaches to their implementation (Davis & Arend, 2012). The term *cooperative learning* is sometimes used synonymously with CL but is also commonly used to denote a highly structured approach to group work in which students help each other to learn (Barkley et al., 2013; Davis & Arend, 2012). Overall, CL is extremely flexible in terms of its implementation. Student learning groups may be formed with a variety of sizes and for a variety of purposes, and group work may last only a few minutes or longer than a semester (Barkley et al., 2013).

Although the benefits of learning with others have been acknowledged in several classical texts, the growth of CL in the United States can be traced to the work of John Dewey in the early 1900s (Johnson & Johnson, 2005). Dewey advocated for the use of cooperation as a means of learning rational problem solving and democratic principles
In the 1930s, there was a movement away from this approach toward one that placed greater emphasis on individualism and competition in learning. With the Civil Rights movement of the 1960s, attention again turned toward the benefits of CL, particularly as a means of reducing racial tensions and creating greater social cohesion (Webb & Palincsar, 1996). A number of educators in Britain also advocated for the use of CL techniques in the 1960s and 1970s as a means of democratizing education and moving away from authoritarian social forms; this movement had some influence on CL approaches used in the United States (Bruffee, 1992). Collaborative learning became increasingly popular in the 1980s and is now one of the most common instructional practices, used from preschool through graduate school and for all types of subjects (Johnson & Johnson, 2005; Webb & Palincsar, 1996).

**Theoretical Approaches to Collaborative Learning**

Underlying CL instruction is a long history of psychological research exploring the social aspects of cognition. Many cognitive scientists have studied how individuals acquire knowledge not just through solitary, independent processes, but through various types of interactions with others that affect both the content and processes of cognitive activities. Many of these perspectives focus on cognitive development within the individual but also demonstrate how social factors can have a powerful influence (Rogoff, 1998). On the simplest level, the presence of others can serve to facilitate or hinder cognitive activity. For example, people can become distracted by the presence of others, or they may perform differently when they know they have an audience (Levine et al., 1993). In other instances, people's social roles and identities have a strong influence...
on their cognitive activities and behaviors, and social influences may play a role in
cognition even when others are not physically present. For example, people may form
opinions on the basis of known group opinions, on their own comparisons with others, or
upon anticipated interactions with others (Levine et al., 1993). One learning theory that is
based on the importance of social influence is Albert Bandura's (1986) social-cognitive
theory, which focuses on the way that modeling influences learning and points to the
power of the media in affecting human behavior. Bandura asserted that learners absorb
verbal and visual codes that function as guidelines for future behaviors. These codes are
absorbed via live models (real people) and symbolic models (media), and people learn
behaviors by watching the actions of models and observing what kinds of consequences
occur as a result (Bandura, 1986).

While social influence research focuses largely on the individual, CL approaches
to instruction are also based in constructivist learning theory and hold that cognition is
inherently a collaborative process (Rogoff, 1998). Constructivist learning theory asserts
that knowledge exists within each person and must be constructed (or reconstructed) by
learners who use their prior experiences in combination with cognitive skills and
strategies to make sense of new material and incorporate new information into their
current understandings (King, 1993; O’Donnell & Hmelo-Silver, 2013). Constructivism
owes much to the work of Jean Piaget, and while he asserted that knowledge construction
occurs largely within the individual, he did recognize that peer interaction can play an
important role in learning. He located the source of learning in cognitive conflict that
must be resolved within individuals. In other words, learning may occur when learners
attempt to resolve the internal conflict that exists when there is a discrepancy between a
learner's current understanding of a situation and new information acquired from the environment. When peers of equal status interact with each other, cognitive conflict may result if each expresses different perspectives and ideas about a problem. When this occurs, individuals must reflect upon and work through different alternatives to problems as they attempt to resolve this conflict (Gredler, 2009; O’Donnell & Hmelo-Silver, 2013; Rogoff, 1998). This process of working through problems raised through social interaction can result in cognitive restructuring that can enable individuals to apply new solutions to these problems (Levine et al., 1993). Peers are especially well-suited to arousing cognitive conflict in each other because they communicate largely as equals and share a similar manner of communicating (Webb & Palins, 1996). However, cognitive conflict does not necessarily require the physical presence of others to occur; in fact, it can also be prompted through the process of reading texts or hearing messages (Levine et al., 1993).

Despite the recognition of a social element in learning, Piagetian theory differs from social constructivist theory, which posits that learning is fundamentally social in nature, occurring through interaction with the social environment (Hmelo-Silver, 2009). Social constructivism owes much to the work of Lev Semyonovich Vygotsky and his sociocultural theory of development. Vygotsky (1978) argued that humans create signs and symbols that carry meanings within particular cultural contexts, and this process of signification allows humans to respond to their environment and communicate with those around them. Children learn and internalize the signs and symbols of their culture, which enable and structure their cognitive development; thus, human development is inherently dependent upon socially shared activities. Speech is one representation of how this
signification process occurs and is important for learning because it serves as both a means of communication and as a way of structuring thought (John-Steiner & Mahn, 1996). Not only is the transmission of cultural signs and symbols important for cognitive development, but the very processes of learning and thinking result from and are structured by socially shared activities and relationships (Gredler, 2009; Levine et al., 1993).

The importance of social relationships for learning is exhibited in Vygotsky's (1978) concept of the *zone of proximal development*, which he characterized as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). Thus, a child learns through social interaction with an adult (or other more knowledgeable members of a culture), who helps that child reach the next stage of his or her cognitive development. The adult recognizes higher-level functions that are emerging within the child, engages the child in learning activities, models learning strategies, and guides the child to arrive at a new level of understanding. From this perspective, the child plays an active role in both the social interaction and execution of the learning. Therefore, knowledge is not constructed solely within an individual who imparts it to another; rather, knowledge is co-constructed through the interaction between the child and adult (Gauvain, 2009; Gredler, 2009; Hmelo-Silver, 2009; O’Donnell & Hmelo-Silver, 2013; Vygotsky, 1978).

This notion of the co-construction of knowledge is at the heart of CL; that is, students work together not merely to discover knowledge but to construct it together. Although Vygotsky's zone of proximal development specifies that the child can develop
only through interaction with a more knowledgeable cultural member, this idea has been adapted to apply to group learning among peers. Accordingly, students can draw upon other students as resources because every student in a group brings a different set of perspectives, experiences, and understandings. Thus, students working together in a group can complement each other, thereby helping each other learn and develop (Barkley et al., 2013; DeCosta et al., 2010; John-Steiner & Mahn, 1996). Webb (2013) described how students make different contributions to the group and build upon each other's ideas to arrive at new solutions: "By acknowledging, clarifying, correcting, adding to, building upon, and connecting each other's ideas and suggestions, students may collaboratively build and internalize knowledge and problem-solving strategies that no group member has at the start" (p. 21).

Sociocultural theory also suggests that the notion of community is essential to learning and that communities are formed when people with different perspectives come together and negotiate shared understandings. This concept of community extends to the classroom. Palincsar, Brown, and Campione (1993) explained that "divergent classrooms can become learning communities—communities in which each participant makes significant contributions to the emergent understandings of all members, despite having unequal knowledge concerning the topic under study" (p. 43). The case for CL and its link to the idea of learning communities has been further explained by Bruffee (1992, 1999) who claimed that knowledge is derived through communicating with others in a process of negotiation and consensus building within a community. From this perspective, the teacher is not the ultimate source of knowledge and authority in the classroom; rather, the teacher becomes part of a knowledge community in collaboration
with the students. Collaborative learning pedagogy reinforces the concept that knowledge is not a thing to be acquired but is instead a product of a community of knowledgeable peers that is represented in the language of that community. Students use their own language when they begin to participate in a knowledge community, but eventually they learn a new way of communicating, which is determined by and derived from the collective (Stacey, 2005). For Bruffee (1992), knowledge is inherently a process of social construction; he explained that

We establish knowledge or justify belief collaboratively by challenging each other's biases and presuppositions; by negotiating collectively toward new paradigms of perception, thought, feeling, and expression; and by joining larger, more experienced communities of knowledgeable peers through assenting to those communities' interests. (pp. 29-30)

Consequently, the very process of CL "model[s] how knowledge is generated, how it changes and grows," thereby helping students to prepare to participate in the many knowledge communities in which they will engage throughout the course of their lives (Bruffee, 1992, p. 30). Education, then, is a process of helping students learn to "reacculturate" into the many groups that they will join throughout the course of their lives (Bruffee, 1995, p. 14). Because collaboration does not necessarily come naturally, humans need to learn how to share their thoughts and beliefs in such a way that they become valuable members of the groups that they participate in throughout their lives.

Information processing theory also provides some insight into the cognitive mechanisms that occur during CL. Information processing theory describes the ways that information is processed and stored in memory, and CL scenarios are designed to actively
engage students by using social interaction to help them connect pieces of information and organize them into meaningful concepts to facilitate further processing (Barkley et al., 2013; Schraw & McCrudden, 2009). The communication processes of speaking and listening during group work can assist with this processing function. Once information has been ingested, it must be rehearsed and restructured for it to be retained in memory, and the process of explaining concepts to other students in CL situations can aid cognition (Johnson & Johnson, 2005; Wittrock, 1979). Webb (2013) explained that when presenting their ideas to others, students must

. . . identify the salient features of the problem or task; prioritize, reorganize and clarify information to make it more coherent; see new relations and build new connections between pieces of information or concepts; generate multiple ways of representing information and make explicit the links among different representations; monitor their own understanding and develop a metacognitive awareness of their misconceptions or gaps in understanding . . . and strengthen connections between new information and previously learned information, all of which may help these students to develop new perspectives and deeper understanding. (p. 20)

The act of listening to the explanations of others also helps in cognitive processing as students compare new information with prior understandings, recognize contradictions, create connections between ideas, and prepare to respond to other students. As group members challenge each other's ideas, students must examine their prior knowledge, assess inaccuracies, and use incoming information to develop new models of understanding (Webb, 2013).
Thus, a strong theoretical basis exists for the notion that collaboration with peers can enhance learning and development. However, for students to be able to successfully learn in groups in which they are co-constructing knowledge, group learning scenarios must be carefully and clearly constructed. This has become a core tenet of social interdependence theory, which was influenced by the ideas of early twentieth-century gestalt psychology, which emphasized that perception could best be understood in terms of the whole rather than the sum of separate parts. Social interdependence theory has its origins in the work of social psychologist Kurt Lewin, who pioneered the study of group dynamics in the 1940s (Webb & Palincsar, 1996), and was more fully developed by the brothers David W. Johnson and Roger T. Johnson, who have been articulating many of the principles of cooperative learning, a structured form of CL that is more commonly used in K-12 settings, since the 1960s (Johnson & Johnson, 2005, 2009). Social interdependence theory states that when working in groups, the success of each individual is dependent upon the functioning of the group as a dynamic whole, and changes within group members can affect the attainment of a common goal. The ways that learning groups are structured determines how those groups act and whether they are able to achieve their goals. To successfully function, members of learning groups must achieve positive interdependence. Positive interdependence operates on several levels, including the group's expected outcomes, the means used to achieve those outcomes (which involves resource sharing, assignment of group roles, and task division), and the boundaries that define the group (such as identity, environment, and expectations) (Johnson & Johnson, 2005, 2009).
The concept of social interdependence has several implications for successful group learning. Positive interdependence should lead to a sense of personal responsibility and individual accountability which is essential for successful learning in groups. Johnson and Johnson (2009) explained that, if there is a lack of individual accountability, then

Members may reduce their contributions to goal achievement when the group works on tasks where it is difficult to identify members' contributions, when there is an increased likelihood of redundant efforts, when there is a lack of group cohesiveness, and when there is lessened responsibility for the final outcome. (p. 368)

Positive interdependence is also linked to promotive interaction, which describes the techniques used to encourage the group's efforts, including providing help to each other, exchanging resources, acting in a trustworthy manner, and exerting appropriate amounts of effort. Finally, students must use appropriate social skills, such as communication and conflict resolution, and group processing skills, such as the ability to reflect upon their success as a group and make changes accordingly (Johnson & Johnson, 2009). Hence, social interdependence theory demonstrates that it is not enough for instructors to simply assign a group project and walk away. On the contrary, group assignments must be carefully constructed for learning to occur.

However, Bruffee (1995) argued for a different approach to implementing CL. He maintained that while the high degree of structure in group learning is appropriate for K-12 students, CL at the college level has different goals and should therefore be implemented using different strategies. While college students need to learn to work
together productively, they also need to learn to think independently and to confront their own views. Bruffee argued that at the college level CL should be unstructured with little professor involvement. He advocated that through CL, the authority of the professor should be supplanted by the authority of the students: "Collaborative learning replaces the traditional classroom social structure with another structure: negotiated relationships among students and a negotiated relationship between those student communities and the teacher" (p. 17). While K-12 students must learn how to help each other, college students must learn how to handle disagreement and dissent. Thus, Bruffee argued that at the college level inquiry should be a social process that helps all group members learn to confront issues, examine entrenched beliefs, and challenge authority.

Despite the different theoretical approaches to CL that are discussed above, they all suggest that there are certain situations in which CL may be more or less effective than other methods. In many classroom learning situations, the notion of the co-construction of knowledge by peers does not apply. Hopper (2003) wrote that "it is difficult to imagine any latitude where a collaborative group of eighth graders may negotiate meaning and create new knowledge in something as tightly defined as mathematics" (p. 25). For certain kinds of tasks, individuals may outperform groups and therefore a social constructivist approach may not be appropriate. For example, Levine et al. (1993) explained that "On numerical estimation tasks, group judgment is slightly superior to the average individual judgment. On other tasks (e.g., logical and mathematical brainteaser problems), group judgment is better than the average individual judgment, and worse than the best individual judgment" (p. 600). Proponents of social interdependence theory state that group work should not be used when cooperation is too
difficult or cumbersome, when tasks are simple or too difficult to divide, and when the procedures for completing tasks are sufficiently clear and specific that individuals would not benefit from group evaluation (Johnson & Johnson, 2009). In addition, groups cannot appropriately co-construct knowledge if members do not exchange all information, if they exchange incorrect information, or if some members dominate the discussion (Hopper, 2003; Levine et al., 1993). Learning can also be hindered when groups suffer from groupthink (Hopper, 2003; Janis, 1972; Levine et al., 1993) and when too much emphasis is placed on the notion of learning through consensus and collegiality. In these instances, CL may actually serve to stifle the voices of independent and creative thinkers if their views do not adhere to those of other group members (Hopper, 2003).

However, there are many learning situations in which CL would be appropriate. While CL can be used to teach any number of different types of learning, the choice to use CL must be well-connected to the learning outcome of a task (Davis & Arend, 2012; Svinicki & Schallert, 2016). In a discussion of how to facilitate seven different ways of learning, Davis and Arend (2012) argued that CL is especially well-suited for assignments that involve "changing opinions, attitudes, and beliefs" and "creating an awareness of multiple perspectives" (p. 37). It can be especially powerful for exploring differences of opinion and for achieving a greater understanding of how and why people think differently about certain issues. In this sense CL strategies are useful for cultivating greater empathy in students and in helping students to attain a deeper understanding of the course material. In addition, CL is desirable when students must create a final product that is greater than the sum of their individual efforts (Davis & Arend, 2012). Svinicki
and Schallert (2016) noted that CL can be especially effective for learning scenarios involving knowledge creation and knowledge application.

**Collaborative Learning Research in Postsecondary Settings**

In its early stages, most research on CL was performed at the K-12 level; however, the amount of CL research conducted at the postsecondary level has grown dramatically in recent years (Barkley et al., 2013). A search of the Educational Resources Information Center (ERIC) database with the thesaurus terms "higher education" and "cooperative learning" (which is the term used by ERIC to describe learning situations in which students work together in small groups) revealed 2,192 research studies (determined by using the "reports - research" limiter) in scholarly journals that have been published since 1988, and over 1,800 of these were published since 2005. The value of CL is now so well-accepted at the postsecondary level that the use of collaborative assignments and projects is one of the high-impact educational practices recommended by the Association of American Colleges and Universities (n.d.), based on the work of education policy scholar George Kuh (2008). Collaborative learning is also one of the benchmarks for effective educational practice that is measured annually on the National Survey of Student Engagement (2015) and includes items such as working with classmates on course projects or assignments, and explaining course material to others.

While research of CL in distance learning environments has greatly expanded in recent years, most of the studies discussed here focus on CL in face-to-face settings.

In many studies it has been found that CL leads to use of higher-level reasoning strategies, greater long-term retention, more intrinsic motivation, greater learning transfer, greater time on task, and more positive attitudes toward learning (Johnson &
Johnson, 2005, 2009; Johnson et al., 2007). In measuring the effects of CL, studies frequently employ an experimental or quasi-experimental method in which a group of students receiving a CL treatment is compared with a control group that uses a form of instruction typically characterized as traditional, competitive, or individualistic (Kyndt et al., 2013). The most comprehensive review of research in this area has been conducted by the Johnson brothers, who articulated the theory of social interdependence discussed above. Johnson et al. (2007) identified 305 research studies conducted since 1924 that have investigated the effects of CL in college and adult settings, and they determined that it resulted in significantly greater gains in three major areas: academic achievement, interpersonal relationships, and psychological health. In particular, their analysis showed that CL resulted in greater learning of verbal, mathematical, and procedural tasks (i.e., physical activities); improved quality of relationships among students, including greater levels of camaraderie, cohesiveness, and trust; and higher levels of self-esteem, including feelings of self-acceptance and positive self-views (Johnson et al., 2007).

A number of meta-analyses have confirmed the positive effects of CL on academic achievement in several different subject areas. In a meta-analysis of 39 studies of small-group learning in science, technology, engineering, and mathematics (STEM) classes in higher education, Springer et al. (1999) found that students who worked in CL groups demonstrated greater achievement, and the effect was greatest for groups composed primarily of African Americans and Latino students in comparison with groups that were predominantly white or relatively heterogeneous. In a meta-analysis of 65 studies of CL in primary, secondary, and higher education settings conducted since 1995, Kyndt et al. (2013) found that CL had a positive effect on both academic
achievement and student attitudes toward CL methods. More positive effects were found for students at the primary and higher education levels, for students in mathematics and science classes, and for studies conducted in non-Western cultures. In another meta-analysis of 37 STEM courses taught at the high school and college levels, Bowen (2000) found that the median student performance in courses that used CL techniques was 20 percentile points higher than in traditional courses. In a meta-analysis of nine studies conducted on college statistics classes that compared CL and traditional learning strategies, Kalaian and Kasim (2014) found that college students' achievement on statistics exams was improved by 23 percentile points for classes taught using CL methods. Finally, using a meta-analysis of 24 studies of CL at the primary through college levels, Pai, Sears, and Maeda (2015) found that both structured and unstructured CL scenarios increased students' abilities to transfer knowledge to new situations.

Clearly, there is an overwhelming amount of evidence supporting the positive effects of CL on various types of academic achievement.

Nonetheless, even in CL studies that found positive academic results, these outcomes were not always evenly distributed. Typical of the findings, Wright et al. (1998) compared 203 students enrolled in two sections of a first-year chemistry course, with one section using CL and the other using traditional lecture techniques, and found that students in the CL section demonstrated stronger reasoning and communication skills. In a qualitative component to the study, the authors found that most students in the CL class enjoyed the open-ended group problems and acquired a greater sense of self-reliance, although 20% of students expressed frustration with having to work with dysfunctional groups or expressed a preference for working alone. In another study of
420 students who were split between lecture-based and CL sections of a biochemistry course, Anderson, Mitchell, and Osgood (2005) found that CL resulted in significant learning gains in content knowledge, critical thinking, and problem solving as measured by exams for students in the middle range of performance, but no improvement was noted for students at the high and low ends of exam scores. Outcomes may have been influenced by the fact that each CL group was guided by a trained senior or graduate student, and students could self-select into the CL course. Ultimately, the authors concluded that the CL treatment was effective but too resource-intensive to continue in its present form. In another study of CL implemented in a first-year biochemistry course with 44 students, CL was found to improve learning of course content and team work skills in comparison to students in previous iterations of the course, which were lecture-based. However, a small percentage of students who had low attendance in the CL activities were not included in the comparison, and several students expressed some frustration with CL techniques (Fernandez-Santander, 2008).

What makes CL especially attractive to educators is that it purports to teach discipline-related knowledge and skills while simultaneously developing other useful abilities. In a review of these other types of learning outcomes, Sellitto (2011) identified three different categories of student learning, including: experiential capabilities such as exposure to diverse viewpoints, teamwork, and role-playing skills; personal attributes such as responsibility, confidence, respect, compromise, and creative thinking; and acquired skills, such as communication, conflict resolution, negotiation, leadership, and time management. An example of this is a study conducted by Martínez, González, Campoy, García-Sánchez, and Ortega-Mier (2014) of undergraduate engineering students
in Spain, in which the authors found that students perceived that CL had a positive impact on their development of teamwork skills and to a lesser extent on their creativity.

Collaborative learning’s potential for developing an appreciation for diverse viewpoints and an understanding of multiculturalism has also been noted in several studies. For example, in a study of 2,050 second-year college students across 23 institutions, Cabrera et al. (2002) found that participation in CL was found to predict greater openness to diversity. In another study of engineering students, Terenzini, Cabrera, Colbeck, Parente, and Bjorklund (2001) found a link between use of CL methods and development of design, problem-solving, communication, and group participation skills. Of note, many of these studies that address non-course-related learning outcomes relied upon student reports of their learning gains through methods such as surveys or interviews.

Despite these many positive reports, some research has called into question whether CL always lives up to its promise of improved student learning. For example, in a study of students in a college marketing course, students learned more course-related content when working individually than when working in groups, and the majority expressed a preference for working alone. The author speculated that the lack of success with CL could have occurred because of social loafing, group coordination difficulties, and the groups' tendency to divide the labor along individual specialties (Bacon, 2005). In another study of students in a college statistics course, CL was found to predict success on statistics exams only some of the time (Delucchi, 2007). In a college political science course, CL was found to help students with fact recall but did not help to improve their analytical thinking skills (Rothgeb, 2013). For an educational research methods course, Onwuegbuzie and DaRos-Voseles (2001) studied graduate students who were divided
between sections that used CL and individual learning strategies. Students in the CL sections scored significantly lower on the midterm examination than those in the individual learning sections, although no significant difference was found on the final examination. In another study of students enrolled in several sections of a second-year economics course, Johnston, James, and Lye (2000) found that students who were in CL sections did not show gains in learning as measured by exams, except in the case of international students. While students receiving the CL treatment had a positive view of the CL experience, it did not have an impact on their interest in the subject matter.

Finally, in a review of 14 studies that used CL techniques with Asian college students, Thanh, Gillies, and Renshaw (2008) found that half the studies reported that CL had either a negative or neutral effect on academic achievement. While the studies discussed above have found that CL did not always result in the desired effects, it appears that most research studies of CL at the postsecondary level have shown positive results.

In addition, concerns have been raised about the methods commonly used for CL research. Most CL studies are conducted by educators evaluating their own course assignments, so they may be biased about the outcomes (Colbeck, Campbell, & Bjorklund, 2000; Johnson & Johnson, 1999). In a review of studies that used CL in college-level statistics courses, Delucchi (2007) found that little or no evidence was provided in these studies of students' quantitative skills, with many relying on surveys of student satisfaction and informal data. In a re-investigation of the 37 studies used in the meta-analysis conducted by Springer et al. (1999) and discussed above, Colliver, Feltovich, and Verhulst (2003) found that in some studies the positive effects of CL could be attributed to confounding variables, while in other studies, the authors failed to
establish the comparability of the CL and control groups. Because comparisons of studies of CL activities can vary greatly in terms of measures, duration of the activities, and students, it can be difficult to attribute outcomes to a particular treatment (Slavin, Hurley, & Chamberlain, 2003). Another problem with the comparability of treatment and control situations was addressed by Barkley et al. (2013), who explained that

Research on instructional methods is sometimes criticized, however, for comparing carefully designed experimental methods with average, across-the-board traditionally taught classes. This is, in a sense, stacking the cards in favor of the experimental method. It may be that the reason for the generally positive findings in the published reports of the contributions of group learning to achievement is that the groups studied are usually carefully structured to accomplish student learning. Research on lectures that were carefully planned to raise questions and involve students in actively thinking about what was being said would also show more positive results than across-the-board studies of the efficacy of active lecturing. (p. 28)

Because of the methodological problems in the studies they reviewed, Colliver et al. (2003) concluded that "Small-group learning has not been shown to support the acquisition of content any better [or worse] than large-group learning" (p. 4).

In addition, in spite of the repeatedly positive results demonstrated in CL research, students routinely complain about the group assignments that they receive in their classes, citing confusion, dislike of group mates, different motivations among group mates, resentment about having to depend upon others for grades, difficulty of coordinating efforts, uncertainty about how to work together, and the presence of social
loafers or free-riders, which are students who put forth less effort in group (Phipps, Phipps, Kask, & Higgins, 2001; Taylor, 2011). In fact, much of the research about students' experiences of CL reveals contradictory or even negative results. In a survey of university students, Phipps et al. (2001) found that only 18% of students believed that CL had a positive effect on learning, although many expressed positive responses to individual CL techniques. In another survey, Hillyard, Gillespie, and Littig (2010) reported that one-third of university students rated their small-group experiences as mostly negative or mixed while another third rated their experiences as mostly positive. In studies of a general education course, Machemer and Crawford (2007) found that most undergraduate students placed a lesser value on CL activities than on individual active learning activities and class lectures, which they perceived as having a greater impact on their exam performance.

While many students in the studies cited above expressed mixed responses to CL, some have expressed strongly negative responses. When students repeatedly experience failed learning situations, they associate those experiences with negative emotions. Those negative emotions make them less receptive to learning in similar situations in the future, which also shape their conceptions of themselves and their abilities to do well in these types of situations. Experiencing feelings of stress and anxiety about a learning situation can lead to a release of the hormone cortisol, which activates fight or flight responses in the body and reduces frontal lobe activity, ultimately distracting students from the learning task (Sousa, 2016). Indeed, some undergraduate students have so frequently experienced negative group projects throughout their college careers that many have developed commonly used coping strategies, such as quickly identifying and
compensating for the presence of social loafers in groups, and categorizing group members in terms of their levels of dominance or passivity, maturity or immaturity, and conscientiousness or disengagement (e.g., "dominators," "loners," "mother hens," "go getters," and "slackers") (Gillespie et al., 2006, pp. 88–90). Not surprisingly, students who have had repeated negative CL experiences in the past are less inclined to feel positively about doing more academic group work in the future (Forrest & Miller, 2003; Sweeney et al., 2008). While many college instructors may simply trust that poorly functioning groups will sort through their difficulties, this is often not the case, and repeated negative experiences of CL may result in students feeling a kind of "group fatigue" (Gillespie et al., 2006, p. 99).

While CL offers much potential, a number of things can go wrong with group communication that hinder learning. Students must learn to deal with the conflict that is a natural part of any group endeavor, and Allen and Plax (2002) have observed that the success of group learning depends in large part on how students manage the "dialectical tensions" that exist between speaking and silence, isolation and belonging, and engaging and disengaging (p. 229). Managing these tensions may require complex communication and relationship-building skills, which greatly affect both cognitive and affective learning. The challenges in group communication are many. Many students become disengaged and refuse to fully participate, perhaps because they feel inhibited due to perceptions that they have lower status or lower ability in relation to other group members (Webb, 2013). In some cases, students may feel that their contributions are not necessary to the group's success or they may be inclined to put forth considerably less effort in group situations than they would if working alone (Davis & Arend, 2012;
Johnson & Johnson, 2009; Levine et al., 1993; Webb, 2013). While some students may not go so far as to free ride, their contributions may be characterized by apathy, demonstrating a lack of commitment to the group’s goals and a failure to fully participate (Davis & Arend, 2012). Students often recognize that unequal levels of participation are often equally rewarded in group assignments and may therefore choose to put less effort into group assignments, especially if they feel that it benefits them to put more effort into other classes or assignments (McCorkle et al., 1999). Students may avoid asking for help if they need it, they may feel uncomfortable about challenging others' ideas, or they may not respond attentively and appropriately when others speak. Some groups may spend too much time arguing in an unproductive manner, or some group members may be overtly rude or hostile to other members (Davis & Arend, 2012; Webb, 2013). In addition, the differing motivation levels of team members influence their roles in groups, with highly motivated students often becoming the team leaders while lesser motivated students become the team slackers (Colbeck et al., 2000).

Another problem with CL frequently occurs with the tendency of students to divide the work. Theory related to the specialization of labor suggests that if students have only a limited amount of resources to devote to class assignments, then they will attempt to achieve the necessary output through minimizing their inputs to the extent possible (McCorkle et al., 1999). This occurrence was found in a qualitative study of upper-division engineering students engaged in a CL project, in which evaluators found that few student teams shared a common goal, and many students did not learn about aspects of the project completed by other team members due to time constraints (Colbeck et al., 2000). When students divide the work, CL groups often function more like
workplace teams rather than learning groups. In the workplace, groups are often formed in the short-term to accomplish a task, and team members divide the work on the basis of each person's expertise. Workplace teams commonly use a combination of both individual and group accountability, and teams work toward a common project outcome (Bacon, 2005). Similarly, students working in learning groups often divide the work according to their areas of strength, working independently on their portions and combining their efforts at the end. However, learning groups differ considerably from workplace teams, and this common tendency for students to divide work may effectively prevent them from learning all of the intended content in a CL situation, resulting in a final product that differs significantly in quality in its different sections (Bacon, 2005; McCorkle et al., 1999). In a meta-analysis of 35 studies that used CL techniques in the teaching of psychology, Tomcho and Foels (2012) found greater effects with activities that offered higher levels of participant interdependence, which led to greater engagement, but lower effects for group activities that required a formal group presentation, possibly because it may have encouraged students to divide the work in such a way that they did not adequately learn all of the required content. In fact, Davis and Arend (2012) suggested that if a task is easy to break into separate parts, then it is probably not well-suited to CL.

For some students who encounter repeated negative problems when working in groups, it is clear that the basic composition and functioning of groups is often at the core of these difficulties, and this suggests that instructors could do more to structure groups to enhance learning. However, a lack of agreement exists on how to do this, with numerous differences cited in terms of recommendations for group sizes, durations,
grading strategies, use of assigned roles, use of peer assessment, use of instructor feedback, and necessity of teaching group skills (Fink, 2002). Different approaches advocate different group sizes of anywhere from two to ten students (Bacon, 2005; Davis & Arend, 2012; Fink, 2002; Johnson & Johnson, 2005; O’Donnell & O’Kelly, 1994). While students have more opportunity to hear diverse perspectives in larger groups, the potential for free riding may increase as group size grows because individuals are less likely to view their own contributions as being important to the group's success (Johnson & Johnson, 2009; McCorkle et al., 1999). Group rewards, rather than individual rewards, are often used as a way of motivating students to fully participate in the group and to hold each other accountable, but there is also disagreement about the proper use of incentives (O’Donnell & O’Kelly, 1994; Webb & Palincsar, 1996). Group composition can also have an important impact on group functioning, and many educators advocate for the use of heterogeneous groups to increase diversity of views (Levine et al., 1993; O’Donnell & O’Kelly, 1994; Webb & Palincsar, 1996). However, it can be difficult for an instructor to determine exactly which combination of students works best because each student "can vary on so many variables simultaneously that it is difficult to unravel the relative impact of each one" (Webb & Palincsar, 1996, p. 860). The difficulty of properly structuring groups increases with size because "The larger the group size, the more variability one might expect in terms of personality, ability, responsibility, and commitment" (O’Donnell & O’Kelly, 1994, p. 332). Thus, there is no perfect formula for structuring groups that instructors can use to minimize problems with group functioning.

Collaborative learning does not come naturally to many college students; nonetheless, many students receive little guidance from instructors about how to work in
groups. The literature suggests that instructors should give some attention to this topic to address the anxieties and frustrations that students often feel when confronted with CL challenges (Colbeck et al., 2000; Hansen, 2006; Tombaugh & Mayfield, 2014).

Instructors may need to emphasize the importance of building teamwork skills and incorporate peer evaluations into the grading process. Instructors may need to teach strategies for fostering open and honest communication to help students effectively manage conflict. Instructors may also need to address group reasoning skills by teaching question-asking strategies or implementing activities that can help students evaluate their group processes. Finally, instructors may want to consider implementing certain structural supports for CL, such as assigning certain roles within groups, providing some class time for group meetings, and using multiple points of feedback to monitor group work (Hansen, 2006; Tombaugh & Mayfield, 2014; Webb, 2013).

**Collaborative Learning and Personality**

A considerable amount of research has focused on the benefits of CL to different types of students, and these are usually characterized in terms of demographic differences. Some studies that have focused on demographics have found that female students, international students, and students who are members of minority racial and ethnic groups all seem to benefit from CL (Barkley et al., 2013; Cabrera et al., 2002; Springer et al., 1999). However, demographic classifications do not tell the whole story of students' different experiences with CL because students may also respond differently to CL situations depending upon their personal characteristics (Cantwell & Andrews, 2002; Forrester & Tashchian, 2010; Ke & Carr-Chellman, 2006; Lakhal et al., 2015; Persky et al., 2015; Walker, 2007). Personality, which describes the "structures and
propensities that reflect or explain characteristic patterns of an individual's thoughts, emotions and behavior" (LePine et al., 2011, p. 312), may affect students' preferences for CL, their satisfaction with CL experiences, and the extent to which they learn through CL (Cantwell & Andrews, 2002; Forrester & Tashchian, 2010; Ke & Carr-Chellman, 2006; Persky et al., 2015; Walker, 2007). Walker (2007) even questioned whether certain types of students with quieter or less social personalities are disadvantaged in CL situations and whether these students learn as much or as well as they could.

Research studies of CL by personality type typically focus on one of two areas: student attitudes towards group work and student performance as a result of working in groups. Student attitudes are typically measured through assessments that gauge whether they enjoy CL, find it interesting and engaging, are comfortable in group settings, and experience personal growth as a result of group work. Attitude measures also seek to determine whether students believe CL helps them learn, whether they think it helps them learn more than other methods, and whether they feel that it is a productive use of their time (Forrester & Tashchian, 2010). When testing personality characteristics, scholars have either used one or more standardized instruments, have relied upon teacher/researcher observations of student behavior, or have used students' self-reports of their personal characteristics. In addition, scholars have addressed students' personality characteristics in different ways, with some emphasizing the differences between solitary and cooperative learners, between introverted and extraverted students, or between quiet and talkative students. Each of these different approaches will be addressed separately below.
Solitary and Cooperative Learners

One way that types of students have been studied in relation to CL concerns their preferences for either learning in a solitary fashion or learning with others. This approach is based on learning styles theory, which suggests that students learn in different ways and that having a better understanding of students' learning preferences can help teachers to engage students in the learning process (Ke & Carr-Chellman, 2006). In recent years this characterization has become less common than approaches that emphasize students' introversion/extraversion or quietness/talkativeness (discussed in more detail below), but studies with this emphasis provide some insight into student behaviors. While studies of students' preferences for solitary or cooperative learning may not address students' personality characteristics directly, some studies have found a link between a preference for group learning and personality types, with extraverts expressing a higher preference for cooperative learning (Ramsay, Hanlon, & Smith, 2000) and introverts expressing a higher preference for solitary learning (Ke & Carr-Chellman, 2006). Students who prefer solitary learning also report lower levels of sociability, lower needs for affiliation, and higher levels of social anxiety, and are more likely to experience discomfort in group settings (Cantwell & Andrews, 2002). Feldman Barr, Dixon, and Gassenheimer (2005) described an extreme type of solitary learner whom they characterized as "lone wolves" (p. 81). These students preferred to work alone, disliked group work, did not trust others, and viewed others as less capable. When working in CL situations, these lone wolves had a negative impact on group performance.

Not surprisingly, when the instructional method matches students' learning preferences, students tend to perform better (Webb & Palincsar, 1996). For example, in a
study of middle school students, Dunn et al. (1990) measured students' learning styles and then randomly assigned them to a learning-alone treatment or a learning-with-peers treatment. Students who preferred to learn alone performed better in the learning-alone condition (as did students who expressed no preference), while students who preferred to learn in groups performed better in the learning-with-peers condition. Okebukola (1986) contrasted individualistic learning, in which students work independently; competitive learning, in which students are focused on individual accomplishments in a competitive environment; and cooperative learning preferences, in which students work toward group goals and rewards. In a study of secondary school students from rural and urban schools in Nigeria who were randomly assigned to classes with cooperative or competitive learning situations, Okebukola found that students performed better when matched to their preferred learning styles. In addition, the author noted the presence of a cultural dimension to learning styles, observing that rural students demonstrated a greater preference for cooperative learning while urban students demonstrated a greater preference for competitive learning. This cultural influence on learning preference was also noted by Hutchinson and Gul (1997), who studied university students in Hong Kong and discovered that extraverted students with collective cultural beliefs showed a stronger preference for CL situations than did extraverts with individualistic cultural beliefs, although introverted students were less inclined to prefer CL without regard to their cultural beliefs.

Solitary learners may participate in CL situations differently than do cooperative learners. In a study of five graduate students in an online course, Ke and Carr-Chellman (2006) used interviews, observations, and document analysis to explore how solitary
learners viewed the CL experience. They found that solitary learners were not opposed to working in groups, but used peer interaction to support their learning in a minor way, such as through confirming their understanding of material or sharing perspectives. When working with groups, solitary learners often preferred to divide tasks and work independently, thereby effectively turning group projects into smaller individual projects. They preferred to be responsible for their own learning, so they may have felt uncomfortable when having to rely on group members. Ke and Carr-Chellman (2006) explained that these solitary learners

. . . felt forced into interdependence in the collaborative learning environment. They did not enjoy feelings of safety or control when they had to rely on others' schedules and efforts in completing a collaborative task. Finally, they perceived peer support as a give-and-take process in which a sense of fairness is essential. Being "frustrated" was their response to peers' differing levels of participation and interaction. (p. 261)

Overall, solitary learners prefer to construct knowledge through individual interaction with content and through reflective, critical thinking, so CL situations tend to pose challenges that may be emotionally taxing to these types of students (Ke & Carr-Chellman, 2006).

**Introverted and Extraverted Students**

Another approach to studying the relationship between student personality type and CL focuses on students' degrees of extraversion/introversion. Carl Jung was one of the first to characterize the traits of introversion and extraversion, and he described the ways that extraverts are more focused on the outer world and introverts are more focused
on the inner world (Jung, 1971; Wilt & Revelle, 2009). This has since became a common method of explaining personal characteristics, partly owing to the popularity of tests such as the Myers-Briggs Type Indicator (MBTI), which classifies personality type on the basis of the four different tendencies of extraversion/introversion, sensing/intuiting, thinking/feeling, and perceiving/judging (Davidson et al., 2015; Little, 2014; Quenk, 2000), and the Big Five model, which classifies personality type on the basis of the five traits of agreeableness, conscientiousness, neuroticism, extraversion, and openness to experience (Funder, 2001; LePine et al., 2011; Wilt & Revelle, 2009).

Degrees of extraversion and introversion, which have a strong genetic component, are thought to be affected by different arousal levels in specific neocortical areas of the brain. Extraverts have low levels of arousal and perform best in situations of high stimulation, while introverts have high levels of arousal and perform best in situations of low stimulation (Little, 2014; Morris, 1980; Wilt & Revelle, 2009). This often translates to a need for physical and social environments that allow for greater or lesser amounts of stimulation and social interaction (Davidson et al., 2015; Little, 2014; Morris, 1980). Thus, extraverts perform at their best when interacting with others, while introverts perform at their best when in more subdued environments where they can focus on internal experiences, ideas, and reflections. Extraverts may become fatigued when going too long without external stimulation, while introverts may become fatigued when exposed to too much social interaction (Davidson et al., 2015; Quenk, 2000). Extraverts generally tend to be more social, talkative, assertive, outgoing, active, energetic, and friendly, while introverts tend to be less social (but not anti-social), and more quiet, reserved, shy, reflective, and focused (Barry & Stewart, 1997; Davidson et al., 2015;
The trait of extraversion/introversion can also be understood on a continuum, with some people having higher or lower degrees of the trait and others located somewhere in the middle (Little, 2014). It has been estimated that people with more introverted personalities comprise approximately one-third to one-half of the population (Bayne, 1995; Cain, 2012; Center for Applications of Psychological Type, n.d.).

Numerous studies have been conducted about the ways that introverts and extraverts behave in small group settings, and these studies are generally found in the psychology, management, and human resources literature. Research in this area became popular in the 1990s, partly in response to increasing interest in how to effectively manage organizational teams and partly in response to the widespread adoption of the Big Five model (Funder, 2001; LePine et al., 2011). While the personalities of team members can have a substantial effect on team functioning, the effects appear to be more strongly related to team processes rather than team outcomes (Kozlowski & Bell, 2013; LePine et al., 2011). It is difficult to determine exactly which combinations of personality traits result in successful team functioning, and proper determination relates partly to the types of tasks that need to be performed; however, higher levels of extraversion are generally thought to be more desirable for teamwork (Kozlowski & Bell, 2013; LePine et al., 2011).

Extraverts and introverts bring different qualities to group work that may result in furthering or hindering the goals of the group, depending upon the mix of personalities. Extraverts generally bring a positive attitude toward teamwork, and they help to encourage discussion among team members, which may be why they are often perceived
by other group members as having a greater effect on group outcomes (Barry & Stewart, 1997; Peeters et al., 2006). Teams that are high in extraversion and emotional stability tend to be cohesive, positive, and long-lasting (Kozlowski & Bell, 2013). However, extraverts may also become distracted by the social interaction that comes with teamwork, which can interfere with their ability to focus on completing the tasks at hand. In addition, extraverts enjoy being dominant, and having too many extraverts on a team can result in conflict (Peeters et al., 2006). Thus, as the number of extraverts on a team increases, so can performance because they can help to improve communication even at the expense of some lack of task focus; however, if there are too many extraverts on a team, performance can suffer (Barry & Stewart, 1997). In addition, when working together on group projects, introverts and extraverts may differ dramatically in their approach to the work. Little (2014) explained that

Introverts, preferring a slow and careful approach to their tasks, see their extraverted colleagues as too "crash, bang, wallop" and want to rein them in. Extraverts can get exasperated at their introverted colleagues' style; they want them to speed up and get things done, even if there are a few little mistakes. (p. 40)

Thus, extraverts and introverts may become irritated with each other's different styles of working in group situations.

In studies of CL in higher education settings, students' qualities of extraversion/introversion have been found to affect their attitudes toward learning and, in some cases, their performance. Not surprisingly, introverted students are more likely to prefer to study independently than are extraverts (Chamorro-Premuzic, Furnham, &
Lewis, 2007). In a study of business students, Forrester and Tashchian (2010) found that of all the Big Five personality factors, extraversion was the best predictor of student attitudes toward group work:

. . . individuals high on extraversion enjoyed participating in groups and believed that group work was a productive use of class time. They were engaged and tended to learn more in group work settings than from lectures alone. . . . They were also relaxed in group settings, could express and communicate their ideas and were not afraid to ask for help. In summary, individuals who enjoy talking to other people, are energetic, high spirited and cheerful are likely to do well in groups and contribute to group work. (p. 43)

Studies have differed as to whether students with different personality types actually perform better or worse in CL situations. In a study of students in a pharmacokinetics course that used CL techniques, Persky et al. (2015) found that introverts tended to rate their experiences of CL lower than did extraverts, but both groups exhibited comparable levels of performance. In a study of students in a second year psychology course, Walker (2007) also found that introverts had a less favorable view of CL than did extraverts but found no difference in performance between the two groups. In a comparison between English foreign language students' performance in competitive and cooperative learning situations in Iran, extraverted students were found to perform better in CL situations while introverts performed equally well in either scenario (Marashi & Dibah, 2013). In another study of students in business courses, extraversion was found to have a small but positive effect on performance in CL situations (Lakhal et al., 2015).
The personality composition of group members can also affect team interaction. Hsu, Chou, Hwang, and Chou (2008) found that group homogeneity affected the performance of business students in CL situations. Homogeneous groups performed better, with groups composed of all or mostly extraverted students exhibiting the lowest amount of task conflict and the highest amount of workload sharing. Groups with a mix of introverted and extraverted students experienced the highest amount of task conflict and the lowest amount of task sharing. Just as the mix of student personalities can influence the effectiveness of CL, so too can knowledge of each other's personal characteristics. When student team members know each other's personality type, they may be able to better understand and manage their team's behavior (Clinebell & Stecher, 2003).

**Quiet and Talkative Students**

Several studies of the role of personality and learning characterize students in terms of their qualities of quietness or talkativeness. Quiet students demonstrate the fixed trait of having a low willingness to communicate, which describes a person's general attitude toward initiating communication with others (Richmond, McCroskey, & Mottet, 2005; Richmond et al., 2013). Studies of quiet students often rely on self-reported measures of different types of quiet behaviors, teacher/researcher observations of students to determine student levels of quietness or talkativeness, and the use of qualitative research methods to explore students' perceptions of their own behaviors. In many of these studies, quiet students' performance in CL situations is considered as only one aspect of their behavior in classroom settings, if it is addressed at all.
Some studies of quiet students acknowledge the different reasons for which students may exhibit quiet behavior in the classroom, ranging from having quiet personality traits to being quiet only in certain types of situations. For example, many quiet students are shy, which refers to students who feel anxiety when faced with social situations and who fear social evaluation (Coplan et al., 2011). Some students may be chronically shy while others are only shy in certain types of social situations, and some students may even be both shy and extraverted (Briggs, 1988; Cain, 2015). Some quiet students may demonstrate communication apprehension, which is "the fear or anxiety associated with either real or anticipated communication with another person or persons" (qtd. in Richmond et al., 2013, p. 31), and approximately 20% of college students report high levels of communication apprehension (Richmond et al., 2005). Students with high communication apprehension may also have high levels of sensory-processing sensitivity, which makes them more attuned to different elements in their environments. This higher sensitivity requires increased neural processing of external stimuli and may be related to traits such as neuroticism and introversion (Gearhart & Bodie, 2012). However, many quiet students are not fearful or anxious but simply prefer not to initiate communication for any number of reasons (Richmond et al., 2005). These students may be quiet in the classroom because they are socially introverted, have deficient communication skills, or feel socially alienated (McCroskey, 2007; McCroskey & Richmond, 1991).

The behavior of many students who appear to be quiet in the classroom can be explained by a number of factors that are unrelated or only partially related to personality. Many students exhibit quiet behavior in certain classroom situations but do not generally exhibit the trait of quietness; for example, some talkative students may be
quiet because they are confused by the material, they dislike the class or their classmates, they fear the judgment of their peers, they do not know what the teacher expects from them, or they struggle to speak in an appropriately academic voice (Reda, 2009; Townsend, 1998). In addition, some students are quiet in particular situations because of cross-cultural differences that influence how they behave or because they are ethnically or culturally divergent from the classroom majority (McCroskey, 2007). For example, in a qualitative study of students in medical schools in East Asia, the Middle East, and Western Europe, Frambach, Driessen, Beh, and Van der Vleuten (2014) found that a number of cultural factors inhibited students from non-Western countries from speaking out, asking questions, and challenging other students in CL situations. Some non-Western students were hesitant to ask questions in small groups because of the fear of losing face in front of other members, while others were disinclined to challenge group members because of the value that their culture placed on group cohesion and harmony. Thus, some students who are quiet may be reluctant to speak up in small groups for cultural reasons, including traditional expectations, conventions regarding hierarchical relations, norms regarding group dynamics, and attitudes toward achievement and competition (Frambach et al., 2014).

Considerable differences exist between the ways that students with talkative and quiet personality traits behave in the classroom. Quiet students tend to ask for assistance less frequently, receive less attention from teachers, and receive less positive reinforcement for learning, while talkative students receive more attention and more positive reinforcement, resulting in increased learning and self-confidence. While talkative students may frequently raise their hands in classes, even if they do not know
the correct answer, quiet students may refrain from participating, even when they do
know the correct answer (Richmond et al., 2013). When working in small groups, quiet
students tend to get distracted by their focus on dealing with the communication
challenges before them which may detract from their ability to productively address the
topic of the group assignment (Richmond, 2009). Quiet students tend to talk less or say
things that are less relevant to the group's assignment, sometimes even as a means of
discouraging further attention from being directed toward them. They usually express
agreement with the opinion of the group, even if they do not actually agree. They even
tend to choose seating positions in small groups that pull attention away from themselves
and inhibit conversation (Richmond, 2009; Richmond et al., 2013). Not surprisingly,
quiet students tend to dislike classes which require that a high percentage of the grade
comes from class participation and group discussion. In classes that allot a high
percentage of the grade to participation, quiet students may receive lower grades than
talkative students even if their achievement is equal or even superior in other ways
(Richmond et al., 2013). The differences in quiet students' experiences of school may
also have long-term effects. According to Richmond et al. (2013), "quiet people are
discriminated against in the school environment. The impact of this discrimination is
cumulative over the years of schooling" (p. 73). In fact, some studies have found that
college students who have high levels of communication apprehension are more likely to
drop out of school prior to obtaining a degree (Ericson & Gardner, 1992; McCroskey,

Many discussions of quiet students have portrayed quietness in a negative light,
with quiet students frequently characterized as being docile, compliant, deficient,
indifferent, unremarkable, or even defective (Barker, 2011; Thompson & Bell, 2011). In fact, in a teacher guide called *Quiet Children and the Classroom Teacher*, McCroskey and Richmond (1991) stated that "students who are too quiet are students with problems," and "Quiet children form the largest group of learning-disabled students in our classrooms" (p. 1). The authors asserted that quiet children's reluctance to communicate can detract from their healthy development since "quiet people are typically less successful at making friends, seeking out needed information, influencing others, making decisions, talking with peers, and being assertive" (p. 3). In *The Quiet Child*, Janet Collins (1996), motivated by a frustration with how to teach quiet students, conducted semi-structured interviews with twelve of her former pupils who were approaching middle school and whom she described as being quiet and withdrawn. She characterized them as uncommunicative, unenthusiastic, and passive students who disengaged from classroom activities or refused to participate. While the children were more talkative at home and with people they knew well (and were able to communicate sufficiently in the interviews), the social nature of the classroom posed problems for them because of their social anxieties, feelings of not belonging, and fears of being ridiculed. Collins (1996) went so far as to suggest that quiet children should be treated as a group with "special educational needs" (p. 51) because their learning may suffer due to what she characterized as the emotional difficulties that are at the root of their quiet behavior. From this perspective, small group work can be viewed as a non-threatening technique that teachers can use to help students with communication apprehension to engage with their peers (McCroskey & Richmond, 1991); however, Collins (1996) found this approach to be frustrating because many of her quiet students spent so much time alone
that it was difficult for them to find partners or to work with their peers during group activities.

For many teachers, silence in the classroom may represent students' inability to speak, an unwillingness to participate, resistance, hostility, disempowerment, alienation, or a lack of preparation, engagement, knowledge, motivation, intellectual ability, or attention (Reda, 2009; Richmond et al., 2005; Schultz, 2009, 2010). Barker (2011) argued that many teachers do not know how to interpret the silences of their quiet students and have difficulty judging the extent to which they are engaged in learning. Because classroom participation is a common way of evaluating students at all levels, teachers often associate student participation with talk and, conversely, may discount quiet students' less vocal ways of participating (Schultz, 2009). In a study of the ways that elementary school teachers respond to different types of students, Coplan et al. (2011) found that teachers believed that shy or quiet students were less intelligent and were likely to do more poorly on academic work than were talkative or exuberant students. Many elementary school teachers used peer-focused strategies, such as encouraging more peer interaction, when responding to shy or quiet students (Coplan et al., 2011). Barker (2011) contended that quiet students are often aware of these negative perceptions and believe that their peers and teachers may view their quietness as a sign of disengagement, disinterest, boredom, anger, or inattention, while viewing talkative students as being more engaged.

Both teachers and other students may categorize quiet students in ways that are limiting and unfavorable, without recognizing the full extent of quiet students' abilities and interests (Barker, 2011). Gillespie et al. (2006) used focus group and individual
interviews with upper-division college students who had participated in multiple CL experiences to understand how the students interpreted these situations. In recurring reports of negative group experiences, students described how they categorized group members in terms of dominance and passivity, using terms such as "dominator," "extrovert," "control freak," "bully," "type A personality," "bossy," and "know-it-all" for dominant students and "sheepish," "shy," "recluse," "loner," "blah people," and "child" for passive students (Gillespie et al., 2006, pp. 88–89). Students also described how dominant students were perceived as being smarter than others in the group and often stifled the ideas of other group members. This labeling was part of a larger narrative strategy that college students used to understand and cope with their frequent participation in groups, but Gillespie et al. (2006) argued that ultimately this type of labeling may serve to lock students into certain kinds of harmful collaborative strategies.

More recent studies have called into question these limited perspectives by inviting quiet students to explore their own views of their behavior. In a study of middle and high school students, Schultz (2010) explored how students used silence as both a sign of power and, in the case of minority students, as a form a protection when negotiating their identities with other students. In a study of students in a college composition course, Reda (2009) used student journals and essays, her own teaching journal, and interviews with five students to explore college students' perceptions of their classroom silences. Her findings revealed that students did not view their silences as passive or disengaged. Instead, students expressed a variety of reasons for silence, including feelings of anxiety and a lack of control when forced to speak, difficulties with learning how to speak in an academic voice, challenges with knowing what an instructor
wants to hear, fear of social judgment, difficulties with adjustment to college and academic rules of communication, students' own inner dialogues and self-critique about their views, and a desire to listen, pay attention, and reflect (Reda, 2009). In a dissertation focusing on the ways that 23 quiet high school seniors viewed their own engagement, Barker (2011) found that quiet students believed that their silence was a sign of interest, commitment, focus, and attentiveness. These students explained that thinking takes time, and they described how they often chose not to speak because they felt that their silence helped them perform and learn better.

As mentioned above, in most of these studies of quiet students, CL was addressed in only a minor way and the focus was on the classroom environment as a whole, but a few studies devoted some attention to group learning situations. In Reda's (2009) study, four out of the five students interviewed expressed a preference for working in small groups over whole class discussions because they felt safer, more focused, and more authentic in these situations, whereas they viewed large class discussions as more competitive. In Barker's (2011) study, quiet students believed that they worked best alone and that they learned differently from other students. These quiet students preferred to work alone because they could exercise greater control of their learning with the opportunity to work at their own pace and without distractions. Barker (2011) explained how

Working without distraction and the implicit pressure to speak, [quiet] students perceived optimal conditions for their creativity to flow—they were the one in control, they proceeded at the pace of their choosing, and they could work without the explicit guidance of others. The choice, control, and independent action
described as possible when working alone were also characteristic of the highest conceptions of engagement held by quiet students. (p. 142)

In other words, quiet students believed that their quietness helped them to best engage in learning and that solitary work was the most satisfying.

Some educators have recommended a number of ways for addressing the needs of quiet students in the classroom. Instructors can recognize the role of listening as a form of participation and avoid assigning participation grades that are determined solely on the basis of talk. Instructors can provide alternatives to oral participation requirements and recognize the importance of writing as a means of discussion and dialogue. Instructors can encourage a variety of classroom learning formats, from individual work time to large class discussion, and reinforce the notion that learning happens in many ways. Instructors can strive to create supportive classroom environments in which students feel that they can express their thoughts without being judged. Finally, instructors can recognize silence as productive and provide reflective space for students who need more time to think. Some strategies that they can use to accomplish this are by asking students to write their thoughts prior to discussion, by asking students to prepare discussion questions prior to class, or by having students write out individual responses prior to sharing them with others (Davis & Arend, 2012; McCroskey, 2007; Reda, 2009; Townsend, 1998). As Davis and Arend (2012) wrote, "The goal is 100 percent engagement in thinking, not 100 percent speaking. Sometimes teachers may need to work with individual students to come up with appropriate and comfortable ways of showing their involvement" (p. 130).
Summary

The enthusiasm surrounding CL has resulted in its becoming a very popular pedagogical strategy across all disciplines at the postsecondary level. Social constructivist learning theory suggests that by working together, students can exchange information and work through different ideas, thereby participating in the co-construction of knowledge. Each student brings a different set of perspectives, experiences, and knowledge to CL scenarios, ideally allowing students to serve as resources for each other. However, for CL to be successful, social interdependence theory states that group work must be carefully constructed to achieve positive interdependence, individual accountability, promotive interaction, appropriate social skills, and group processing skills. Without these characteristics in place, CL may not result in successful learning outcomes. As a consequence, it may not be enough for instructors to simply assign students to groups and hope that they learn. In addition, while CL research at the postsecondary level shows that it often results in learning gains, methodological issues prompt some concerns. The growing popularity of CL may have led to its over-use and sometimes inappropriate application. While it seems clear that most of today's college instructors are familiar with CL as a learning strategy, they may be less familiar with the research about how and when it should be applied. When deciding to integrate CL into a course, instructors need to carefully consider it in relation to their course objectives to ensure that it is a suitable approach and that it offers the best way for students to learn the course content.

Because CL is now so widely applied, its over-emphasis may create challenges for students who prefer to learn through other methods. While the research on student
personality types and CL is not extensive, it suggests that students who can be characterized as quiet, introverted, or solitary learners may be disadvantaged in CL situations. Not only do these types of students frequently express their dissatisfaction with CL, but concerns exist about the impact that it has on their learning. In many cases, these types of students may be deprived of the ability to learn more or learn better through forms of learning that are more suitable to their personalities.
Chapter III: Methodology

The purpose of this study was to examine the perceptions of self-identified quiet students as they participated in collaborative learning (CL) activities at the college level. The CL situations explored in this study were part of formal classroom instruction but may have consisted of anything from brief in-class group activities to out-of-class group assignments that spanned several days, weeks, or even months.

The literature indicates that there may be several reasons why students exhibit quiet behavior in classroom learning situations. What was important for the purposes of this study was that students perceived themselves to have a quiet personality. When applied to CL, the term quiet is most commonly used to describe types of behaviors that are less talkative, less outgoing, less social, and more introspective than may be commonly seen in group situations.

This research examined the experiences of students while they were participating in CL as part of their class requirements to understand how they experienced these situations and how they understood their learning in the context of these situations. Thus, this study was designed to answer the following overarching research question:

- How do self-identified quiet students experience CL at the college level?

Three questions were used to clarify the focus of this research. These clarifying questions were:

- What factors contribute to the ways that self-identified quiet college students experience CL?

- How do self-identified quiet college students' larger patterns of academic participation influence their experiences of CL?
How do self-identified quiet college students understand the meaning of CL in terms of how they learn?

**Research Design**

This study employed a qualitative design because it explored how participants experienced a particular type of learning through first-person descriptions. Qualitative research studies are usually conducted in a natural setting, with the researcher serving as the instrument of data collection and interacting extensively with participants. By using a qualitative research design, this study focused on understanding the meanings shared by participants through language, used detailed textual analysis to understand those meanings, and provided a descriptive, holistic interpretation of the data (Creswell, 2013a).

This study employed a phenomenological research design to understand how participants experienced the phenomenon of CL. While there are several variations in phenomenology, most hold several principles in common (Dowling, 2007; Patton, 2002). First, phenomenology asserts that knowledge is affected by what humans consciously perceive and how they consciously perceive things in their environments. With its origins in philosophy, a phenomenological approach to research emphasizes the role of consciousness in understanding the world (Creswell, 2013a; Moustakas, 1994). Although he was not the first philosopher to discuss phenomenology, Edmund Husserl, writing in the early part of the twentieth century, developed it as an alternative to empirical science and as a means of connecting philosophy with actual lived experiences (Lichtman, 2013). Husserl held that knowledge of objects in the external world cannot be fully understood
apart from an understanding of subjective, inner experience (Creswell, 2013a; Moustakas, 1994). Eagleton (1983) explained that Husserl rejected . . . what he called the "natural attitude"—the commonsensical person-in-the-street belief that objects existed independently of ourselves in the external world, and that our information about them was generally reliable. . . . What then can we be clear about and certain of? Although we cannot be sure of the independent existence of things, Husserl argues, we can be certain of how they appear to us immediately in consciousness, whether the actual things we are experiencing is an illusion or not. (p. 55)

Husserl observed that the ways in which we consciously direct our attention to external objects shapes our understanding of the world (Creswell, 2013a). According to Eagleton (1983), "The act of thinking and the object of thought are internally related, mutually dependent. My consciousness is not just a passive registration of the world, but actively constitutes or 'intends' it" (p. 55). To Husserl's emphasis on the importance of consciousness, philosopher Martin Heidegger emphasized the importance of lived experience (Kvale, 1996). For Heidegger, human existence . . . is in the first place always being-in-the-world: we are human subjects only because we are practically bound up with others and the material world, and these relations are constitutive of our life rather than accidental to it. The world is not an object "out there" to be rationally analysed, set over against a contemplative subject: it is never something we can get outside of. . . . Human existence is a dialogue with the world. (Eagleton, 1983, p. 62)
Phenomenological research focuses not merely on how people experience life events, but on how experiences are transformed through conscious understandings. What is important is not just how people experience phenomena but also how they describe and interpret that phenomena and incorporate their interpretations into their worldviews (Patton, 2002).

A second important principle of phenomenology is that it seeks to understand lived experiences to arrive at a deeper understanding of the essence of the phenomenon (Lichtman, 2013; van Manen, 1990). The word essence is derived from the Latin essentia, meaning "to be," and from the Greek ousia, meaning "the inner essential nature of a thing, the true being a thing" (van Manen, 1990, p. 177). Essence describes the most important, indispensable properties that make something what it is and distinguish it from what it is not (van Manen, 1990). Thus, phenomenology moves beyond individual consciousness to arrive at knowledge of shared experiences. According to Eagleton (1983),

Phenomenology examined not just what I happened to perceive when I looked at a particular rabbit, but the universal essence of rabbits and the act of perceiving them. It was not, in other words, a form of empiricism, concerned with the random, fragmentary experience of particular individuals. . . . It claimed to lay bare the very structure of consciousness itself, and in the same act to lay bare the very phenomena themselves. (p. 56)

Phenomenological research seeks to identify shared meanings through an understanding of the diversity of separate, individual expressions of experiences of a phenomenon without attention to its causes or origins (Kvale, 1996). The phenomenological researcher
derives the essence of an experience by working with multiple individuals and then identifying those qualities that are common to all instances of the experience (Patton, 2002). Creswell (2013a) explained that phenomenology reveals the essential underlying structure of a phenomenon such that readers can recognize it in whatever context it occurs: "grief is the same whether the loved one is a puppy, a parakeet, or a child" (p. 82). A phenomenon may appear in various forms, but what remains constant among all variations is the essence of that phenomenon (Kvale, 1996).

A third principle is that phenomenological thought recognizes that meaning is intimately connected to language itself. Language is not merely a means of communicating meaning, but language makes meaning possible. Eagleton (1983) explained that "meaning is not simply something 'expressed' or 'reflected' in language: it is actually produced by it . . . we can only have the meanings and experiences in the first place because we have a language to have them in" (p. 60). Phenomenology holds that lived experiences are best understood, interpreted, and shared through language expressed by individuals (van Manen, 1990). To understand essence, phenomenology probes individuals' descriptive details of first-hand experiences and the meanings that they make of these experiences, which involves the expression of their internal perceptions, memories, and judgments (Moustakas, 1994; van Manen, 1990). Patton (2002) described how phenomenological research "requires methodologically, carefully, and thoroughly capturing and describing how people experience some phenomenon—how they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with others" (p. 104).
Descriptive accounts of experiences shared through language become the means through which a researcher collects data about the phenomenon, conducts the analysis, interprets meaning, and communicates it with a broader audience (Lichtman, 2013). These descriptive accounts of experience are inherently retrospective in nature because meaning can only be comprehended through reflection on past experience. van Manen (1990) described how, "A person cannot reflect on lived experience while living through that experience. For example, if one tries to reflect on one's anger while being angry, one finds that the anger has already changed or dissipated" (p. 9–10). Through detailed descriptions of past experiences, the phenomenological researcher derives deeper insights into everyday events, enabling readers to see everyday occurrences from a new perspective.

A fourth principle of this method is described as phenomenological reduction, whereby the researcher attempts to remove the phenomenon in question from its cultural context so as to focus on its defining features (Dowling, 2007). Connected to this principle is the notion that researchers must suspend their common ways of looking at a topic and approach it with a fresh perspective. This characteristic of phenomenological research is described by the Greek word *epoche*, which refers to the process of suspending all previous knowledge about a topic and refraining from ordinary ways of perceiving things. By attempting to set aside all assumptions, preconceptions, biases, and judgments about the subject of inquiry, researchers are better positioned to engage with and understand participants' experiences (Creswell, 2013a; Lichtman, 2013; Moustakas, 1994; Patton, 2002; Pollio, Henley, & Thompson, 1997). While it is impossible for researchers to fully set aside their own ideas, they can make their own thoughts about a
topic explicit by writing them down, thereby helping them to recognize how these thoughts can potentially influence the course of the data collection and analysis (Lichtman, 2013; Pollio et al., 1997).

In the field of education, phenomenological research helps to challenge assumptions about the lived experience of learning and provides insights into aspects of learning that are not quantifiable. Phenomenological research does not attempt to measure how much was learned or to describe all of the factors that caused learning to occur; rather, it focuses on the experience of learning itself so that educators can better understand students' perspectives (van Manen, 1990). van Manen (1982) explained that phenomenology can help to ground pedagogical theory and practice in an understanding of the lived experiences of students:

.“. . . in the field of curriculum we confidently talk about "selecting, planning or organizing learning experiences." This confidence begs a question—the question whether we really know what it is like when a child "has an experience" or when the child "comes to understand something.”. . . In our efforts to make sense of our lived experiences with theories and hypothesizing frameworks we are forgetting that it was living human beings who bring schemas and frameworks into being and not the reverse. (pp. 296-297)

Phenomenological research in educational settings can be used to bring a deeper understanding of how students experience learning, which can help educators to better appreciate and empathize with the perspectives of their students and plan learning scenarios accordingly.
With the rise in popularity of CL at the college level, students of all majors experience a variety of CL situations throughout their college careers. Phenomenology can illuminate how students feel about CL experiences and understand the impact that it has on their lives and educations. This research explored how quiet students participated in these situations by using their own descriptions of, feelings about, and interpretations of their experiences. By using a phenomenological approach to understand the essence of CL for quiet students, college instructors can consider these experiences when designing learning activities and assignments.

**Data Sources**

This study used three sources of data: interviews, participant reflections, and course syllabi. A description of each source is provided below.

**Interviews**

In phenomenological research, in-depth interviews are an essential tool for understanding participants' experiences in their own words and from their own points of view (Pollio et al., 1997; Seidman, 2013). Kvale (1996) explained how the use of the interview to explore lived experiences is fundamental to phenomenology because it "gives a privileged access to our basic experiences of the lived world" (p. 54). In phenomenological interviewing, questions are designed to evoke detailed descriptions of experiences, and follow-up questions use the participants' own language as much as possible (Pollio et al., 1997).

In this study, semi-structured interviews were used to understand how self-identified quiet students experienced CL situations. Students' own words formed the raw material for this study, "revealing respondents' depth of emotion, the ways they have
organized their world, their thoughts about what is happening, their experiences, and their basic perceptions" (Patton, 2002, p. 21). The focus of these interviews was on creating a natural dialogue with participants (Pollio et al., 1997). Pre-determined questions were asked to ensure that a focus was maintained for each interview, but some questions also emerged from the natural course of the dialogue on the basis of individual information shared by each participant (Pollio et al., 1997). Students' expressions of their subjective experiences of CL in their own language provided a basis for arriving at the essence of these experiences (Seidman, 2013).

This study followed Seidman's (2013) recommendation for using a series of three sessions in phenomenological interviewing. The first interview helped to build trust between the researcher and participant, and established a context for the participants' experiences. The second interview focused on a reconstruction of the details of those experiences, and the third interview invited participants to reflect on the meaning that their experiences had in their lives. In the first interview, which was conducted at the beginning of the fall semester, context was established by focusing on participants' understandings of themselves as quiet persons and on the experience of being a quiet student in college classes. In addition, the first interview reviewed the students' perceptions about their prior experiences with CL in college and any factors that may have contributed to those experiences. The second interview, which was conducted mid-semester, focused on what participants were currently experiencing in CL and other learning situations in their college classes, asking them to share as many details as possible about what was occurring during these situations. During the third interview, which was conducted at the end of the semester, students were asked to share further
details about their experiences and to reflect on the meaning of CL in the context of their overall college learning experiences. The focus of each interview was as follows:

- **Interview One:** In what ways does the student experience learning in college as a quiet student? What experiences has the student previously had with CL in college?

- **Interview Two:** What is it like for the student to participate in CL and other classroom situations in their college classes? What are the details that characterize these experiences and how do they compare to other learning experiences?

- **Interview Three:** What does it mean to participate in CL and other learning situations in college as a quiet person? How does the student make sense of his or her learning in CL situations and in college in general?

Interviews Two and Three also contained questions relevant to each participant's unique experiences as shared during the first or second interviews. See Appendices A–C for a list of interview questions.

**Participant Reflections**

Reflections are a type of documentation that is commonly used in qualitative research in the form of journals, diaries, and other formats (Patton, 2002). Journaling is a method that allows participants both to document and reflect upon their experiences, and can be used by researchers to enhance interview data (Hayman, Wilkes, & Jackson, 2012). For the purpose of this study, short written reflections were used in a manner akin to brief sessions of journaling, but they were recorded as written responses, text messages, or emails.
After participating in CL situations, students were asked to immediately write a text, email, or response on paper recording their thoughts and impressions. Seven participants completed this activity between one and four times. Participants either brought their reflections to their interviews or they used their smartphones to text or email their reflections to the researcher. Brief written reflections represented a way to quickly and easily capture students' immediate responses to CL that were later explored in the interviews. Students provided reflections following participation in CL experiences in response to the following prompt:

_Soon after participating in a group activity for a class, write a few thoughts about what it was like. What did you do? What did you like? What didn't you like?_

Reflections were discussed with the participant during the second and third interviews.

**Course Syllabi**

Syllabi for the participants' courses were used to better understand the types and parameters of CL assignments that the students were experiencing, although they were not used as data sources for the purpose of analysis. This documentation helped to provide a context for the interviews and enabled more specific questions to be asked about the details of the students' experiences related to these assignments. The syllabi also provided information about the weighting of CL in the course, the parameters of these types of assignments such as group size and type of project, and the specific requirements for how these assignments were to be executed.

**Participants**

Criterion sampling was used to select participants in this study because phenomenological research must necessarily be conducted with people who have lived
through the experience in question (Creswell, 2013a; Patton, 2002). The criteria that participants met were as follows. First, participants consisted of college students who self-identified as having a quiet personality. Second, participants were required to participate in some form of CL over the course of the semester in question. Because students who were taking more courses were more likely to participate in CL, participants were required to be enrolled in a minimum of 12 course hours during the time of the study. Third, participants were upper-division students (that is, students who were in their junior or senior year of study). Juniors or seniors were selected because they have considerable experience with college-level assignments and have a stronger sense of their needs and preferences as learners than do lower-division students. Fourth, participants were born and raised in the United States. Because international students studying in the United States may have different reasons for being quiet and/or different patterns of working on CL assignments, they were not included in this study.

Ten participants were recruited for this study. Because of the extensive interaction that often occurs with each participant through multiple in-depth interviews, as well as the time involved in the coding and analysis of these interviews, the number of participants in a phenomenological study is generally ten or less (Creswell, 2013a). To identify both the commonalities and differences that exist among quiet students’ experiences of CL, participants were recruited from a variety of majors, including those from professional programs (e.g., nursing, education, journalism, engineering) and those from the liberal arts and sciences. See Table 1 for a list of participants, their majors and minors, basic demographic data, and their PRCA scores (discussed below).
Table 1.

Study Participants

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Gender</th>
<th>Status in school</th>
<th>Age range</th>
<th>Race*</th>
<th>PRCA score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art &amp; Sociology</td>
<td>F</td>
<td>Senior</td>
<td>18-25</td>
<td>W</td>
<td>111</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>M</td>
<td>Junior</td>
<td>35-40</td>
<td>W</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Secondary Education</td>
<td>ESL</td>
<td>F</td>
<td>Junior</td>
<td>H</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Community Health Sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French &amp; Psychology</td>
<td>Communication Studies</td>
<td>M</td>
<td>Senior</td>
<td>18-25</td>
<td>W</td>
<td>100</td>
</tr>
<tr>
<td>Journalism</td>
<td>M</td>
<td>Senior</td>
<td>18-25</td>
<td>W</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>Economics</td>
<td>M</td>
<td>Junior</td>
<td>18-25</td>
<td>W</td>
<td>82</td>
</tr>
<tr>
<td>Nursing</td>
<td>F</td>
<td>Senior</td>
<td>18-25</td>
<td>W</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>Psychology &amp; Art</td>
<td>F</td>
<td>Senior</td>
<td>18-25</td>
<td>W</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Theatre (Stage Management)</td>
<td>Business</td>
<td>F</td>
<td>Junior</td>
<td>W</td>
<td>97</td>
<td></td>
</tr>
</tbody>
</table>

*Note: W = white, H = Hispanic

Recruitment for the study posed a particular challenge because, by nature, quiet students can be difficult to identify and may not always be the first to volunteer. Therefore, the researcher visited a variety of classes with the permission of the instructors to explain the study to students and invite them to participate. Because data collection started at the beginning of the fall semester, participant recruitment occurred during the preceding spring semester. When visiting classes, the researcher first administered the 24-item Personal Report of Communication Apprehension (PRCA-24) (McCroskey, 2009), an instrument which was developed in 1982 and has since been widely used because of its high levels of reliability and validity. This instrument was used as a guide in selecting students to participate in the study. While not all students who are quiet have communication apprehension, all students who have higher levels of communication apprehension are generally quiet (Richmond et al., 2013). The PRCA-24 includes items that ask students to rate their perceived levels of communication apprehension in relation
to four different types of contexts: small groups (e.g., "I am tense and nervous while participating in group discussions"), meetings/classes (e.g., "Communicating in classes usually makes me uncomfortable"), one-on-one conversations (e.g., "Ordinarily I am very tense and nervous in conversations"), and public speaking (e.g., "My thoughts become confused and jumbled when I am giving a speech"). Each of the four areas is addressed through six questions which are rated on a 5-point Likert scale (from strongly agree to strongly disagree) (see Appendix D). Students were asked to score themselves by using the accompanying rating sheet to determine whether they had low, average, or high communication apprehension (see Appendix E). After administering the PRCA-24, the researcher explained the study to students and asked those students who considered themselves to be quiet or introverted and were interested in participating to submit their contact information (see Appendix F). The researcher explained that the PRCA-24 could be used to help them determine whether they were quiet. Because some students identified with the quality of introversion more so than quietness, both terms were used when recruiting participants.

The researcher selected a variety of students who scored high or moderately high (with a score of 80 or above) for communication apprehension and who expressed an interest in participating in the study. Participants' PRCA scores are included in Table 1. The researcher reached out to interested students through email and held a brief initial meeting with each student during the spring semester to ascertain whether they met the criteria for the study (including whether they did indeed self-identify as quiet or introverted students), to explain the study in detail, to collect more information about their contact preferences, and to obtain their written consent. The researcher also
recorded demographic and contact data about the students during this initial meeting (see Appendices G–I for the contact information sheet, the student data sheet, and the consent form). This meeting helped the researcher to assess whether the student was a good fit for the study and whether the student seemed committed to participating over the course of the fall semester. At this initial meeting, the students were also informed about the available compensation for the study in the form of cash or gift certificates: $15 for Interview 1, $20 for Interview 2 and reflections, and $25 for Interview 3 and reflections. If the students were confirmed as good candidates for the study, the researcher informed them that she would contact them again prior to the beginning of the fall semester to set up the first interview.

**Data Collection**

This study was conducted under the auspices of the university Institutional Review Board.

The first set of interviews was conducted during the first and second weeks of the fall semester. The second set of interviews was conducted mid-semester, and the third set of interviews was conducted during the final weeks of the fall semester. During the week or two prior to each interview, participants were contacted via email to arrange for an interview time. Participants were sent an email reminder about each interview the day before it was scheduled. All interviews were conducted in a group study room in the library or the student achievement center on the university campus. Each interview lasted approximately 30–75 minutes. All interviews were audio recorded and transcribed verbatim.
During the first interview and again during the second interview, students were given the reflection prompt and asked to record their responses immediately following an interaction that occurred as part of a CL assignment or activity any time during the semester. Students were given instructions for writing the reflections and sending the texts or emails. Students were also emailed a reminder about the reflections a week or two before the second interview and again before the third interview. Reflections were discussed during the second and third interviews.

When setting up a time for the first interview, the researcher asked participants to bring copies of all current syllabi that contained descriptions of a CL assignment or activity. Course syllabi were reviewed during the first interview to identify those classes that had a stated CL element. During the first interview, the syllabi were also photographed and returned to the student. Prior to the second and third interviews, the researcher reviewed the syllabi to better understand the requirements of the students' assignments and ask questions as appropriate.

**Data Analysis**

The goal of phenomenological analysis is to discover the essence of a particular phenomenon; as such, it involves a complete description of that phenomenon but also moves to a deeper understanding of its essence. Phenomenological analysis proceeds through a process of induction, in which patterns and themes are derived from a close study of the data (Patton, 2002). Traditionally, phenomenological analysis moves through several steps, beginning with a process in which the researcher first *brackets* off the data involving the experience in question from other experiences to prepare for in-depth analysis. The data are then *horizontalized* by isolating individual elements derived from
the data and giving them equal weight in the analysis. Next, the data are organized into meaningful clusters, and themes are created from the clusters. Then, the researcher creates textural (i.e., what was experienced) and structural (i.e., how it was experienced) descriptions of each theme. Finally, the researcher synthesizes these descriptions to create a final interpretation of the meaning and essence of the phenomenon (Creswell, 2013a; Moustakas, 1994; Patton, 2002).

With some variation, this study followed this general pattern of phenomenological analysis by proceeding through the following steps: (a) preparing the data, (b) coding and categorizing data, (c) thematic and descriptive analysis and interpretation, and (d) member checking (Creswell, 2013b; Patton, 2002; Rubin & Rubin, 2011). These steps are described below.

First, all interview and reflection data were transcribed into separate Microsoft Word files. All participants were given an identification code that was used to maintain confidentiality. Data files were organized using the identification code, the source type, and item number (e.g., H1, CRef2, etc.). Data files were then loaded into NVivo software to facilitate the coding and analysis.

Coding is the process of labeling different chunks of data with a descriptive code to facilitate the organization and analysis of that data (Creswell, 2013b). Coding proceeded in an inductive manner, with codes and categories derived from a close reading of the interview and reflection transcript data (Boyatzis, 1998). Data were reviewed to identify individual units of meaning, and a list of descriptive codes was generated. Codes were preliminarily grouped into clusters, and all codes and clusters were described in a codebook.
Each transcript was re-read thoroughly, and individual statements that related to the study were identified and coded. By using NVivo software, codes were applied to the transcripts line by line, and new codes were created as necessary. When data did not appear to be consistent with existing codes and categories, the coding structure was re-examined and the codebook adjusted as necessary. This process of coding data and clustering codes began immediately following the first set of interviews and occurred in conjunction with the second and third interviews throughout the process of data collection.

Themes represent patterns found in the data that describe and organize the data, provide explanations of the data, show relationships among different elements of the data, or suggest ways that the data can be interpreted (Boyatzis, 1998; Rubin & Rubin, 2011). Following completion of coding, a list of themes was then generated from the clustered data. Detailed descriptions were created for each theme that incorporated the language used by the participants through the use of direct quotations. Descriptions contained specific examples and covered the experiences of the participants. Once the themes were generated and described, they were compared against the coded data to ensure that they accurately represented the participants' experiences and that all relevant data had been taken into account.

For validation purposes, an overview of students' experiences of being a quiet student and of CL was shared with the participants during the third interview. Participants were asked whether these descriptions of learning as a quiet person and learning through CL were consistent with their understanding of their experiences. If the participants found discrepancies between these descriptions and their own experiences, the data were
revisited and analyzed, and the descriptions were adjusted accordingly (Creswell, 2013a; Lichtman, 2013).

**Summary**

A qualitative, phenomenological research design provides an excellent framework for the study of quiet students' experiences of CL at the college level because it allows students to describe their own experiences and reflect upon what it means for them in the context of their own lives. In this study semi-structured interviews, participant reflections, and course syllabi were used to understand students' CL experiences over the course of a semester. While the data collected were extensive, a detailed and systematic approach was used to facilitate analysis and interpretation.
Chapter IV: Quiet Students' Participation in Classes

Because collaborative learning (CL) occurs within the larger context of academic coursework, quiet students' patterns of academic participation were explored in detail. This chapter will begin with a brief overview of how these students characterized their personalities in terms of quietness. Next, it will describe several themes which emerged in relation to students' participation in classes, including (a) the choices that quiet students make when navigating through an inherently social academic environment, (b) the difficulties of meeting instructors' expectations when communicating in classes, (c) perceptions of engagement and unengagement in the classroom, and (d) the particular learning characteristics of quiet students' experiences. The next chapter will move to the issue of how these students experienced CL in light of these larger contextual issues.

When asked to characterize themselves as having quiet or introverted personalities, participants most commonly described themselves in relation to or comparison with other people. Most participants described how they do not have many friends, but rather, have a few friends with whom they have close relationships. When they feel comfortable with others, they are more likely to open up, and in fact, they may become quite talkative with their close friends. This reluctance to open up to people with whom they were unfamiliar extended to their choice of social situations as well. Most participants described how they preferred quieter social activities that involved only a few people over larger social gatherings. When they did have to interact with people, they often fared better in smaller groups or one-on-one situations rather than larger groups. Several students described their preference for staying at home and engaging in quiet activities as opposed to participating in lots of social activities. A few participants
described how they preferred quieter social situations because but they often became "overwhelmed" or "drained" by extensive social interactions. For example, the education student explained, "I do like to go out, I do like to have fun, but only in small portions. After a couple of hours I feel drained. I need a break. I need to just step away for a minute." While some students described this tendency to get overwhelmed in social situations, others expressed feelings of judgment and self-consciousness about their ability to interact well with others. For example, the French/psychology student said, "I pretty much don't talk to anyone ever really. If they're not in my tiny little social circle, I don't really talk to anyone. And that's on a good day. On a bad day I just freeze up and look really awkward." Not surprisingly, several participants characterized themselves as having a quiet voice and being less expressive than other students, and several described their preferences for listening and observing over talking.

Most participants described how they knew they were quiet because they repeatedly heard others describe them as such. Often these students felt frustrated by these descriptions of themselves or felt that others were implying that being quiet was a negative quality. A few students described how they were surprised by this characterization of them by others because they felt that they spoke as much as was necessary. For example, the math student explained that "It's weird because I don't feel introverted. At work initially I had people telling me I was quiet and I never felt like I was. Whatever I felt like I needed to say, I said it. . . . Those moments of just silence don't bother me much." Several students used language to describe themselves that suggested a need for social distance, such as wishing to be in one's own "bubble," wear an "invisibility cloak," or be in a "hamster ball." A few participants described themselves
in terms of some of the negative perceptions that exist about quiet people, using terms such as "outcast" or "lone wolf."

In spite of what they perceived as the negative judgments of others about their personalities, several participants described being comfortable with themselves as quiet people. The math student said, "I'm not incapable of communicating with people. It's not really destructive to my life or family or friendships or anything like that. It's just more of a personality." They had a strong sense of self-concept and often felt that others did not understand their strengths. For example, the health sciences student connected her quiet personality to a tendency to think more deeply about things: "I just feel more comfortable being quiet . . . I feel like I spend my time more thinking about the subject at hand." The journalism student also connected his quiet personality to a greater degree of introspection: "I kind of like that I'm more quiet. I like that I'm more introspective. I like that I don't speak unless I feel like it's necessary because then I feel like I don't say as much dumb things." These students expressed a wish that others would recognize that "being introverted is not a bad thing." Many students simply enjoyed being by themselves. A few participants articulated a desire to be more outgoing, but in all cases this was followed by an expression of their own comfort with themselves as quiet people. For example, the journalism student stated, "Sometimes I do wish I was more outgoing or I had more friends . . . but then, you know there are things about being quiet and introverted that I like and given the choice, I feel like I would still be introverted." Thus, participants were aware of how they were perceived by others, but most of them felt comfortable with themselves as quiet people and had a strong sense of self-concept.
Navigating through a Social Academic Environment

Participation in CL scenarios does not occur in a vacuum. The ways that quiet students participate in small groups can be influenced by any number of factors, including where they sit in classes and how they interact with other students. Even their interactions with instructors can have an impact on how they understand CL assignments and their own participation in them. While many CL activities occur during class time, very often students must work with each other outside of classes to complete large group assignments. Thus, quiet students' preferences for completing academic work, both in and outside of class, can have an impact on their participation in CL scenarios as well.

However, for many quiet students in this study the academic environment was a "noisy" one that was highly social and filled with distractions. Participants made a number of choices about how they navigated through this social academic environment to enhance their ability to learn successfully, and these choices were consistent with their quiet personalities.

Participants’ quiet personalities influenced their participation in classes from the moment that they walked into a classroom on the first day of classes. A few participants often sent non-verbal signals to other classmates that they preferred not to engage in conversation when they entered a classroom. For example, the journalism student preferred to walk into class wearing headphones and sit "in the corner or in the back." He then engaged in "doing my homework or I'll be reading my textbook or just a book that I'm reading for my own enjoyment" to portray the impression that "I'm not really inclined to talk with anybody else." The art/sociology student often found the classroom to be too noisy as students were arriving, so she preferred to wait near the door until class was
about to begin and things got quieter, at which point she took her seat. She too frequently wore her headphones around other students "because if you have headphones on people don't talk to you." The health sciences student liked to sit "towards the front, but in a corner where no one can sit next to me on one side" to minimize her interactions with other students in the class. A few participants described how they felt most comfortable with other quiet students and sought them out. For example, the education student described how she frequently strategized about how to sit next to other quiet students: "I just kind of walk into the classroom that first day kind of late and see where there's only one or two people sitting at a table, and that's the table I join."

However, despite their inclination to want to reduce interactions with other students they did not know, five participants often recognized that they needed to choose seats that helped them minimize noises and distractions, such as sitting toward the front of the room. For example, the art/sociology student described how, "I have to sit in the front near the center because I'm easily distracted by noises. . . . It's easier to ignore them if they're behind me rather than in front of me." However, for the psychology/art student, this need to minimize distractions through her seating choice had to be sacrificed if it forced her to walk in front of other students because she felt that this drew attention to herself. She described how "If the door is at the front of the room, then I'll sit right there. But if it comes in towards the back of the room . . . then I sit in the back because I don't like walking past all the people to get to the front."

Four participants complained about the excessive noise in their classes and the difficulty of focusing under these circumstances. The math student described the "constant chatter" in a large-lecture class: "You can't concentrate at all. I honestly have
skipped a class before because I just don't see a point sometimes because it's like how close do you have to sit to hear anything? . . . It actually drives me nuts." The computer science student described an incident in an algorithms class when he was having trouble understanding some difficult problems:

It's just a really long class, really difficult to pay attention. And these people were talking and instead of just whispers it started to become like a little bit louder than whispers and I cannot hear what the teacher is saying when there's this psspsspsspss in my ear the whole time. And finally after the third day that these people were talking beside me I interrupted class and I said "You guys, please be quiet, I'm trying to pay attention," and I think it came across as pretty angry.

He described how he had a tough time going back to class after that day because he felt embarrassed about interrupting the class.

Six participants believed that other students in their classes recognized that they were quiet or introverted. Their quietness sometimes resulted in their feeling isolated from others because, as the art/sociology student said, "people can kind of tell when you're not social and leave a seat open next to you on both sides." Some students believed that others judged them negatively for being quiet. For example, the French/psychology student said, "I can tell people that for the first time that they're around me, they're super just like, 'What is she doing?' Or they'll give me weird looks." A few participants described bonding with other quiet students in their classes, which they enjoyed. For example, the health sciences student said that "If I make a friend in class, it's usually just one friend and I usually try to go for the person that's also quiet." The art/sociology student also described how she liked finding and talking with people who were similar to
herself: "I love talking to people. I'm just not good at it. . . . Usually people with similar problems band together. So it's usually people who have anxiety or depression or problems around people or outcasts." However, participants were not averse to talking with more social students too. Four participants described having satisfying experiences when outgoing students in their classes initiated conversations or friendships with them, which they enjoyed.

Nine participants thought their instructors recognized that they were quiet students, while a tenth student felt that her instructors did not even notice that she was there because she had to take many large lecture classes. While many participants felt reluctant to initiate communications with their instructors outside of the classroom, several described how their comfort level with their instructors affected how likely they would be to interact with them. Having smaller classes was important in this regard. The health sciences student described how in one of her smaller classes there "was definitely a lot more interaction with the professor, and the professor really got to know each and every one of us, instead of there being 300 people in a lecture hall." This made her feel more comfortable about communicating with her professor and more inclined to speak up during class. Some of these quiet students were reassured by their instructor's overall attitude and demeanor toward them in the classroom. The psychology/art student described how "some teachers I'm OK with just approaching because they give that open feeling and then some teachers it's a little hard just because they're a little more intimidating than others."

Four participants described feeling positively about instructors who had reached out to them, related to them as individuals, made a point of noticing that they were
attentive, tried to help them learn, or went out of their way to give them special attention. The art/sociology student described how she had told one of her art professors that she was interested in learning about bookbinding. That professor came in to campus on her day off and spent over four hours teaching her how to bind a book. This student described this as "her favorite learning experience" in college because "it showed that some teachers actually do care." While many participants appreciated instructors who showed that they cared, some had also been deeply affected by instructors who they perceived were "condescending," "aggressive," "belittling," "yelled at" students, or failed to interact well with students. This inevitably made them more reluctant to speak out in classes or ask them questions outside of class time. The French/psychology student described emailing a professor with some concerns, but the professor criticized her message for having typos. When she went to class the next time, she felt deeply embarrassed and described how "I just refused to look at her. God, it was bad. . . . I'm like 'please, just kill me now'." Participants felt more reluctant to participate in classes led by these types of instructors.

While most participants believed that their ability to ask questions of their instructors was essential for their learning, they differed as to whether they would visit instructors during their office hours. Six participants never or almost never visited instructors during their office hours or after classes because they felt uncomfortable or intimidated. The psychology/art student described how, "If I don't understand things, it's hard for me to go up to the teacher. It is intimidating to go to their office hours just by themselves." However, four participants valued the opportunity to speak with their instructors in one-on-one situations and often sought them out. They often felt
uncomfortable asking their questions in class where they felt social pressure from other students, so they sought out occasions to ask their questions of instructors in private. A few students described waiting until after class when other students had left to ask their questions. For example, the health sciences student described how "If it's just one-on-one, I tend to do better than if there's people in the room, or I'll wait until everyone leaves to ask a question." A few participants communicated with their instructors during office hours because they wanted them to know that they were engaged in the classes.

Because in-person communication was often difficult, six participants valued the opportunity to email instructors regarding their questions. For some, email was a much less intimidating method of communication than in-person interactions. The psychology/art student described how email gave her the opportunity to craft her questions more carefully than she would be able to do in person: "I usually email them. . . I'm not good on the spot, so I like being able to rewrite what I'm trying to say multiple times." However, a few students described how they rarely even emailed instructors with their questions; instead, they tried to figure out the answers to their questions themselves. The math student had never asked a question of his instructors in office hours or email during his entire college career. In fact, when he had questions, he used the internet as a way of finding substitute instructors who could answer his questions. He explained: "Every teacher you get isn't going to be a great teacher. But with the internet you can always find that great teacher."

All 10 participants described how they needed to study in quiet environments, usually in places that minimized distractions and allowed them to focus. Five participants described how they almost always studied at home because they found their home
environments to be quiet, comfortable, and less distracting than places on campus. The math student described how the university did not seem "as focused on learning as they are [on] creating like this city within a city kind of thing." He found it difficult to study in such a busy environment: "There are too many distractions on campus. And they're all of these restaurants . . . and coffee shops and the courtyards and even the buildings. The architecture is nice, everything's nice, [but] there's a lot of distractions here. So I study at home." The French/psychology student preferred the comfort that her home environment offered, choosing to study on her couch, with a blanket on her lap, a cup of tea nearby, and "dead silence." Some participants liked to study in quiet places in the library or other quiet spots on campus because they found their home environments to be too distracting due to the presence of roommates, pets, and family members.

All participants typically studied by themselves, and they often preferred it that way. Some students had almost never studied with others during their entire college careers. The journalism student described how he had only studied with another student once or twice: "I prefer to just study by myself because I feel like with group study sessions it's more likely to veer off into different sections." Nevertheless, participants did on occasion choose to study with others, and they sometimes found it comforting, enjoyable, or helpful to share their experiences with others or be able to ask questions of other students. For example, the sociology/art student described her enjoyment that came from studying with three other quiet people with whom she'd taken several classes:

We don't usually talk much but we're together. If someone has a question they can ask, but it's not like we're not talking all the time. We're mostly just doing our
own thing with just other people close by. I think that's probably my favorite way to study, [but] it's just hard to find people that will do that.

Several students voiced a similar sentiment about the benefits of getting help from others when the course material was challenging. For example, the nursing student explained how studying with another student helped her do well in a recent class: "What I didn't understand, she would try to explain to me, and what she didn't understand I would try to explain to her." However, in spite of the fact that she felt like she benefitted from studying with someone else, she said it was "hard for me to go out of my comfort zone and go, 'hey, let's study together.'"

In conclusion, quiet students described navigating through an academic environment that is busy, noisy, and inherently social. Thus, participants' personalities influenced their classroom experiences from the moment they walked into a classroom, extending to choices they made about how to minimize social interaction, how to sit next to other quiet people, how to choose seats that helped them focus, and how to minimize the amount of attention that they received from others in the class. Participants often had limited interactions with other students in their classes but sometimes enjoyed those peer interactions that they did have, provided that they did not feel judged in a negative manner. Communicating with instructors was difficult for some quiet students because they felt uncomfortable or intimidated. Some preferred to interact with their instructors face-to-face in one-on-one situations, while others were more comfortable asking their questions over email because they found that to be less intimidating. However, many participants valued opportunities to get to know their instructors and appreciated those who took an interest in them or made extra time for them. At the same time, having
negative interactions with instructors made them even more reluctant to speak aloud in classes. Participants also preferred to study in quiet environments that allowed them to minimize distractions and focus on their academic work. All participants typically studied alone, but some recognized that there were times when it was beneficial to study with others because they found it enjoyable, comforting, or helpful in learning course content.

**Difficulties of Meeting Expectations for Speaking Aloud**

When students participate in CL scenarios, they must by necessity speak aloud with other students. So how do quiet students speak aloud in classes in non-CL situations, such as when called upon by an instructor? For many quiet students, speaking aloud posed many challenges. In many cases participants expressed feelings of discomfort about speaking up in classes and often found it difficult to meet their instructors' expectations for how students should participate in classes. These expectations for speaking aloud were a source of tension and uneasiness for many participants.

When instructors asked questions in class, nine participants reported infrequently raising their hands to respond, and they found it extremely difficult to speak aloud in the classroom setting. The nursing student explained that it was difficult for her to volunteer to speak out: "They ask us to participate and that's always really hard. I'll do the required work but it's always hard for me to raise my hand." While most participants infrequently or never raised their hands, they would speak out in class if an instructor called on them by name. According to the theatre student, "I will 100 percent not speak [in class] unless the teacher actually chooses me." A few students explained that when called upon to give an answer, the instructor often asked them to repeat themselves because they spoke so quietly. One student avoided making eye contact with her instructors in the hopes that
they would not call upon her in class. This reluctance to answer questions asked by instructors also extended to asking questions of their own. For example, the French/psychology described how she would ask clarification questions if she absolutely had to, "but for the most part if I don't really have to talk, I probably won't talk."

Five participants described how the immediate social pressure of the classroom situation made them less inclined to speak out in class. These students felt that it was more difficult to formulate an appropriate response aloud while all the other students were paying attention to them, and they felt that this additional attention was very distracting. The health sciences student explained that, "I just get nervous trying to come up with something good to say off the top of my head while everyone is just staring at me." The journalism student observed that other forms of classroom communication, such as those that involved writing or participating in online discussion boards, removed this additional social pressure, thus making it easier for him to express his ideas: "I can formulate my thoughts more freely and more concisely over technology or written rather than speaking it out. Because speaking out comes with an additional pressure that I don't feel with discussion boards." These students most often dealt with this social pressure by refusing to participate in class discussions. Even when they were certain that they knew the correct answers, they often preferred to stay silent. The psychology/art student described feeling some regret about not being able to speak up in a large class:

In my psych class I'm pretty sure I know the answers but because it's a hundred people in the class I can't answer it. . . . And then sometimes [the instructor] will be like, "This is the answer." And I'll be like (whispered sadly), "That's what I was going to say. I should have said something but I couldn't do it."
A fear of looking "stupid," or "dumb" often motivated six participants to refrain from speaking. Students often commented that they were "afraid to be wrong" and or "scared to be embarrassed." Because classroom discourse is often construed in terms of answers that are right and wrong, the prospect of spoken participation could be intimidating. The journalism student explained:

Most of the time I am not sure of what I'm thinking is in my head is correct, and I don't want to raise my hand and answer a question if I'm not certain that what I'm saying is right. Because I am really scared of that fear and embarrassment of saying the wrong thing in class.

The theatre student described how she worried that she would stutter when she spoke aloud, which often made her forget what she wanted to say: "It's weird because it's like I over think it too much. . . . I'm like 'Oh how am I going to say this so people understand me,' because . . . I have to prepare what I'm going to say so that I don't stutter as much."

These students felt they would be judged by others if they did not say the correct response, if they did not phrase their responses in the right way, or if they delivered their responses in a way that made them look awkward. Some students described how they felt more comfortable speaking on subjects related to their major fields of study. However, for six participants speaking up in their majors was not any easier, and in fact, they found it to be even more challenging to speak in upper-level classes in their majors. The math student felt that it was "harder to speak up" in his major classes because other students were knowledgeable about the subject matter, leading him to be "more fearful of being wrong." The computer science student described how in his engineering classes, "It's not
as forgiving as humanities. It's not about ideas, it's more about facts. So if you don't have your facts straight, it can be kind of embarrassing."

For six participants, these expectations for speaking aloud were made even more difficult because they felt as if their bodies worked against them. The psychology/art student described a strong physical reaction to the idea of speaking up: "I do wish I was more outspoken and I have tried to be. It's just that mentally I feel like 'I'm OK, you're fine, you could do this.' But then physically my body always just reacts in a way that's like, 'OK, you're not OK with this.'" The education student also described speaking aloud in class in terms of a physical reaction: "My heart starts racing and it's like an adrenaline rush." Five students felt that if they were called on in class and forced to speak, they turned red, stuttered, or had a shaky voice, which only increased their feelings of embarrassment and discomfort. The psychology/art said, "Once I start talking, I get choked up and I feel myself turn very hot and uncomfortable, and my voice gets really small and shaky."

Despite their dislike or discomfort with speaking aloud in classes, certain types of classroom situations prompted participants to speak up. Seven participants stated that they would be more inclined to speak out if they felt very confident with and interested in the subject matter. The psychology/art student explained that she would speak out "Only if I'm 100 percent that I know the answer. If [the instructor] goes, 'Guesses are fine, there's no right or wrong here,' I won't. I'll try in my head . . . and build myself up to it five times and then I'll be like, 'No, I can't.'" The art/sociology student said that she might volunteer to speak up "If it's something I'm really passionate about. . . . Or if I have a really strong sense of when people are being wronged." A few students described how
they were more inclined to speak aloud in class if they were comfortable with and had respect for their instructors. Most students described how it was easier to speak up in smaller classes than it was in large lecture halls, and the smaller the class size, the less difficult it was. Several students described occasionally speaking out as a way to improve the learning environment in the classroom by asking questions or by answering an instructor's question if no one else would participate. The journalism student stated that

Most of the time I'll stay silent until the silence becomes really uncomfortable and nobody's answering, and the professor is just kind of like staring out looking for an answer. . . . Then I feel compelled to do it because I don't want to make this hard on the professors even though I don't really want to speak up.

Only the computer science student expressed few reservations about speaking aloud in classes. Although he often preferred to listen and observe, he still spoke out in classes: "I know that I'm introverted and quiet, but somewhere along the line I learned that asking questions is OK and I can ask them confidently." When they did speak out, some participants felt proud of themselves for being "brave." For example, the psychology/art student described how,

It made me get all nervous and I can only talk for like a couple seconds. But at the same time because I liked [the subject] and it felt good to put my information [out there] so . . . I think it was good for me personally.

Nine participants described needing time to craft their responses before speaking aloud and they felt very uncomfortable with having to respond immediately to an instructor's question. In some cases these students wanted to be able to plan their responses. The education student explained, "When I speak [in class] I plan out what I
want to say. And I make little outlines, almost like little notes that can help guide me before I speak." Participants often wanted time to think carefully before speaking aloud, and they preferred not to speak if they did not have adequate time to fully develop their thoughts. Their need for preparation time varied depending on the type of question asked by instructors and the type of material that was the focus of the lesson. The math student described how he often did not speak in his classes because he needed time to sort through and process the new information he was learning in class: "Sometimes it's just [that] new information doesn't always set in that fast and you're trying to piece it together in your own head. You're trying to connect it with old information and new information."

The education student preferred that her instructors let her know a week ahead of time when they would be discussing a topic so that she could come to class prepared. For many students, their thoughts came quickly but the right words did not, and they worried about looking "stupid" in front of other students if they could not come up with a correctly phrased response. The journalism student explained,

I definitely need time to fine tune my thoughts because if I just speak on the fly I either end up saying something that is totally different from what I thought in my head or it just comes out like jumbled and I end up ranting and it's disorganized. If I have time to think about what I'm saying, it's more concise, it's more eloquent, and it's more in line with the discussion.

Giving presentations has become a common feature of many college classes, and these assignments posed a special problem for seven participants. Their reactions ranged from feeling "awkward," and "stressed" to feeling that giving presentations was "really scary" and "nerve wracking." Five participants described feeling out of control when
giving presentations. The nursing student disliked presentations because "I get up in front of the class and I freeze. Everything I know leaves. I don't know what to say." A few students described their reactions to presentations in terms of having panicked feelings, red faces, or shaky voices or bodies. The French/psychology felt that "It never goes well. I panic the whole time. And then I stutter." The sociology/art student even experienced panic attacks that involved "hyperventilating and dizziness and sometimes crying." The psychology/art student was embarrassed when

I almost fell off the chair in front of the class, and I was just hot and nervous and I brought notes up with me but [the instructor] said that at the beginning of the year that we weren't supposed to bring notes. But then I saw everybody else before me bring notes. So I was like, "Fine, I'm bringing my notes up," but then I was just thinking about how I'm not supposed to have notes, I'm not supposed to have notes, and then oh my god, I almost fell.

In conclusion, instructors’ expectations for speaking aloud in classes served as a source of tension and discomfort for the participants in this study. While most preferred to stay silent in classes, there were many reasons why they chose to speak aloud, such as being called on by an instructor, being interested in the subject matter, or wanting to create a more positive learning environment. However, in many cases students reported feeling too much social pressure or peer judgment, or feeling a lack of control when they tried to speak up, as if their bodies had turned against them. Most participants felt that instructors asked for responses from them at too fast a pace. They were uncomfortable with having to craft responses on the fly and they wanted time to reflect upon the subject
matter and prepare their answers. Many felt that if they did not have time to choose their words carefully, then they would look foolish in front of their peers.

**Perceptions of Engagement and Unengagement**

Instructors attempt to engage students in learning class content, but throughout this study, participants expressed the belief that instructors misread their silence for a lack of engagement. The core of this perceived misperception was the equation of engagement with speaking and the primacy given to it above all other forms of participation. Quiet students often struggled with the need to show signs of their engagement and their inclinations to want to learn in their own ways rather than those that equate engagement and learning with speech. They recognized that engagement was often judged in terms of a successful performance and that this performance was one that involved speaking aloud.

Six participants believed that their instructors had negative perceptions of quiet students. These students felt that their instructors thought that they may have been less engaged in the course material because they were quiet, or that their quietness indicated that they were "lazy," "rude," "disrespectful," "sad," "mean," or "different." The health sciences student said, "I feel like professors could just be a little bit more considerate about someone who's introverted. Just because they're quiet doesn't mean they don't want to participate in class and they're not interested in the class. They're just quiet." A few students believed that their instructors felt that that quiet people had serious problems. The math student recalled a time in his younger years when a teacher believed that because he was quiet, he was somehow "defective" or had been "abused." He felt that many negative perceptions exist about quiet people that are perpetuated in the classroom:
I think people who are really extraverted think people who are quiet are either sad or they have something going on. . . . There's a difference between what I think and what I think should be said, and I guess I weed out a lot of my own thoughts. . . . It's not ever meant to be a disrespectful thing.

The journalism student echoed this feeling that quiet people are often perceived as having problems:

Professors and I guess people in general view that as a bad thing. Like if you're shy or quiet you have something to hide or you don't want to participate or you didn't do the reading or you didn't do the homework. Professors will think of quietness or shyness as something that's bad and something that needs to be challenged. . . . When you're quiet, people think that you're hiding something or you're mean or you don't want to talk to people. I like talking. I feel like I'm chatty, I feel like I'm friendly, but I'm not social or outgoing. . . .

Participants recognized that their instructors wanted them to speak aloud, but they felt that they could not always participate in the way their instructors wanted; they preferred to listen, observe, write out their thoughts, or take notes as a way of engaging in a class. Seven participants described how they enjoyed listening to instructors' lectures and felt that lectures were often well-suited to learning certain types of content. These students often tried to show their instructors that they were engaged by looking at them attentively and nodding their heads. The journalism student said, "I want them to see and to know that I'm listening to you and I'm observing the information without speaking. . . . It's not that I'm quiet because I don't care. I'm just quiet because I'm quiet." Several participants also enjoyed their instructors' use of web applications that allowed them to
respond to questions by using a phone or laptop and see an aggregation of other students' responses without having to speak aloud. Many participants voiced a preference for communicating in writing rather than out loud. This extended to online class discussion boards, where in the words of the health sciences student, "it's just me and the computer" and where they did not have the added pressure of social attention.

For the most part, students preferred that their instructors did not try to encourage them to speak out more, and eight of the participants used words like "forced," "hate it," "uncomfortable," "unhappy" "pressure," and "makes it worse," to describe their reactions when instructors attempted to get them to speak out. The sociology/art student explained how it made it worse when instructors tried to get her to speak out because "now the fact you don't want to speak up is being drawn to the attention of the entire class." She likened the experience to putting a child in skates and pushing them down a hill. The journalism student thought that instructors who tried to force quiet students to speak created more pressure, and this pressure "overtakes what am I actually learning or what am I actually thinking." A few participants felt that they would only be comfortable with being encouraged to speak out more if it was about a subject with which they were very comfortable. The theatre student explained that if she was encouraged to speak out in others subjects, this encouragement would make her "uncomfortable" because she would not have enough time to prepare: "I just like to think about it first before I answer." The education student, however, said that although she "hated" when her instructors tried to get her to speak out more, she "appreciated that they had taken interest in me," reinforcing "that it's OK to say something. It's OK to get involved if you really feel passionate because they can tell that I'm dying to say something. I just I don't always
know how to find my way in." While several students described being proud of themselves when they did speak out in classes, they generally preferred to do it on their own terms, without being forced.

Participants wished that their instructors had a better understanding and were more accepting of the personalities of quiet students. The French/psychology student wished her instructors recognized that "We're here and we're present. I don't want to say we can't say anything. It's just the idea of it is not very pleasant." The computer science student wished his instructors knew that sometimes he learned better when he had a quiet space to work through a complex problem alone rather than having to work through it collaboratively in a noisy classroom. The sociology/art student felt that her quiet personality combined with chronic anxiety made it difficult for her to cope with some classroom situations that involved lots of noise and talking. She wished her instructors knew that when they pushed her to speak up in class, they may actually be "pushing someone who actually can't cope with it. . . . I'm not responding because I will completely break if they push me too hard." Most students wanted their instructors to realize that they were engaged and respectful in classes. The nursing student lamented that "Because we're quiet or we're not talking doesn't mean that we're not interested or that we're not getting it. . . . Sometimes I feel like professors think I'm not a good student but they don't know that I study 24/7." The math student captured the general sentiment when he said that he wanted instructors to understand that being quiet is "not a disrespectful thing. It's not an unhappiness. It's not anything like that. It's just a different personality."
In summary, many participants felt that because they were quiet, they were perceived negatively by their instructors, and they felt that their instructors viewed them as being less engaged in the course material than more outgoing students. They struggled with ideas that equated classroom engagement with speech, and because of their quiet personalities, they felt unable to perform the outward signs of their engagement in a way that was expected. Instead, most participants preferred to participate in classes in ways other than speaking, such as through listening, observing, writing, taking notes, or using technology. Many participants wished that their instructors would take a broader view of what it means to participate in a class. On the whole, quiet students were concerned that their instructors did not entirely accept or understand their quiet personalities. They were concerned that negative perceptions of quiet people hindered their ability to be as successful in their classes as their more outgoing peers, who may appear to be more engaged in learning the course material. Participants wished that their instructors had a better understanding of the needs and preferences of people with different types of personalities.

Learning Characteristics of Quiet Students

Because their participation in college classes was shaped by their quiet personalities, quiet students' learning experiences exhibited particular characteristics. As they attempted to make meaning from their college experiences, they recognized that their quiet personalities came with both advantages and disadvantages in terms of completing their class assignments and learning academic content.

Eight participants felt that there were challenges to being a quiet person in college. In particular, five participants felt that one of the biggest challenges came with
their reluctance to ask for help when they needed it. This included asking questions of instructors in class, in office hours, or over email. The nursing student believed that her learning suffered because of her reluctance to speak up more: "Maybe the learning isn't as in depth because you're not participating as much, so that you're not having conversations with the professors like I see like a lot of people do." This reluctance to communicate could extend not only to instructors and other classmates but to other campus support services as well. The art/sociology described how

It's harder to ask for help when you need it. They're always like, "Go to the tutoring center," and I'm not going to the tutoring center. I tried once and it was complicated and they looked at me weird and I left. Because all it takes is a weird look and you're like, "OK, good bye." . . . You don't have the same resources when you can't really talk to people.

Seven participants disliked it when instructors assigned grades for spoken participation. When professors assigned points for participation, some participants were often more worried about getting points than on making a meaningful contribution to the class discussion. The health sciences student felt participation grades put quiet students at a disadvantage:

When participation is graded on how much we comment . . . and raise our hands, I don't really think that's fair because of course the people that are more extraverted, it's going to be easier for them. But that doesn't mean that someone who is introverted isn't engaged in the class.

The psychology/art student felt that it took extra effort to participate when her grade depended upon it:
I do have to hype myself up a little bit in my head. It'll take me a minute to raise my hand and then sometimes I'll take my hand back down and then I'll put it back up. But eventually I will do it, but it just takes me a minute to get there.

The sociology/art student stated that classes in which "participation is hard core" could make it stressful and difficult to fully pay attention.

Seven participants perceived that many instructors had a tendency to favor talkative students in classes. The computer science student felt that there was a tension in classes between the needs of talkative and quiet students:

I know there are some people who, in order to learn, have to talk about it. And I honestly feel like that's got to be really hard to sit in a lecture and not be able to talk it out. But at the same time I don't feel like I'm that person necessarily. If it's something really difficult, I want to be able to think about it a long time in my head and I feel like there can be a conflict between the people who need to talk about it and the people who need to think about it.

Participants objected both to the types of assignments that instructors created and the ways that they structured and mediated classroom discussions. The journalism student felt that his instructors were "more compelled to gear the class work and the group work to the more outgoing people rather than the shy people," explaining that "a lot of course work is not very directed towards people who like to work by themselves or who are very quiet." A few participants believed that instructors did not know how to control or often neglected to "rein in" very talkative students who tended to dominate discussions. The journalism student complained,
I feel like sometimes that needs to be reined back. But that's never in the minds of the professor. It's always like, "You're not talking, You need to be talking more."
And I understand that it makes their job easier, but I also feel like talking too much makes our job harder.

He resented that instructors were reluctant to say to talkative students, "You're noisy, you're not focused, you're not cooperating. You're not getting your stuff done, you're just being outgoing or maybe you talk too much. Nobody ever says that in a class: you talk too much rather than you don't talk enough." A few participants described talkative students as being "obnoxious" or allowed to take "center stage." The math student believed that instructors tended to like outgoing students because they were outgoing themselves and judged a successful class in terms of having lots of dialogue: "I think a lot of teachers get into teaching thinking of that ideal student. They have a classroom of people with their hands up and there's a lot of back and forth." Overall, these students felt that the tendency of many instructors to let some students talk without limit detracted from their own learning.

In spite of the challenges that came with being a quiet student, nine participants also felt that being on the quieter side came with some academic advantages that helped them do well in their classes. In particular, they felt that they were good at learning on their own. Many participants felt that being quiet had forced them to develop good study and learning habits and to become more "self-sufficient" or more "self-reliant." For example, the sociology/art student was proud of having learned to sew on her own. The education student explained that
I can't rely on others to help me study just because if you don't feel comfortable talking to a lot of people and you get tired interacting with a lot of people, obviously then that's not going to work for you, so you have to find something that does. So you have to learn to take good notes, you have to learn to pace yourself and regulate yourself and not get distracted. Otherwise you're going to fail.

Several students described how they often used the internet to help them learn when they faced difficulties in their studies. They felt that they were "better listeners" and "more observant" than those who were talkative, which was an advantage in some types of classes. The art/sociology student explained

It's easier to pay attention when you don't have the distractions of constantly needing to talk to people. So I'm a lot more focused on my studies than a lot of people that I see around me because it's like they have friends sitting next to them and they're passing notes and I'm just sitting there staring at the teacher.

The education student felt that because she was observant and paid careful attention in classes, she could more easily identify when professors emphasized certain pieces of information that students would be tested on. A few participants felt that being quiet helped them to be better thinkers, which gave them an advantage in their course work. The health sciences student felt that when quieter people spoke out in classes, their responses were more thoughtful: "I feel like someone who is more quiet thinks more about their responses and puts more thought into the subject than the person who's outgoing and just blurts out an answer. So I feel like I spend a lot more time really thinking about the material." The journalism student voiced a similar sentiment: "Because
I don't speak up as much, I'm more likely to think about my answer and I'm more likely to think about what I'm saying. . . . Is this beneficial to the discussion rather than just talking for talking's sake?" A few students felt that because they listened carefully in classes, they could clearly hear all sides of an argument and be more objective in evaluating them.

Thus, quiet students perceived that their learning experiences exhibited particular characteristics. Many participants felt that being quiet put them at somewhat of a disadvantage in classes. Because they were reluctant to ask questions, they may not have always have gotten the help that they needed. Similarly, they perceived that many instructors geared classes toward more talkative students. Concern was expressed that because talking is rewarded in classes, instructors may not recognize when some students talked too much, which may detract from the learning of others. While being quiet may come with academic challenges, it comes with some advantages too. Participants felt that they were better able to focus in class and minimize distractions. They felt that they had acquired good study habits that allowed them to be more self-reliant, such as through taking good notes or finding answers to questions on the internet. In addition, several felt that their tendency to be thoughtful could be of great benefit in learning course material.

Summary

Quiet students' participation in classes had a great influence on their overall learning experiences, and four themes regarding their participation were identified in this study. First, quiet students had learned to navigate a "noisy" and highly social academic environment that included both the physical classroom and the larger campus setting, and involved the constant interactions that occur with other students and instructors. They
made choices within this environment that helped them to stay focused, feel comfortable, and maximize their learning. Second, they experienced difficulties in meeting instructors' expectations for class participation. Their quiet personalities often made them more reluctant to speak out in classes. Many felt considerable social pressure when having to speak aloud and they feared being judged by their peers. They usually appreciated the chance to have time to prepare what they were going to say, and they tended to dislike giving class presentations. Third, they experienced tensions between feeling engaged in their classes and feeling that others perceived them as being unengaged. They wanted their instructors to understand that being quiet does not mean that they were uninterested in the course material, were not working hard, or had problems; rather, they often preferred to participate in classes through ways other than speaking aloud, such as through listening, observing, writing, taking notes, or using technology. Finally, a fourth theme that emerged from this study was that quiet students' learning exhibited particular characteristics. They sometimes faced challenges when it came to completing their class assignments because they were often reluctant to ask for help when they needed it, and they believed that many assignments and class discussions were structured for more outgoing students, which put them at a disadvantage. Nonetheless, many participants had learned to be self-reliant, had acquired good study habits, and considered themselves to be thoughtful, which they attributed to their quiet natures. The next chapter will show how quiet students' participation in classes affected their experiences with CL.
Chapter V: Quiet Students' Participation in Collaborative Learning

The 10 participants in this study experienced a variety of collaborative learning (CL) situations over the course of the semester. To better understand their experiences of these CL activities, their participation was examined from the very start of the activity in which they were assigned to small groups, through the process of communicating with their group members, to the completion of the final products. This chapter will examine these students' experiences, with a particular focus on what factors helped or inhibited their ability to learn. Four themes were identified regarding quiet students' participation in CL: (a) the necessity to perform sociality when assigned to groups, (b) the tensions between speaking and silence experienced with group communication, (c) the role that negative emotions played in CL and its interference with learning, and (d) the types of learning scenarios which permitted quiet students to learn with others.

The CL situations in which these students participated included a variety of activities that were completed both during and outside of regular class time. The most common CL scenario was small group discussion that occurred in class and required students to talk about course-related content with one or more partners. These discussions sometimes concluded by having a group representative report what they talked about to the class. Students who took language classes also frequently found themselves communicating in small group situations in which they were required to practice language content in some manner. Students also participated in a variety of in-class activities, which varied from taking only a few minutes to taking an entire class period, and which also varied from working with a few other students to working with as many as 15 students. Activities varied considerably by discipline and included tasks such as a
congressional role playing activity in a health policy class, a brainstorming activity in a drawing class, and a behavioral matching activity in a psychology class. Some of these classroom activities were completed on an ongoing basis with the same group of students throughout the semester. For example, the math student participated in a flipped classroom environment, in which students were responsible for doing readings and watching videos outside of class and working with the same small group of students to complete math problems during class time. The health and nursing students both participated in lab sessions for their science courses in which they worked with lab partners every week to take quizzes together and do joint activities such as dissections and experiments. One student participated in group projects in an online information systems class, which she completed using online tools. Finally, several participants engaged in large group projects that required extensive work with their partners outside of the classroom over several weeks. For example, the computer science student worked on a large-scale programming project for a robotics class, the journalism student created a business marketing plan for a strategic communications class, and the health sciences student created a communications campaign for a local community organization for a health communications class. Many of these large group projects and in-class activities culminated in some kind of class presentation.

Performing Sociality

Whether long or short, big or small, simple or involved, a CL situation always begins with an initial assignment of students into groups. How those groups were formed appeared to have a significant impact on quiet students' overall comfort with the group and consequently how much they learned as a result of these collaborations. However, for
many participants the initial assignment into groups forced them to perform a kind of sociality, which served as a source of discomfort and anxiety, both in terms of having to find group partners and having to initiate communication with students whom they did not know. In a few cases, this initial discomfort was so intense that students removed themselves from the group situation altogether.

When learning groups were initially formed, instructors either assigned students to predetermined or randomly assigned groups, or they required students to find their own partners. Six participants preferred to be assigned to groups because it spared them the awkwardness of having to approach students that they did not know and ask them to work together. These students felt that having to find group partners forced them to have to pretend to be social in a way that conflicted with their personalities. They often found that this type of social performance distracted from their being able to focus on the task at hand. The journalism student described the difficulty of having an instructor tell students to

"Group up with whoever your friends are or whoever you want to." And then it's like, well I don't have friends in this class, I don't talk to people, I don't know people. So I can't really get with a group. And if I end up in a group it's because it's thrown together and nobody really wants to be in this group. . . . I feel like [finding your own group] is more performative. . . . I have to pretend that I'm outgoing and that I am trying to get a group together whereas if it's randomized we're already past that stage and we can get to work.

A few participants described feeling rejected when other students formed groups with their friends and they were left sitting alone because they did not know many people. It
made them feel embarrassed and called attention to the fact that they did not have any friends in the class. The art/sociology student said, "It becomes awkward because you're just still kind of sitting there by yourself because everyone else is grouped up and you don't have anywhere to go." Participants sometimes feared that they would be left with no group. The nursing student explained that when she had to find group members, "That stresses me out. I'm like 'I'm going to be the one left out. I just know it.'" This method of having students find their own group partners was extremely common. Only two participants described having ever been in classes in which groups were assigned on the basis of interest or ability, but they were generally more satisfied with this method. For example, the journalism student described how he was more satisfied with one of his group projects in which the students were assigned to groups on the basis of their topic interests, and the psychology/art student described how she was assigned to an art activity on the basis of her interest in a particular theme for her portfolio.

In contrast, if participants had friends in their classes already, they often preferred to be allowed to pick their friends. In addition, four participants preferred to pick their own groups because they wanted to be able to choose partners who they knew would do good work. They often described closely observing other students to try to determine who would be "motivated" or "lazy." In any case, when participants knew people already or had friends in their classes, they were generally more comfortable with their group interactions. In addition, it often helped to work with the same group of people for an extended period of time. If they were working on multiple group projects within a single class over the course of a semester, seven students described how they preferred to work with the same group repeatedly because they found it easier to open up and talk more
frequently if they had a chance to get comfortable with the same group of students. This suggested that their perception of needing to perform a certain type of social behavior relaxed as their familiarity with their partners increased. For example, the nursing student described how her comfort level with a particular group increased over the course of a semester: "The first day I was really awkward. I was like, 'I don't know what to do.' But then after that I saw them every day so I got to know them, and it was pretty easy to do the group work."

The size of groups had a significant impact on participants' comfort levels and the challenge of managing the social dimensions of group work. Participants described CL situations in which they were assigned to work with as many as 15 other students at a time, which made it more challenging to know how to handle the different personalities in their groups. In general, all participants felt that, in the words of the theatre student, the "bigger the group, the worse" things got. With big groups, students complained about the difficulty of getting people to respond to a request for a group meeting or finding a time when everyone could meet. It was also harder to get larger groups organized around a certain agenda. With larger groups, members were more likely to "clash" with each other, and it was "hard[er] to get [everyone] on same page." All students talked about the inevitability of having group members who did not pull their weight when working with larger groups. A few students stated that they were less likely to speak up in larger groups because they were "more intimidating." The nursing student wrote in one of her reflections:

In my jurisprudence class we did another group presentation where he assigned us a topic and gave us 30 minutes to prepare a presentation. My group had six people
in it which made it hard for me to talk, ask questions, or give my opinion. However, the group decided to split up the presentation into three different sections so two people would present on each section. So when I worked one on one it was a lot easier to talk and give input but I still let my partner take charge and I just followed his lead.

Generally, participants preferred groups of no larger than four or five students, but some preferred to work with only one or two others.

When CL scenarios were long or involved, students often had time to socialize with other group members and talk about topics other than their group assignments. However, all 10 participants in this study preferred not to socialize with other group members, unless they were working with a friend. Instead, they preferred to stay focused on the task at hand. The journalism student felt that groups often posed a challenge for him because he preferred to "focus more on the assignment itself rather than socializing."

The theatre student described how she preferred a group assignment in an online class over that conducted for an in-person class because she could stay focused on the task when messaging her group mates. "I don't have to actually socialize with them," she said, explaining that this meant that she did not "have as much anxiety as talking to someone."

The journalism student described how I don't feel comfortable talking about anything too personal I guess just because my mindset going into group projects is like "I'm here to do the work and do well on the project." . . . When we meet we should only really talk about the project or maybe small talk but anything beyond that is kind of like, I don't know. I don't want to say it's unnecessary but it's not the kind of group climate that I prefer.
Several students contended that they did not possess strong enough social skills for handling communication when it veered off task. For example, the education student felt that she did not always have the social skills necessary to establish the relationships that helped to enhance communication and she got "distracted by conversations." The theatre student described a day in her dance history class when her professor had students work with a partner to learn the minuet. Her partner wanted to chat while they danced: "He kept talking to me about martial arts and I was like, 'I just want to learn the minuet. I don't know how to have a conversation with you.'"

However, five participants recognized that non-academic communication did have its place in making it easier to collaborate and they made an effort not to appear unfriendly to others. A few students engaged in small talk, chatting superficially with other group members, asking questions such as "how is your week and things like that," but keeping it "short and brief" and avoiding topics that were personal. A few other students were happy to respond to other group members if they initiated the conversation. The math student recognized a connection between his reluctance to talk about non-academic matters and the success of group projects: "I don't like the small talk and a lot of the personal things that go on. Maybe that's why I don't like group projects because sometimes the best group projects probably come from that, people who can actually collaborate better." Only the computer science student was willing to invest more time in socializing, even though he preferred to stay focused on the task at hand. He explained that he felt that some socialization may make it easier for groups to work well together:

I'm kind of "get business done and this is what we have to do." The socializing part of it is something that I don't think about honestly. I just want to get to do
what we're going to do and get it over with. But I think it provides an opportunity for some really good socializing if you work well with your team. And I try to remind myself that other people are more motivated to work when there's social interaction. . . . If you have a group that likes each other, they're probably going to be more productive.

Because participants found the social interactions that came with CL to be so challenging, they sometimes opted not to participate at all. Five participants described situations in which they removed themselves from a group or never joined one to begin with. A few students described occasions when they ignored an instructor's directions to partner with other students in class; instead, they opted to do the activity on their own or just sit quietly by themselves. But sometimes the resistance to working in groups was more extreme. One student described a situation in which she left a classroom and hid in the bathroom during in-class group work. On another occasion she explained to an instructor that she would take her allotted class absences on days that were devoted entirely to in-class group activities, saying "sorry, I can't" and that she would "force myself not to get sick" so that she could attend all of the other class days. The theatre student described dropping a class when she was assigned to an extended group project that combined both bad group partners and unclear instructions from the professor: "He was explaining the assignments and they were super confusing. And then I got into this group and they were just like 'I don't know what we're doing,' and I'm like 'OK, well, I'm leaving.'" The computer science student also decided to drop a class when he felt that he could not keep up with an especially demanding group project. However, this removal from group situations happened very infrequently because students felt that they had to
participate in assigned group projects to pass or get good grades in their classes, and only rarely were they given an option to complete a group assignment individually.

In summary, quiet students felt forced to perform a kind of sociality from the first moment that groups were formed. In particular, the process of finding groups often required them to pretend to be social in ways that were anxiety-inducing. Some students preferred to have groups assigned so that their discomfort with managing the social aspects of finding group partners was minimized. Others, however, preferred to pick their own group partners so that they had greater control over ensuring that their group was a success. Participants generally preferred to have smaller rather than larger groups because they found them easier to manage. When students knew or became familiar with their partners, their need to perform relaxed and their comfort level increased. In addition, participants generally preferred to stay focused on their group task and did not like to socialize with other group members. For some participants, the social aspects of CL were occasionally so difficult that they removed themselves from group situations altogether.

**Tensions between Speaking and Silence**

Collaborative learning is dependent upon successful group communication, and all group partners must contribute in a productive and respectful manner. However, the participants in this study experienced tensions between the desire to speak and the inclination to be silent. These tensions played out in many different types of situations that are common to CL situations, such as having someone take the lead, deciding on a direction for the group, sharing different points of view, dividing the work into parts, and establishing a timeline for completion. Participants often struggled to manage these tensions in a satisfactory manner. They exhibited various patterns of speaking and silence
when it came to CL activities, and these patterns greatly influenced how successful they felt the projects were and how much they felt that they learned from these activities.

Similar to the ways that they described being reluctant to speak out in whole class discussions, seven participants described how they were often uncomfortable with speaking out in small group situations. Although they often found group communication to be awkward, they generally participated as much as was necessary to complete their assignments. The reasons for their reluctance varied. Some students were less inclined to speak out when they did not know their group members, but were more inclined to speak when they did know them. Many students were afraid of being judged about what they had to say, and were more likely to speak up if they felt confident about the subject matter. For example, the journalism student explained that "If I know what I'm talking about well, I'll be one of the more active participants. If I don't, I'll be more likely just to observe and take everything in." The French/psychology student worried about saying something in her small groups that sounded "really broken" and "everybody [would] know I have no idea what I'm doing." A few students worried that if they did not feel confident with the subject matter, then they might hinder the progress of other group members. The nursing student explained that "If it's something I'm really struggling in, I feel bad because I don't want to bring my group down. I'd rather me just fail than fail my entire group if I'm not understanding it." While participants shared many reasons for not speaking aloud in groups, they also felt less of a need or an urge to speak up in group situations. For example, the math student explained, "I don't always need to include myself in what they're saying. . . . I don't need to always add [my opinion]. I can just let it be."
Because of the communications tensions that they experienced in their groups, six participants often exhibited a tendency to agree with others, which they sometimes communicated by smiling, nodding their heads, or giving yes or no answers. They often found it easier to stay silent because they felt uncomfortable with the social aspects of communicating in their groups when differences of opinion arose. Sometimes they chose to stay completely quiet, even if they did not agree with what was being said. The theatre student described herself as the "agreeer" in her groups, stating that

Sometimes it's hard because you might be in a group where everyone's opinions are different than yours. But you're also the minority opinion, and so you don't want to be like, "Oh but I think differently of this." So when that happens, I usually just stay quiet.

Some students described how they found it difficult to mesh what they wanted to say with the opinions of their group members and they often found it easier to avoid arguments. The sociology/art student wrote about her quiet discomfort when she was faced with a group situation in which there was disagreement:

We had to work in groups of five to solve a problem. I understood the topic but the rest of my group didn't. They started arguing about it and I just couldn't force myself to speak up. It wasn't for a grade, we just got points for "participating." My group spent the whole time arguing about what was being asked and didn't even really get to the topic. I wasn't able to speak up even though I knew the answer. It was super uncomfortable and I never said anything besides my name at the beginning.
Regarding a group project in which he had to create a marketing plan for a business, the journalism student described how dissatisfied he was when he succumbed to his group members because he wanted to avoid creating tension: "So I didn't fight for what I wanted to do too much mostly because I didn't want to cause too much conflict in the group I guess. I just wanted to be easy going." This perceived need to go along with the group often made him "hate" group projects because "that's not how I think, that's not how I feel, it's not what I wanted to say." Several students expressed a reluctance to correct the work of their group mates if they thought they were wrong about something, unless their grade depended it. For example, the theatre student explained that she might fix a "simple grammar error," but that she would not go further than that. The sociology/art students described how she avoided the confrontation that came with group critiques because "most people do not respond kindly to being critiqued even in situations where its expected."

Six participants described their discomfort with wanting to "open up" or "share" their personal thoughts, feelings, and ideas with people whom they did not know or were not comfortable. For example, the education student explained how difficult it was for her to share her personal opinions with strangers: "Nobody is going to want to open up and talk about something, especially if it's personal. . . . Usually I don't feel comfortable with these people. So I don't really want to share my opinion because I don't really know you." Often this disinclination to share was exhibited in a general lack of engagement in the CL situation and an attempt to get the project done as soon as possible. The journalism student described a group activity in which he had to share an idea for a paper with other students. He was uncomfortable with it and tried to finish it as soon as
possible: "I was like 'Here's my idea,' and then I was like, 'OK, back to being by myself.' .
. . Whenever they're like 'work with the people around you,' I'll get what the professor wants done as soon as possible. Then I'm like, 'OK, I'm finished.'" The sociology/art student described a more extreme level of disengagement when she participated in an in-class discussion with a partner, in which they had to discuss three questions:

And then he asked me a question that was a yes or no question, so I just said yes or no. And then he answered the second question himself. And then the third question came along and I was like, "The answer to the third question is yes."

And that was the end of our conversation.

Not only were many reluctant to share their thoughts regarding topics that were personal in nature, but eight participants refused to engage in discussions of controversial or political topics for fear of how their opinions would be received by their group mates or dislike of getting into "confrontation," "conflict," or "arguments" with others. They described discussions of political or controversial topics with phrases like "echo chambers," "aggressive undertones," "violent reactions," "yell," "rude," "dismissive of the other side," "it can get so heated," and "people taking things really offensively." These students did not want to engage in controversial discussions with people whom they did not know and trust for fear of what their reactions would be. They felt that the recent political climate was such that people were too easily offended, and they worried about saying the wrong things. For example, the nursing student felt uncomfortable expressing her personal opinions to strangers:

I don't know if I want people to know my opinions, they're just random people. . .

. Everyone gets so offended nowadays. . . . I'm not the type of person that opens
up anyway but then when it's a bunch of people that I don't know and that don't know me, it can cause problems.

The theatre student described having to do a project with a partner and because it was "such a touchy topic it was also really awkward" because she "always worried I'll say something wrong at the wrong moment." The French/psychology student believed that a discussion of political topics "never goes well."

Collaborative learning almost always requires that one or more students take the lead in setting a direction for the group, getting the group organized, dividing the work, and scheduling meetings. All 10 of these quiet students preferred not to take the lead themselves and to let other students take that role in groups. However, most participants described instances in which they had to take the lead in their groups. The reasons for this varied, such as when other group members did not care, when the group members were wasting time or doing a poor job, when the group members were not scheduling a time to meet, when group communication was bad, when the self-designated leader was misleading the group, or when they felt that their organization skills were superior to those of their group members. Several students described the annoyance or distress that came with having to take the lead in these types of situations. The journalism student talked about the discomfort that came with having to take the lead in small group discussions when students did not seem to care about participating:

When group discussions become more painful for me is when I have to be the one that has to be the leader or the initiator and be like, "OK, so what do you guys think about this? Well, let's talk about this next. What do you guys think about that?" That's when it's really hurtful for me because I didn't want to be in a group
discussion in the first place but now I'm leading it with people that don't want to participate. So then it feels like I'm the professor now and that's a position that I didn't want to be in.

Not only did this role of group leader come with extra work, but it required that students use social and organizational skills to keep other students on task. The education student talked about the difficulty of being the leader when some of her group members were unmotivated: "It's really hard for me to hold these people accountable. And how do you hold somebody accountable when they have no interest? And obviously they don't, they're not going to listen." The nursing student was reluctant to take the lead under any circumstances, even if meant that her grade would suffer:

I haven't taken the lead, but then the person I'm working with doesn't really know what they're doing. . . . But then I'm too afraid to speak up. And I feel sometimes we'll suffer because they don't know what to do, but then I'm too afraid to tell them this is what we need to do.

A few participants recognized that more outgoing students appeared to feel more of a desire to take the leadership role, and they often let them take charge.

When CL assignments were lengthy or complex, eight participants preferred to divide the project into parts and pull it together at the end with minimal interaction. Dividing the work allowed students to work on their parts individually, thereby reducing the amount of social interaction with their group mates. The French/psychology student illustrated this when she explained that "A good group is a group where I can break off into my own and we can do our own things. And then just come together and then run through [the presentation] once." Not only did this division of labor help to clarify their
roles, which eased some of the stress that came from group interaction, but it also helped to make their group interactions more efficient and organized, and their group mates more accountable.

Because it was often difficult to find time for groups to meet outside of class, students often used remote communication devices, and six participants discussed their liking for these types of tools. Tools they had used included Google Docs, phone applications like Slack, the institution's course management system, or texting. However, several students also described frustrating instances in which communication was unclear or the project was disorganized because their groups worked remotely. The theatre student described the difficulty of fully understanding some of these group messages: "Messaging is hard because you don't know what's passive aggressive or if they're going to take it wrong." Several students were frustrated when group members did not respond to text messages and it left them confused about how to move forward. Despite some participants' discomfort with speaking out in small groups, several preferred to meet in person rather than to work remotely, at least at the start, because in-person communication was less ambiguous and therefore less stressful for them. The education student explained,

I think initially when you're divvying out the roles you should be in person for that, just to make sure everybody's clear on what they're supposed to do. And then everybody's clear so there's no like, "Oh I didn't know," or "I didn't see the text message," because you know we were right here and we all wrote it down.
The art/sociology student explained that she interpreted social situations better in person and thus preferred to meet face-to-face "not because I like interacting with people, but because I need to be able to read body language to understand people."

Although participants were generally not fond of group discussions, if they were required to speak out in class, seven participants found it easier to do so in small group situations than in whole class discussions. For example, the nursing student felt that she was much more likely to speak up when she was working with a few lab partners than when she was in a large lecture hall filled with students, and she appreciated the opportunity to ask questions of a small group of people that she would never ask in a big class. Most students seemed to share the feeling of the math student who felt that "the bigger the group gets, the harder it is" and that smaller groups were less "intimidating" than speaking in front of the whole class. A few students, however, felt that speaking in small groups brought an additional awkwardness of having to form a group and interact with group members, so they preferred whole class discussions over small group work. In addition, several students described how, if they were not required to speak up, then they preferred whole class discussions over small group discussions because there was less pressure on them to speak and there was a greater chance that those students who spoke up were prepared for discussion. They felt that they learned more from these whole class discussions than they did from small group discussions.

Thus, speaking aloud in groups was fraught with tension for quiet students. Just as speaking aloud in front of the whole class could be difficult, speaking up in small groups could be hard as well because it was accompanied by numerous choices about when and how to speak as they tried to anticipate the reactions of their group members. Many
participants were uncomfortable opening up to people they did not know well, and many dealt with the social difficulties of group communication by exhibiting a tendency to vocalize agreement with their group mates, even if this did not accurately represent how they felt. Finally, they all preferred not to be group leaders, and many preferred to divide up group assignments into parts so that they could each work on their own parts individually.

**Negative Emotions Interfere with Learning**

Collaborative learning situations elicited strong feelings in quiet students. Participants in this study repeatedly described past memories and current experiences of CL that were intertwined with strong negative emotions. While they also relayed some positive experiences, which will be addressed in the next section, they shared many more negative feelings about their CL experiences and the impact of these feelings on their learning experiences overall. Seven participants used negative language to describe their participation in CL experiences, using words such as "stressful," "awkward," "weird," "uncomfortable," "frustrating," "worried," "scared," "nervous," "anxiety," "unfortunate," "disappointing," "upset," and "trepidation." A few students had feelings that went well beyond discomfort, going so far as to describe their group projects using the words "obnoxious," "awful," "torture," "hell," "nightmare," and "horrendous."

These negative feelings often began from the moment a group assignment was announced. The health sciences student described how "as soon as the teacher says go find a group or something, I'm like, 'Oh no.'" When an instructor announced that a group assignment would be part of a class, the journalism student described worrying extensively about the social aspects of the group assignment rather than "what the actual
workload is going to be" and feeling that "Oh, I have to be in a team. That's going to be the hardest thing for me this semester." The psychology/art student described how, when an instructor explained group assignment instructions, she was unable to focus on what was being said because she was worrying about what she would have to do in her group. However, not all of these students experienced this type of immediate anxiety. The education student's feelings varied according to the type of assignment, and there were times when she felt "excited" if the CL assignment seemed like a good one and she would get to work with other good students. The computer science student's feelings varied depending on the class; he found it "hard" when he did not know people in the class and he had to find "people that are actually going to work for this project." But if he knew motivated students that he could work with in the class, then he felt that "this is going to be fun. I'll probably learn something and do something really cool."

All 10 participants found that the question of who would do what part in each group was an area that frequently led to problems or caused them to feel stress. All complained about free-riders, or students who did not do their fair share of the work, and most believed that free-riders were a frequent presence in group projects. They were often angry about students who did not "do their share," "carry their weight," "do their part," "do anything," "show up," "seem like they're involved," "want to help," "want to do [their] job," or "care about their grades." They described group members who "would just sit there watching," "just tag along," were "fooling around," were "holding us back," had to be "drag[ged] along," and "had no clue what to do." Most students complained about being grouped with students who did not show up for group meetings, did not communicate with their partners, or had not completed the assigned readings or
homework so they were unprepared to make a meaningful contribution to group
discussion. For example, the theatre student described how, "Sometimes you're in a group
where no one's really read anything. So it's not really productive." The computer science
student described how damaging this could be to the group's morale: "All it takes is one
person to just not want to do anything and then it turns everything sour and nobody's
motivated anymore." The art/sociology student described how CL assignments resulted in
her having negative feelings toward other students:

Most of the time we don't learn anything working with the group that we wouldn't
learn on our own except for maybe that working with a group is a pain in the ass
and that people are not trustworthy because you always have that one person who
doesn't do their share.

When assigned to work with these types of students, they often felt like "I might as well
just do the work myself," according to the education student.

All of these participants described experiencing anxiety because they felt out of
control since their grades were dependent upon other students. This source of
unpredictability led to negative feelings. For example, when the psychology/art student
was preparing for a presentation with a particularly difficult partner, she worried that,
"because he interrupts the teacher all the time, I hope I don't talk and he starts interrupting
me." The French/psychology student felt frustrated with her group partners when she
spent several hours working on their project, only to find out later that they had changed
what they were doing and had not told her. She explained that she did "a lot of work. And
then it was immediately all thrown out. So it was unusable because they didn't tell me. . .
. They didn't tell me even though I asked twice." Several students described how they
were unable to work on their portions of group projects because their parts were dependent upon the work of other students, who often waited until the last minute to complete them. They described the stress they experienced with group projects in which they were continually waiting for their partners to respond to messages, to show up to group meetings, to agree on a topic or division of work, to invest time to improve a project, or to do their parts in a timely manner. The computer science student described his disappointment with a large-scale robotics project that involved programming a small remote-controlled car. Despite having weeks to work on their parts, one of his group partners "didn't want to do anything" until the last minute, but by then it was too late to bring all the pieces together. When they presented their vehicle to the class, it would not work. While he felt that he did gain experience from the project, he did not learn as much as he should have: "It's kind of hard when you put a bunch of work into something and are still not able to make it work. You don't feel like you've learned anything because you didn't get that final project."

Most participants felt like they had no alternative but to put up with these free-riders, and they rarely expressed their dissatisfaction with them because they were uncomfortable with having difficult conversations or felt that they had no choice. Almost all of the participants preferred to avoid confrontation in their groups. When the psychology/art student got stuck with doing most of the work on a group project and felt that her two partners were either rude or making excuses, she explained that "I wasn't going to fight with them because [one of them] was rude already, so the timid part of me didn't allow me to stick up for myself and be like, 'No, you need to do this, you were supposed to do this.'" The computer science student, however, was less shy about telling
a group mate to work on his part of a project: "I asked him a couple times to get started on it because he would say 'I don't know what to work on.' And I said, 'Our project would be a great thing to do.'" When this group member made statements about possibly cheating on their project, the computer science student felt anxiety about how to handle it. Several students felt that they often got stuck with certain parts of the group assignment that they may not have wanted because they did not feel comfortable speaking up in their groups. For this reason they sometimes felt that the more outgoing students had an advantage. The health sciences student explained that, "Usually the more outgoing students tend to get the easier things or the better things." The sociology/art student, who was fearful of giving presentations, described an instance when her other group members took the "research parts and since I didn't speak up they had me presenting it, and I was like, 'OK guys, this isn't going to work.'" Most students complained about being in projects in which they had to do most or all of the group work themselves. For example, the computer science student explained how, "The teams that I've had at school so far have just felt like I have to do a majority of the work in order to try and get an A."

Several students described filling out group evaluations of their work, but would generally only make negative comments about other group members if they were very unhappy with their contributions because they did not want to be "unfair," "nitpicky," or "harsh." The French/psychology student said that "I just feel obligated. . . . It gets really hard and then you're just like I'll just give them all As. Because frankly that's what everybody does." None of them seemed to know whether their instructors gave different grades or comments to different group participants on the basis of this feedback. In fact,
after filling out a group evaluation in which she stated that she had done most of the work on a project, the psychology/art student was surprised when her professor returned comments on her group project that said "great split up between work."

In addition to feeling stressed about the social aspects of group work, non-contributing group members, and a fair distribution of work, participants described other sources of stress that came with CL. Several students complained that they infrequently learned with CL assignments. The art/sociology felt that she learned "usually absolutely nothing" from her CL assignments. The French/psychology student felt like she never had positive CL experiences: "I'm crying on the inside so I don't cry out on the outside. . . . I don't get anything out of it except for anxiety." Having to choose the topic of an assignment with other group members meant that they might end up working on something that they were not very interested in or motivated to learn. The journalism student struggled with having to put "in this work for something I really don't care about." A few students described not putting their best efforts into CL. For example, the art/sociology student described her work on CL project: "My head is telling me it's not enough, but I feel like it's the best I can do with those situations." Some students complained about the difficulty of scheduling a time when all group members could meet, and others felt that CL assignments took more time and required more work. The theatre student commented that, "I think it's just more work for me. Even though groups split up the work, it's [still] more work." The computer science student wrote in one of his reflections that he felt like "I am too busy to put in the work for this project that I would like to."
Nine participants voiced a preference for working alone rather than in groups and several discussed the pleasure that came from independent discovery. They often felt like working with other people was a barrier to their own learning, and they felt that they had better learning skills than many of their peers. The French/psychology student explained that:

At least when I learn it on my own, as long as it's correct and I'm understanding it correctly, I learn a lot better because it's in a way that I understand rather than always [having] somebody else trying to tell me how it has to be.

Several participants described themselves as being good at figuring things out on their own, and that's often how they preferred it. The journalism student said, "I am more of a secluded learner where it's like I'd rather take in information myself and in my own way and connect the dots myself rather than working with other people." Several described how they enjoyed listening to instructors' lectures, in contrast with other students who, according to the education student, "get bored and they don't want lectures." A few students described maintaining an active inner dialogue in response to the presentation of new material in classes. The journalism student described how he often found his internal dialogue to be more satisfying than conversation with others:

[When] I'm watching a documentary or I'm watching the lecture and listening to the lecture, I'm more likely to take in the material that way. And even just by reading a textbook I can formulate my own thoughts and react to it myself . . . where I can have my own internal discussions and if I'm reading a textbook be like, "Well, why does it say this? Well, how does that relate to that? Well, how
does that relate to what I'm learning? Oh, that makes sense to me. Wait, this
doesn't make sense to me. Why doesn't this make sense to me?"

Their preferences for working alone were not always connected to the quality of CL. Even when they described positive CL experiences, participants still often expressed a wish to complete the work independently. For example, the education student described how, although she had received helpful feedback during a CL activity, she still liked to her work by herself: "The feedback was good but even if it's good sometimes you're just kind of like, 'I wish I could be alone. I could just do this on my own and power through.'"

In conclusion, all participants in this study experienced stress when working on CL assignments, and many experienced strongly negative emotions. These feelings often began from the very moment a CL assignment was given, as participants anticipated the difficulties that would come with these types of assignments. Participants complained most frequently about other students who did not do their fair share of the group work and they often felt helpless in knowing how to deal with these students. But many were also unhappy with other aspects of CL, and some felt like they rarely learned from CL assignments. In contrast to their negative experiences of CL, most participants simply preferred to learn alone, describing the satisfaction that they received from independent discovery.

**Learning with Others as a Quiet Person**

While quiet students often experienced negative feelings when learning in groups, they also experienced positive CL situations as well. Even though many found CL to be stressful, all participants in this study described instances when they enjoyed learning with other students. Participants were most often appreciative of CL assignments when
they recognized that the situation offered them the opportunity to learn more from working as a group then they would have from working alone. They described three main types of situations in which they learned from CL assignments.

First, eight participants described how they liked to work in groups when they could help each other learn difficult course material. This often meant that they alternated between being teacher and learner, but they were actually able to learn in both roles. The math student felt that the process of "explaining things to other people . . . cements it a little bit better," while the nursing student appreciated how other students' explanations of content helped to "fill in gaps" in her knowledge. Several students appreciated being able to learn the material on their own and come together to review it with others afterwards for reinforcement or to make sure they were "on the right track." Three students taking language classes described how practicing with other students helped to improve their speaking skills and develop an ear for the language. For his group projects, the computer science student described how group members could help each other by filling in a different "piece of the puzzle" that they were trying to solve with a group project. He described how a group partner

. . . helped me work through some code. So that was actually really nice to have somebody just to bounce like, "I've tried this, I've tried this. What else should I try? Or how did you get that to work?" And then once he showed me how to get this to work, I tried something else and showed him how to get something else to work. And that's how I like to do things. You have that back and forth where you figure something out (and) they figure something out.
However, students frequently described how to be able to learn and teach each other, both they and their group partners had to be adequately prepared for the assignment, which did not always occur.

Second, eight participants appreciated CL when it allowed them "get different perspectives" and learn a "different way of thinking about" a topic. They often appreciated CL when it involved hearing different students' interpretations of the same material, as in a translation or a literature course. They appreciated being exposed to different ways of interpreting texts, and they recognized that CL provided them with perspectives that they may not have come to on their own. A few students described benefitting from group discussions that allowed them to see how others would apply their knowledge in different ways. For example, the education student described how

I can get different perspectives and kind of see like, I applied it this way, they applied it that way. And so it's a different way to view the same thing. . . . And even if I don't say a lot I like to listen because you know four different people are probably going to see the same thing four different ways.

However, three students believed that there was a limit to how much they learned from hearing others' opinions and felt that these types of discussions could easily get off track. For example, while the nursing student described how she liked to hear other people's opinions, "I also think that at some point this is what I think anyway regardless of what anybody else thinks on the topic."

Third, five participants also voiced their appreciation for working with groups on large-scale, time-intensive projects that they could not have completed on their own. In these cases, the final product of their group work was generally greater than the sum of
any individual contributions. For these projects, students were often able to bring their unique strengths. The journalism student described his pride in a semester-long group project that involved creating a video narrative. He was able to bring his writing and interviewing skills to the project and his group members brought their video and editing skills. In the end, he felt that the final product was much better than anything he could have completed on his own and that he learned from his partners. Students described other large projects such as designing and delivering a workshop on mental health services for college students, creating a strategic plan for a mock business, creating social media advertising for a local service organization, creating a computer game design project, or doing a behavioral analysis of a fictitious client. For these projects they were glad to have group partners with whom to share the load. A few students described the enjoyment that came with doing large-scale CL assignments with students who were motivated, intelligent, and/or skilled. These students described how they were grouped with students who were good workers and they developed a rapport with their group mates that resulted in a genuine and equal collaboration. This usually came from working with students in their major fields of study. For example, the computer science student appreciated learning from a partner whose experience with computer vision was "amazing" and who had a "lot more knowledge than I did." The education student described a team teaching project that she worked on with two other students:

You could tell we had a good dynamic going. We kind of jumped in on each other like, "Oh, you forgot this, I'll mention it." It went well I think. . . . When you're with other education majors you guys get excited. And you guys get carried away with ideas sometimes. And so that makes it more fun, I think. And they also tend
to be topics that you actually want to learn about, that you're interested in. And so that really helps.

The journalism student described similar admiration for the group members who worked with him on his video narrative project:

We all ended up having our different parts and our different strengths, and whatever weaknesses we had there was someone else that could cover that. And so that was a really good group project. And I ended up getting pretty close to everyone else and enjoying working with them because it's like, "Wow, you all are smart and you have great strengths, and I'm really benefiting from being in a group with you."

Participants also appreciated CL for other reasons as well. A few students discussed the importance of working in teams and working with different types of people in the world of work. For a few students, group activities occasionally added variety to a class. And finally, some appreciated being able to work with others on class presentations. Because they found giving presentations to be especially difficult, they found it comforting to be able to have the support of others when presenting in front of a class.

While quiet students appreciated occasions when they were able to learn from others through collaboration, nine participants described many types of CL situations in which they did not learn. These students complained of having to work in groups for assignments or topics that did not lend themselves well to CL or did not seem to be enhanced by collaboration. These assignments included tasks such as filling out a worksheet, reviewing for a test, reading and analyzing an article, summarizing a textbook
chapter, or writing an essay. Regarding essay writing, a few students discussed the difficulty of writing essays as a group, citing factors such as the difficulty of getting group members to interpret the writing prompt in the same way, or the difficulty of taking parts of an essay that were written by different group members and editing them into one paper with a consistent voice. The health sciences student described worksheets that she had to complete with other group members: "I feel like I don't really learn a whole lot about the topic that we're talking about in lecture that day. I feel like we each kind of just hurry and fill it in before we have to turn it in just so we get the grade for the activity."

The French/psychology student described how her statistics professor frequently had the students discuss topics in class such as their "favorite things," so that they could use this information to determine probabilities. But since they never really computed probabilities on what they discussed, the group discussions appeared to her to have "no point." When the topic was inappropriate for group work, students were often frustrated because the group assignments seemed "pointless," seemed like "busywork," or were not "meaningful." At worst, they felt that working in a group on an inappropriate assignment detracted from their learning. The journalism student described his reaction to having to work in a group to complete an article analysis: "Well, I can really do this by myself and I can probably do it better by myself." For a group project for his strategic communications class, he commented,

I don't really see the need to have five or six people working on this project when it's not a very intensive project to begin with. I already had most of this stuff figured out and then I can just expand on that if it was a single person project. I
probably would enjoy it more and I would probably be able to apply what I've learned more rather than doing group work.

Several participants described how CL assignments that were easy to divide into parts were often not suitable for group work. The psychology/art student explained,

I don't think group work helps very well. I mean sometimes with certain stuff I would say yeah, but a lot of times when you get in the group, kids just kind of work by themselves. They don't really interact with each other. And then they're like, "OK, you do this and you do this and then we'll come together and just answer it in the end." And so it's not really like you're getting every part. You're only getting your part of the presentation or group work.

All participants in this study cited poor group members as a reason why they often did not learn from particular CL assignments. The reasons for this varied. Sometimes they believed that their group partners were unprepared or unmotivated to make a meaningful contribution to the project. In other cases, they described situations in which group members did not possess adequate knowledge or skills to be able to contribute to the group in a meaningful way. For example, the education student wrote about a group activity in class in which one of her group partners, "didn't really contribute anything, but I don't know if she just didn't understand [the subject matter] or she just didn't want to contribute." The journalism student described how he was required to get feedback from other students on a research proposal that he had written, but he explained that "When I submit a research proposal to my professor and they give me feedback, that's feedback I can use. But when it's a student giving me feedback, I don't really absorb it as much and its usually not as helpful." The art/sociology student felt that she usually did not benefit
from learning about the perspectives of her peers in group discussions because their base of information was too similar:

I get [that] it forces you to hear other views that might be contradictory to your own but at the same . . . we're all being taught the same thing from the same person. We might have different views but we all have the same knowledge. So it's not like anyone could actually form an argument against it that would have any basis. Because all arguments would be formed off the same information.

Another common reason cited for their failure to learn from CL was that the students perceived that assignments were poorly structured. Nine participants discussed structural aspects of group projects such as the way groups or topics were assigned, the types of instructions given or lack thereof, the milestones established for completion of work, the clarity of expectations about what needed to be completed, and the inclusion of group evaluations that could potentially hold group members accountable. Most students preferred CL projects in which the instructor imposed some kind of structure on the project that allowed them to have some clarity about how to go about executing it. Having some structure generally helped participants to be able to focus on the task itself without worrying about negotiating these considerations with other group members or having to deal with "fighting." For example, the nursing student described having to prepare a group presentation without clear instructions from the instructor, so the project was "kind of a stressful just because I was like, 'Oh my gosh, I don't know what we're doing.'" Having fewer "unknowns" allowed them to be able to focus more attention on learning. Small group discussions were an exception to this, in which case many participants preferred to, in the words of the health sciences student, "bounce off of each
other's ideas" with little structure from the instructor. However, the vagueness of certain types of assignments was often cited as a source of stress and confusion within groups. The education student explained that "I like a little bit of creativity but I don't want it to be so open ended that you don't even know where to start." Most participants were also given no guidance about how to be a good group member. Only the journalism student described being given some guidelines about how to behave in a group and having to write a contract with his group members about their expected behavior. He appreciated this aspect of his project and felt that it was partially successful because of it:

I've done tons of group projects before but we never talked about any expectations or what you should do in a group, what you shouldn't do in a group. It was basically just like get into groups and figure it out. . . . For professors assigning group projects I think it's really important just to even briefly go over what's good group behavior, what's bad group behavior.

Finally, participants often did not understand their instructors' rationale for assigning CL. When instructors did not share their rationale, participants often developed their own beliefs about why they were working on CL assignments, and they cited a number of different reasons. Half of the participants believed that their instructors gave CL assignments because they had fewer assignments to grade or because they had less to teach, thus making it easier on themselves. For example, the computer science student explained that, "In some ways it might make it easier for them because if you can break 100 people down to groups of five, you have a lot less things to grade at the end of the day." Some participants believed that instructors used CL as a means of getting more students to talk. They believed that instructors felt that students preferred to talk and learn
from each other rather than listen to an instructor lecture. Some students believed that CL was a recent trend adopted by newer faculty who were interested in non-traditional ways of teaching. Some participants believed that instructors assigned CL so that students would learn cooperation and teamwork skills that would be important to them later in life. One student believed his college's accreditation requirements included CL.

In conclusion, participants cited many occasions in which they both learned and did not learn from CL assignments. Participants most often benefitted from CL when they were able to help each other learn, when they were exposed to the different perspectives of other students, and when they worked on large-scale projects that required them to combine their different strengths. They often enjoyed being able to work with other students in their majors who were equally motivated and skilled. Participants often did not learn from CL when they thought that the assignments or topics did not lend themselves well to CL, when they reported their group partners were unable or unwilling to make meaningful contributions to the group, or when they thought CL assignments were poorly structured. In these cases they often felt frustrated that they had to participate in CL when they felt that they could have learned just as much or more if they had done the work on their own.

Summary

Collaborative learning often comes with challenges that made it difficult for quiet students to learn successfully. First, participants in this study were often forced to perform sociality in learning groups, and this performance was a source of discomfort and anxiety for them. Many quiet students were more comfortable focusing on the group task and found it challenging to navigate the social dimensions of group work, such as
dealing with group members who did not do their fair share of the work. Second, quiet students experienced uncomfortable tensions between the need to speak and the desire for silence, and they often struggled to manage these tensions in a satisfactory manner. Because the social aspects of group work were challenging for them, participants often avoided taking the lead, and they often expressed agreement with their group partners even if they did not really share their opinions. In addition, many often found it difficult to open up about their thoughts and feelings within their groups. Third, negative emotions played a significant role in students’ experiences of CL. Many participants in this study had experienced several unsatisfactory CL experiences, which often caused them to have negative feelings about CL in general, and these feelings sometimes interfered with their learning. However, despite these difficulties, quiet students were capable of learning with other students under the right circumstances. Quiet students described three main types of situations in which they learned through CL: (a) when they helped each other learn challenging content, (b) when they learned different perspectives on the material, and (c) when they worked on large-scale projects that capitalized on the different strengths of the group members. They also cited several reasons that they did not learn through group work, including having assignments or topics that were inappropriate for group work, having group members who were unwilling or unable to contribute in a meaningful way, and having assignments that were poorly structured. In addition, quiet students expressed their enjoyment for situations that allowed them to learn independently.
Chapter VI: Discussion and Conclusion

The perceptions shared by the 10 quiet students in this study suggest that their experiences of collaborative learning (CL) may differ from those of their more outgoing peers. Quiet students' participation in CL occurred within a larger academic context in which certain expectations exist about student behaviors. Their experiences in classes were affected by their decisions about how to navigate through a highly social academic environment, expectations from professors for how they should participate in classes, tensions between their feelings of engagement and perceptions of a lack of engagement, and characteristics of learning as a quiet person. Their participation in classes consequently influenced and often set the tone for how they participated in CL situations. Their experiences of CL were often shaped by the necessity to perform sociality in groups, tensions between desires and needs for speaking and silence, the strong emotions—often negative—that they felt during CL, and the situations under which they learned best when working with others. This chapter will discuss the implications of these findings and provide recommendations for how college educators can better construct course assignments and classroom scenarios to ensure that quiet students have more productive learning experiences.

Discussion

The participants in this study often experienced CL situations in ways that differed from those advocated by CL theorists, which meant that they may have felt that they did not learn some or all of the learning outcomes of their assignments. Participants' feelings and thoughts about their behaviors in CL situations suggested that they held a distinct set of values about learning—values that are often at odds with the CL situation
itself. The tensions they felt between their own personal values and those reinforced by CL and other classroom situations resulted in their having negative feelings about their learning experiences.

Values describe beliefs that help to shape people's behavior. Rokeach (1973) defined a value as an "enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (p. 5). In other words, values are abstractions that are concerned with ideal outcomes. They help to guide behavior, they are generally applied across a variety of situations, and they can be influenced by both affective and cognitive elements. While values can be powerful influencers of motivation and behavior, they serve as only one factor that can lead to action, and they are often not consciously articulated or recognized in the moment of action (Hitlin & Piliavin, 2004). In addition, personality traits and values are also related to and can influence each other. Roccas, Sagiv, Schwartz, and Knafo (2002) described how "Traits refer to what people are like, [but] values to what people consider important"; thus, the two are closely connected (p. 799). For example, Roccas et al. found that extraverted personality traits correlated to values related to activity, challenge, excitement, and pleasure. Thus, the values that students hold—values which have been developed through a combination of their personality traits and experiences—may affect their behavior in learning situations.

This study demonstrated that quiet students held four distinct values about their learning, which in turn shaped their behaviors in classes and CL situations. First, participants valued preparedness, planning, and focus. This was revealed in both their reactions to speaking aloud in whole class discussions and to participating in group
activities. They often felt anxiety when they had to speak on the spot without having had sufficient time to prepare. They felt that instructors called for responses from them at too fast a pace, which often meant that they did not have adequate time to think about the new information that they were receiving in class and, in the words of the math student, "connect . . . old information and new information." In addition, they were often frustrated by their group partners' lack of preparedness, which placed a greater burden on them to complete tasks or carry the group discussion. Because they enjoyed focusing seriously on the task at hand, they experienced difficulties with noisy academic situations or ill-prepared students that did not allow them to focus. They were also perplexed by what they perceived as their professors' inability to recognize their attentiveness and preparedness.

Second, participants valued reflection. They often expressed a desire for deep thought, as was illustrated by the health sciences student who said, "I feel like I spend a lot more time really thinking about the material." While they enjoyed deep reflection, they often did not feel comfortable sharing their reflections in classes or in CL situations. They often felt at odds with their learning cultures and frequently felt that they would be judged for what they had to say. This made them reluctant to want to speak out in any academic situation, whether it be in front of the whole class or in a small group. Group learning experiences often felt superficial to them, and as a result they had trouble entering into these conversations. With CL assignments, they wanted to focus on the task at hand, but they were often frustrated by the social demands of group interactions or by group partners who were not serious about learning. These social demands often meant that they could not find a place for reflection in group situations. In addition, they felt
discouraged by instructors who did not appear to recognize that they were thoughtful and reflective, and appeared to misinterpret their silence—during which they were often thinking—as a lack of engagement. At the same time, the more time they spent working with the same set of students, the more comfortable they became with opening up and having meaningful discussions.

Third, participants valued control, predictability, and accountability. They wanted to have a say in their own learning, and they felt that they often had to sacrifice their own opinions and desires when learning in group situations. They often felt stressed because they had to work with students they thought to be unprepared, unmotivated, and unresponsive, and they felt that they could not hold them accountable for their contributions to the group. This made them feel that they had little control over their grades on CL assignments, the final outcome of these assignments, and on what they learned. For example, the journalism student felt disappointed when he had to work on a topic for a group project that did not represent his ideas and concerns (“that's not how I think, that's not how I feel, it's not what I wanted to say”). Participants often expressed frustration at having to wait on others to complete parts of group assignments before they could work on their own parts, which they felt affected their ability to succeed. For example, the theatre student felt anxiety when her group partners did not respond to her messages or did not do their parts in a timely manner, which meant that she had to put off working on her own part of an assignment. Participants often felt stress when they received a CL assignment, knowing that it came with a great deal of unpredictability.

Fourth, participants valued independent thought and learning. Participants preferred to study alone, considered themselves to be self-reliant, and maintained that
they were good at finding their own answers to questions. For example, the sociology/art student was proud that she had to learned to sew on her own. While many of these quiet students appreciated hearing the different perspectives of others in CL situations, they were also deeply engaged in their own inner dialogues that arose as a result of their interactions with lectures, readings, and other course materials. Through their own independent learning processes, they experienced the kind of cognitive conflict and the need to resolve it as described by Piaget (Gredler, 2009; Levine et al., 1993; O’Donnell & Hmel-Silver, 2013; Rogoff, 1998); thus, they often did not feel like they needed group interaction to help them learn. They often found CL to be less satisfying and more shallow than what they experienced though independent discovery. In CL situations they often felt that independent thought was not valued, which often prompted them to remain silent or go along with the group opinion.

Because participants held these four values—preparedness, reflection, control, and independent thought and discovery—they sometimes found themselves to be at odds with the situations they encountered during CL. They often felt that their academic environments seemed superficial, which made it difficult for them to enter into academic discussion or made them more inclined to quietly go along with what other students said. Because they perceived that their values were not reinforced in the classroom environment, they walked into classes feeling fearful that they would not be fully accepted.

The tendency of participants to go along with the opinions of their group members, even when they did not agree with those opinions, was deeply concerning. This did not appear to be a result of groupthink, or a tendency to place the value of group
cohesion above critical thinking and creativity, as described by Janis (1972) and Levine (1993); rather, it appeared to be a form of disengagement because the CL situation was at odds with their values of reflection and independent thought. In many cases, students felt socially uncomfortable and wanted to end their discomfort as soon as possible. In other cases, they felt that their opinions would not be accepted, and they did not want to argue with people who were strangers to them.

All of the students in this study were uncomfortable with conflict and discord. They often did not trust their group members and were reluctant to share personal opinions, emotions, or deeply held beliefs. Many participants described experiencing a strong uncomfortable physical reaction when speaking aloud in classes, a description which suggests that they felt a lack of belonging in the academic culture and an uncertainty about whether their spoken expressions would be accepted in the classroom environment. Several participants indicated that they did not want to talk about politics or feared getting into fights with others over controversial issues. This unwillingness to communicate openly in discussion may have been aggravated by today's political climate, in which a healthy debate sometimes turns rapidly to an unhealthy vitriol. This overall reluctance of quiet students was particularly problematic since productive group learning is dependent upon shared information and open discussion. In his argument for the importance of CL for student development, Bruffee (1995) stated that "Collaborative learning replaces the traditional classroom social structure with another structure: negotiated relationships among students and a negotiated relationship between those student communities and the teacher" (p. 17). While some students might enjoy this idea, for quiet students this seemed to pose difficulties. When quiet students perceived that
they were in an environment that did not value reflection and independent thought, then they appeared to feel that they were not part of a larger learning community and had difficulty entering into the academic conversation.

The value that quiet students placed on reflection and their experiences with CL prompt the question: Do recent trends in college teaching make space for students to be reflective? In recent years there has been an increasing emphasis on the role of active learning in the college classroom, with many college educators emphasizing that students need to spend less time listening passively to lectures and more time participating in active learning tasks such as CL (Davis & Arend, 2012; King, 1993). However, many participants in this study felt that they were actively engaged when listening to lectures because they were thinking deeply about what they were learning. This shift to an emphasis on active learning is an important development in college teaching, but the findings of this study suggest that active learning should not be understood wholly as some kind of visible activity or interaction; instead, active learning might be reconceived as the information processing events that are occurring within the minds of students, which are not always visible.

Quiet students' perceptions about behaviors that are encouraged and rewarded in the college classroom are consistent with many attributes that are valued in contemporary American culture, such as social success and constant social connection through social media and other internet technologies (Cain, 2012; Senechal, 2012). These cultural values have undoubtedly made their way onto college campuses. Quiet students' personal values offer a challenge to these societal values, forcing an inquiry into whether these attributes are always beneficial—both for society as a whole and for learning in particular. Just as
collaboration can be important for learning, so too can solitude, reflection, and independent thinking, but in the current cultural climate these qualities have been considerably de-emphasized.

The role that emotions played in quiet students' reactions to CL was particularly noteworthy. When students have repeated negative emotional experiences related to a learning situation, those experiences are more strongly implanted in their memories and they become less receptive to learning in those same types of situations in the future (Sousa, 2016). Quiet students experienced repeated feelings of tension and anxiety when they received a CL assignment, they often formed negative feelings about their own social abilities, and they sometimes distrusted or had negative opinions about other students. Because many quiet students participated in CL so frequently, they suffered from the group fatigue characterized by Gillespie et al. (2006). It must be noted, however, that the computer science student did not experience this same kind of emotional distress that the others felt. Although speculative, it might be assumed that because he was older, he had learned how to deal with these situations in his adult life.

The negative emotions felt by these quiet students as they reacted to events in their academic environments were undoubtedly connected to their personality traits. All of the students in this study exhibited high to very high levels of communication apprehension. People with communication apprehension may be more sensitive to different elements in their environments, requiring increased neural processing of external stimuli (Gearhart & Bodie, 2012). Thus, it is not surprising that many quiet students felt stressed by excessive noise in their classrooms or too much social interaction. In addition, people who exhibit introverted traits have been found to perform
better in situations of low stimulation and often prefer environments that have lesser amounts of social interaction (Davidson et al., 2015; Little, 2014; Morris, 1980; Wilt & Revelle, 2009). While no attempt was made in this study to measure the extent to which participants showed traits that could be described as introverted, their responses indicated that they probably fell into this category.

A major source of these negative emotions lay with the tension posed for participants in CL situations, which challenged them to simultaneously learn academic content and manage social interactions. According to the group communication literature, every group situation contains both a task and a social dimension: While the task dimension concerns elements surrounding the activity that needs to be completed, the social dimension involves the relationships among group members, their feelings toward each other, and their connections to the group as a whole (Ellis & Fisher, 1993; Frey & Barge, 1996). All of the participants in this study expressed a preference for focusing on the task assigned and gave minimal attention to the social dimension of group work. In addition, all group membership comes with some initial or primary social tension, which occurs when groups are formed and people are unsure of how to behave around others (Ellis & Fisher, 1993). This initial social tension appeared to have been elevated in quiet students. Since the onus to find group membership was often placed upon the students themselves, many participants felt socially isolated and even rejected right from the beginning of a group project if they could not find good partners.

As Allen and Plax (2002) observed, students must learn to manage several tensions that are at play in group communication situations, including tensions between speaking and silence, and engagement and disengagement. Quiet students in this study
deal with the value conflicts they experienced in CL situations by choosing some degree of silence and disengagement. While social tension is a natural part of group communication, it must be successfully managed for groups to perform in a satisfactory manner (Ellis & Fisher, 1993). Managing these social tensions was particularly challenging for the participants in this study, so much so that it often led to a degree of disengagement from the group in the form of silence or acquiescence. Quiet students described expending a great deal of energy focusing on the social relationships of their learning groups, which was a source of stress and anxiety, and served as a distraction from the values they placed on preparation, reflection, control, and independent thought and discovery. When CL assignments were poorly designed, quiet students were susceptible to becoming so distracted by negotiating the social aspects of academic groups that they sometimes lost focus on the assignment at hand.

While perhaps it is to be expected that students must learn to manage social tensions in groups situations, CL posed many unique social situations that were difficult, if not impossible, for participants to successfully manage. For example, this study confirmed the findings of previous studies that it was difficult to hold unmotivated students accountable in CL projects, leading to the presence of free-riders (Davis & Arend, 2012; Johnson & Johnson, 2009; Webb, 2013). The presence of free-riders in groups conflicted with the values that quiet students placed on preparation, reflection, and control and accountability. In addition, the presence of free-riders in CL differs from many other types of group communication that occur in non-academic environments. For example, if employees do not complete their tasks on a group assignment, they can be disciplined or even fired. If athletes do not train appropriately, they can be thrown off a
team. However, with CL assignments, quiet students described having to pick up the slack for those who did not do their parts. Having to manage students who were uninterested or unprepared required not only advanced social skills but some level of authority, which quiet students felt that they did not possess.

The group communication literature also suggests that when social tensions become too high, learning groups may be unable to perform effectively (Ellis & Fisher, 1993). In the group learning situations described by participants, there was generally little time available to focus on important social processes such as building trust or establishing productive communication patterns. Instead, their classroom groups were formed quickly, had limited time to interact, and had to create a group product on a relatively short timeline. Many of the learning groups described by quiet students in this study never achieved the positive interdependence described by Johnson and Johnson (2005, 2009) as essential for learning with others. These conditions made social interactions even more challenging for quiet students.

Because quiet students value reflective thinking, it seems reasonable to assume that CL groups might allow them some space in which to do this. Indeed, a previous study of college students found that small group discussions were a useful way to get students who were reluctant to speak out in whole class discussions to share their perspectives through talking (Reda, 2009). Participants in this study, if required to speak aloud, expressed a preference for speaking in small group discussions over whole class discussions. However, this study also found that all participants preferred not to be required or pressured to speak aloud in either situation. But they did have a desire to
share their thoughts and feelings, and some even expressed pride with themselves when they did speak aloud in classes and made good contributions to the discussion.

In addition, most of the participants in this study repeatedly connected their feelings about speaking aloud in both small group and whole class discussions to their level of confidence with the material. The students in this study may have been more critical of their knowledge of course material than their peers, and they may have set a high bar for themselves for participation in classes. Regardless of the reason, findings suggested that these students were struggling to find their academic voices within their disciplines, a process which takes a significant amount of time and study. It is also a process that involves the acquisition of disciplinary knowledge that is both explicit and implicit, and which involves considerable immersion in the subject matter. Thus, quiet students may need more time to experiment with their own voices, a process which takes much longer than a single semester. They may also need help in learning strategies for communicating within their own discourse communities. Of note, participants' most satisfying group experiences tended to occur in upper-division courses in their majors when they were prepared for and confident about speaking in their subject areas with peers who were presumably equally qualified.

When CL situations were consistent with their values, quiet students found that they often benefitted from them. Many quiet students appreciated opportunities to work with others when it was appropriate, and they spoke positively about particular group learning situations in which they learned much. This study also demonstrated that quiet students were willing to accept the social discomforts of CL when they recognized its potential for learning. These quiet students did not appear to be inherently anti-social and
were capable of communicating productively in group assignments, even if it meant dealing with a bit of uneasiness at times. But quiet students were more likely to have positive CL experiences when they experienced fewer value conflicts. When their group partners were prepared and focused, when they perceived that there was an acceptance of reflective and independent thought, and when they felt that they were still in control of their own learning, quiet students were more likely to learn through the process of collaboration.

Collaborative learning has a solid basis in social constructivist learning theory, which states that knowledge is produced as a result of a shared culture and is socially constructed over time through a process of interaction, negotiation, and shared experiences (Bruffee, 1992, 1995, 1999; Hmelo-Silver, 2009; O’Donnell & Hmelo-Silver, 2013). However, when academic situations conflicted with quiet students’ personal values, they had difficulty fully participating in the learning experience. Given the experiences of these quiet students, how can college educators construct learning scenarios and CL assignments that reinforce these values of preparedness, reflection, control, and independent thought and discovery? These are values that are not only important to quiet students, but should be important to college educators as well.

**Implications for Practice**

The results of this study suggest a number of adjustments that instructors can make to their classes that would better accommodate quiet students without putting others at a disadvantage. This section will first outline recommendations for redefining classroom participation in light of what this study has revealed about quiet students; next,
it will describe strategies for designing CL situations that will help not only quiet students but all students to have better learning experiences.

**Redefining Class Participation**

The participants in this study believed that many negative perceptions exist about quiet people that influenced their ability to be successful in the classroom. Some participants were concerned by the wrongful impressions that they believed others attributed to them—for example, that they were unengaged, did not work as hard, had something to hide, or were depressed. In a few cases, quiet students had internalized these negative perceptions and had learned to see themselves as "weird" or "loners." Their perceptions are consistent with the literature which finds that because instructors often judge the success of classroom teaching in terms of the talk of their students, quiet students are often misunderstood as being unengaged in the course material (Barker, 2011; Collins, 1996; Coplan et al., 2011; Reda, 2009; Richmond et al., 2005, 2013; Schultz, 2009, 2010). In fact, this study found that quiet college students considered themselves to be very engaged in their academic course work, a finding that is similar to that of Barker's (2011) high school study.

When instructors awarded points for participation, some quiet students felt that they were at a disadvantage in these classes if participation was equated with talking aloud. To manage their discomfort in college classrooms, quiet students often preferred to express their engagement in ways that differed from those of their more outgoing peers and that were consistent with the values they placed on preparedness and reflection, such as through listening, paying attention, taking notes, writing, and using technologies. These other forms of participation allowed them to be more reflective and introspective
about the course material while still remaining engaged in course content. Thus, professors should consider techniques for redefining participation and reconsidering what it means to be engaged. As Davis and Arend (2012) wrote, "The goal is 100 percent engagement in thinking, not 100 percent speaking. Sometimes teachers may need to work with individual students to come up with appropriate and comfortable ways of showing their involvement" (p. 130).

The following recommendations align with the findings of this study:

- **Have students share their thoughts through written responses.** Quiet students were often more comfortable communicating in written form because it allowed them time to think about what they would like to communicate and to carefully craft their responses. Written communication provides an excellent alternative to oral communication (Davis & Arend, 2012; Reda, 2009). Instructors can balance oral with written responses, and consider using written responses as the basis for oral discussion.

- **When asking for students to speak aloud, give them time to formulate their responses before requiring them to speak.** Many quiet students struggled to speak aloud because they needed time to think about what they wanted to say. Instructors should embrace the notion that critical and complex thinking takes time. A good technique that instructors can use is to wait several seconds after asking a question before speaking again (Brookfield & Preskill, 2005; Davis & Arend, 2012; Ingram & Elliott, 2016). Alternately, students can be asked to write their ideas on paper first or share them with a partner prior to engaging in a whole class discussion. When appropriate, instructors can consider alerting students in
advance as to what the class will be discussing and who will be responsible for participating. Instructors should also ensure that classroom discussion requirements are fair and balanced.

- **Use technologies to encourage and redefine what it means to participate in classes.** Several quiet students in this study enjoyed their instructors’ use of technology in classes. Polling, quizzing, and survey applications provide an excellent means of gauging class participation. They allow all students to comfortably participate without feeling that they are the subject of unwanted attention. Many of these technologies provide an excellent way to create interactivity within the class and reinforce course material. In addition, discussion boards in course management systems can be used to extend the conversation for in-person classes (Brookfield & Preskill, 2005). Discussion boards can also give students more time to think about their responses before sharing them with others.

- **Ask discussion questions that promote critical and creative thinking.** Quiet students in this study repeatedly voiced their concerns about appearing to be wrong in front of other students. When trying to generate discussion, instructors should be wary of asking questions that have a right or wrong answer, as these types of questions tend to close down discussion instead of opening it up (Davis & Arend, 2012). Instructors can learn successful strategies for promoting discussion, such as considering the goal of questions, phrasing questions carefully, and using questions that open discussion by asking students to provide evidence, provide clarification, make connections, summarize, synthesize, or explain causes and effects (Brookfield & Preskill, 2005; Davis & Arend, 2012).
• *Consider other forms of class participation than speaking aloud.* Quiet students expressed the wish that instructors would expand their understanding of participation to include activities other than talking. Instructors should encourage these other forms of participation and recognize them appropriately. In small classes it is not difficult to determine which students are paying attention, listening, taking notes, or completing in-class activities. In particular, written papers demonstrate students' understanding of course content, the ultimate form of class participation.

• *Encourage students to communicate with instructors outside of class time if they have questions or concerns.* Quiet students valued the opportunity to ask their questions in one-on-one settings, in person and through email. Instructors can encourage students to communicate with them outside of class time, which can give quiet students a chance to show that they are engaged and interested if they do not feel ready to speak aloud in class discussions.

• *Consider when it is appropriate to assign class presentations.* Quiet students found class presentations to be extremely challenging, and they were a constant feature of courses for students in some majors. Instructors need to recognize that presentations have their place in college courses: They are a good way for students to learn oral communication skills, but the amount of presentations within a course should not be excessive.

• *Do not be afraid of lecturing when it is appropriate to the course content.* Several quiet students in this study described the enjoyment that came from listening to lectures. Instructors may feel some pressure to minimize lecturing, but there are
certain types of content for which lecturing is both desirable and effective. In particular, lectures that include the delivery of course information interspersed with thought-provoking questions and answers, activities that involve analytical and problem-solving tasks, and hands-on activities can add variety to the class, reinforce lecture content, and ensure that students are participating actively in learning.

- **Become comfortable with classroom silence.** Quiet students were comfortable with their own silence. Instructors should be comfortable with silence too. Instructors should recognize that silence does not mean that students are not paying attention. Instructors can make room for quiet time in the classroom for students to write, practice, and reflect, and they can use silence as an effective tool in class discussions that creates more space for thinking and reflecting (Brookfield & Preskill, 2005; Davis & Arend, 2012; Reda, 2009).

**Rethinking Collaborative Learning Activities**

Despite the many challenges that come with constructing good CL assignments, when they are well-designed and well-suited to the learning outcome, quiet students—like other students—can have enriching and rewarding learning experiences. In this study, quiet students discussed a number of different situations in which they had positive interactions with their peers and had learned much from their assignments. The participants in this study identified three main types of learning scenarios in which they benefitted from CL: (a) when the final product was greater than the sum of any individual efforts and when they were able to bring their unique strengths to the project, (b) when
they taught and received help from others, and (c) when they learned different perspectives, beliefs, and opinions about issues.

For these three types of CL to be successful, several conditions must be in place related to both the nature of the task and the readiness of the student. For large collaborative projects, the task assigned must be able to draw upon the different strengths of group members, and group members must be knowledgeable, skilled, and motivated. For students to learn from others, they must all be appropriately prepared—both to teach material to others and to be ready for learning. For students to learn about different perspectives surrounding an issue, they must be given question prompts that lend themselves to a legitimate discussion, they must feel comfortable enough to share their perspectives, they must have an appreciation for diverse points-of-view, and they must understand basic tenets of open and productive discussion. For all of these situations, students must understand and appreciate the rationale for CL, which can help to create greater student buy-in for the learning scenario. In addition, they must have adequate communication and conflict resolution skills to be able to move conversation forward in a productive manner.

Even quiet students who may not prefer to participate in CL assignments will be able to benefit from, appreciate, and enjoy them if they can see that the collaborative element is clearly tied to an appropriate learning objective. For quiet students who are reluctant to participate in whole class discussions, small groups may offer a way for them to share their opinions, as they may find it easier (although not necessarily easy) to speak up in smaller groups. However, much thought and planning needs to be given to
designing CL assignments that allow quiet students to participate in a manner that provides them with satisfying and productive learning experiences.

The following recommendations for designing CL assignments align with the findings of this study:

- *Have a rationale for assigning CL and share that rationale with students.* Quiet students in this study described their own theories about why instructors assigned CL. Before assigning CL, instructors should ask: Why is this particular type of content better learned through collaboration? Instructors should make sure that students understand why they have been asked to engage in CL so that they can stay focused on the purpose of the activity even when other parts are difficult. Vague explanations that place the rationale for CL in future workplace scenarios do not provide sufficient information for why students are being asked to learn in groups. If students cannot see the point of the activity, then they might assume that instructors are assigning CL to minimize their own grading.

- *Choose appropriate tasks for group work.* All quiet students in this study described scenarios in which the CL task was not a good fit for group work. If an assignment can be easily divided, then students will do that, essentially creating smaller individual projects out of the larger group assignment (Bacon, 2005; McCorkle et al., 1999). If the project is too easy to divide into individual parts, it may not be appropriate for group work as it may allow students to avoid learning some of the content (Davis & Arend, 2012). Instructors should choose CL tasks that are complex, are open-ended, or require collaborative effort to be completed (Davis & Arend, 2012; Webb, 2013).
• **Recognize that CL may be more effective for upper-level courses.** Many of the quiet students in this study found CL to be especially rewarding when they were able to work with other students in their majors who had equivalent skill levels, interests, and motivation. Thus, large CL projects which are intended to promote the co-construction of knowledge are probably given most effectively in upper-division courses within the major when students have acquired foundational knowledge and when they are more motivated to participate with like-minded students.

• **Assign smaller groups.** The larger the group, the more challenging it was for quiet students to navigate the social interactions that came with trying to ensure that their group worked effectively toward a goal. In addition, quiet students were less likely to speak up in larger groups and felt more comfortable speaking aloud in smaller groups. Instructors should consider the benefits of assigning smaller groups for projects and discussions. With larger groups it is also easier for some students to avoid doing an equal share of the work, it is more difficult to coordinate students' schedules to arrange for meetings, and it is more challenging to get everyone to agree upon a direction for the work.

• **Give careful consideration to how groups are formed.** Many quiet students in this study experienced discomfort when they had to form their own groups. There may be times when it is appropriate to allow students to choose their own groups, but instructors should be aware that this may be uncomfortable for many students. Many quiet students appreciated being able to work on CL projects that were aligned with their interests, experiences, and expertise, so instructors may want to
take these considerations into account when assigning students to groups. Also, instructors should consider when it may be beneficial for classes that have many group projects or discussions to work repeatedly with the same set of students.

- **Give students the option to work alone.** Quiet students reported that they often preferred to work alone but were rarely or never given the option to do so. When the learning outcomes for a particular assignment could be met either through group work or through individual work, instructors should consider allowing students to choose how they would prefer to complete the assignment. This shows respect for students and allows them to make choices about how they learn best. It enables students who like independent learning to work in their preferred mode, while giving more talkative students the option to complete the assignment in a social context.

- **Recognize that group work takes more time than individual work.** The quiet students in this study reported many challenges that came with managing group work, including concerns such as finding a time when everyone could meet or getting everyone to agree on a direction for the group. The rationale for choosing CL should never be to save time or create efficiency, as group efforts always take more time (Ellis & Fisher, 1993). Instructors should plan for that accordingly in their course syllabi and may want to give groups some time to work in class, where they can observe students working in groups and be available to answer questions (Hansen, 2006).

- **Have clear guidelines for what students should produce in their groups.** Quiet students appreciated having clear guidelines for group assignments so that
was not wasted trying to figure out what they should be doing. Instructors should write clear instructions for group assignments and explain them thoroughly. A lack of clear expectations may lead to confusion and disagreement that can interfere with learning.

- *Share strategies for productive discussion, communication, and problem-solving in groups.* Quiet students experienced many frustrations with the way communication occurred in groups, so much so that they reported disengaging from fully participating. Collaboration does not come naturally to many students and they may have to learn how to do it well (Davis & Arend, 2012). In addition, political discussions taking place in contemporary society do not always provide students with healthy models of debate. Instructors should share with students what they value in a good discussion and teach strategies for active listening, asking and responding to questions, expressing ideas, and handling disagreement (Johnson & Johnson, 2009; Webb, 2013). Instructors should alert students to the problems of groupthink and apathy (Davis & Arend, 2012; Hopper, 2003; Levine et al., 1993) and encourage them to find ways to respect the perspectives of all members.

- *Consider putting structures in place for group work or making some recommendations.* Most of the quiet students in this study appreciated having more structure in their group projects. Depending upon the type of assignment, instructors may want to recommend certain roles within groups (Hansen, 2006), make suggestions for ways that groups can monitor their own progress, or set benchmarks for when different parts of a project should be completed. Instructors
may want to check in with student groups on occasion to see how their work is progressing, offer advice when necessary (Webb, 2013), and encourage students to talk to them during office hours or over email if their groups are having problems.

- **Use feedback reports and evaluations to hold students accountable.** Quiet students were frustrated by students who did not pull their weight in group projects. Instructors should require students to document the contributions that they make to the group project to minimize free-riding. Instructors can ask students to give feedback on their group's processes and partners either during the project and/or once it has concluded (Hansen, 2006); however, they may need to take steps to ensure that comments will remain confidential to avoid making students uncomfortable. These reports and evaluations can also help students to reflect upon their own learning.

- **Encourage students to form study groups outside of the classroom.** Several of the quiet students in this study appreciated the chance to learn from their peers when it was appropriate, both as part of class assignments and as part of outside study groups. Many students can benefit from opportunities to review material with peers and help each other with challenging material. For especially difficult course material, instructors can encourage students to form their own study groups to help each other learn. This can encourage more outgoing students to reach out to their quieter peers, and can help quiet students become more comfortable working with other students.
• Avoid over-using CL. Several quiet students in this study felt that they were constantly participating in CL assignments. Instructors should use CL in moderation and recognize that it may not be appropriate for many classes and subjects. Instructors should encourage independent learning and discovery, and recognize that this is also an important part of a student's college experience.

Recommendations for Future Research

This study suggests a number of directions for future research. Because this study was conducted with a small number of participants, future studies could seek to replicate the results discovered here with larger samples. Studies with greater numbers of participants might find greater variation in the ways that quiet students experience CL. In addition, future studies might employ different methods to approach these questions. Studies that use a quantitative approach could be particularly helpful in illuminating the extent to which these findings can be generalized, which can in turn help provide a basis for which to explore changes in pedagogical strategies at the postsecondary level.

This study suggested that quiet students across a range of disciplines had many commonalities in their experiences of CL, but future studies might explore whether disciplinary differences exist in the experiences of quiet students and how these can be addressed by college educators. While this study attempted to explore the experiences of students from a diversity of majors, including those from professional programs and the liberal arts and sciences, this study's small sample size prevented the inclusion of students from a variety of disciplines that use CL in different ways. Educators in many disciplines may use CL assignments to prepare their students for different types of collaborative situations that they perceive students will encounter in their professional lives. Therefore,
it would be helpful for future studies to look at a wider variety of disciplines, and
examine the intersection of assignment development, student personality, disciplinary
culture, and professional expectations within particular disciplines. Future studies might
also look at CL situations within professional contexts and explore whether people with
quiet personalities experience these situations in a manner similar to or different from
those described here.

Finally, future studies might explore the extent to which age plays a role in quiet
students’ experiences of CL. More studies could be done not only with adults of different
ages but also with K-12 students. Because CL is common across educational levels,
future work could explore whether the experiences of quiet children are similar to those
of the quiet adults that were discussed in this study. In addition, the one student in this
study who was slightly older indicated that he may have developed some patterns of
speaking and collaboration from his adult experiences. This suggests that it would be
interesting to follow students over time to determine the extent to which their experiences
of CL in college influence future adult experiences with collaboration, and/or whether
their adult experiences result in changes to the ways that they experience learning with
others.

**Conclusion**

Because CL is widely used across the disciplines and levels in postsecondary
education, it is critical that instructors understand how best to implement it. Quiet
students' first-hand accounts of their experiences with CL have provided an important
means of understanding this widespread instructional technique. Through an in-depth
look at the experiences of 10 self-identified quiet students, this study sought to better
understand their thoughts, feelings, and perceptions about their own learning. In addition, this study's focus on one group of students' set of experiences has provided a way to examine the common practice of CL from both a theoretical and practical perspective, closely examining what makes it effective and/or ineffective for learning.

This study revealed that CL often served as a source of tension and discomfort for quiet students, resulting in the generation of many negative emotions and elevated levels of stress. While this study also showed that quiet students were quite capable of collaborating successfully with other students, they encountered many problems when they perceived that the circumstances of CL were poorly designed. This study—like many previous studies—showed that there is much that can go wrong when students are asked to learn in collaborative settings. Poorly designed CL assignments often resulted in learning situations that were at odds with the values that these quiet students placed on preparation, reflection, control, and independent thought and discovery. Through a better understanding of quiet students' experiences, for whom collaboration may not be their first choice of learning, college instructors can learn to approach CL differently. This study also offers a challenge to the notion that CL is always a useful technique and shows that it can in fact be detrimental when it is perceived to be ill-suited to the learning outcome.

Finally, this study suggests that quiet students represent a group that may be somewhat misunderstood. Quiet students often struggled to navigate through an academic environment that seemed designed for more outgoing and social students and was in conflict with their own values. Their quietness was not an expression of a lack of engagement in academic studies; rather, students were thinking deeply about what they
were learning and exhibited different expressions of participation in the classroom. At the same time, quiet students’ experiences and values offer a wider critique of the role of the social in contemporary American culture. Their expressions of tension and stress in some types of social learning situations generate questions about the importance placed in contemporary society on constant social connection and the tendency to revere the collective opinion. Perhaps what is needed in both society in general and in postsecondary education settings in particular is more emphasis on solitude, reflection, and independent thinking, and a greater recognition of their roles in knowledge creation and critical analysis.
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Appendix A: First Interview Questions

1. Tell me a little more about yourself. Where did you grow up? Where did you go to high school?

2. You were asked to participate in this study because you are a quiet or introverted person. Please tell me why you fit this description. How would you characterize yourself in this way?

3. As a quiet or introverted person, how would you describe your participation in classes? Can you give an example or two?
   a. How would you describe your interaction with your professors? Your classmates?
   b. How do professors or other students respond to you in classes? Do you think you're perceived by other students or by professors as a quiet or introverted person in the classroom?
   c. What prompts you to speak in classroom situations? Can you give an example?
   d. Where do you like to sit in classes?
   e. How do you view the quality and quantity of your contributions to classroom discussion?
   f. Do you think there's a difference between the ways you respond in classroom situations and non-classroom situations?
   g. Are there challenges associated with being a quiet or introverted person in classes? Are there advantages?
   h. What would you want your professors to know about you, or about quiet or introverted students in general?
4. Please think of a situation in the past when you learned something. Can you describe it in detail? Why do you think you were able to learn in this situation?

5. Outside of classroom situations, how and where do you prefer to study?
   
a. With others or alone?

b. How do you arrange your environment outside of the classroom to best help you learn?

6. To what extent do you think that being a quiet or introverted student affects the way you learn?

7. Let's talk for a moment about collaborative learning. Collaborative learning describes any type of assigned learning situation in which students work in small groups of two or more students to achieve a common goal, or what we usually think of as group work.

   Collaborative learning can describe group work in class that lasts only a few minutes or a group assignment that lasts an entire semester and takes a lot of time outside of class to complete. So when was the last time you participated in group work for a college class?

   a. What was that like?

   b. How did you feel about it?

   c. Were you happy with the results?

   d. Did you put your best effort in? Why or why not?

   e. What was the best part? What was the worst?

   f. Were you satisfied with what you learned?

8. As best you can recall, how many times do you think you have participated in collaborative learning for classes over the last year?

   a. For which classes?
b. In big or small groups?

c. Can you describe a few of them?

d. How did you feel about these assignments?

e. Were you happy with what you learned?

9. When you get a collaborative learning assignment in a class, how do you feel?

10. What makes for a good group? What makes for a bad group? (e.g., size of the group, types of partners, structure of assignments)

11. How do you believe other students regard collaborative learning?

12. Let's take a look at your course syllabi for this semester. Which courses are you looking forward to? Why? Which courses are you less excited about? Why?
   a. How many of your courses have some kind of collaborative learning assignment?
   b. How do you feel about each of these assignments?

(Before the student departs:

1. Give instructions and prompt for reflections.

   Soon after participating in a group activity for a class, write a few thoughts about what it was like. What did you do? What did you like? What didn't you like?

   Text or email your responses to ___ at ___.

2. Photograph course syllabi and return to the student.)
Appendix B: Second Interview Questions

1. Last time we talked about being a quiet or introverted person, what that means in terms of the ways you prefer to learn, and your experiences with collaborative learning in classes. Today we'll talk about your current classes. First, how are your classes going?
   a. Which class(es) do you like the most? Why?
   b. Which class(es) do you like the least? Why?

2. Let's talk about some of the collaborative learning assignments or group activities that you've been working on in your classes. In your reflection about this assignment, you stated ______________. Please describe what occurred in the group that prompted you to describe it in these terms. (Or: Tell me about a recent collaborative learning activity for one of your classes. Get details of the activity, e.g., class, number of students in group, instructions from professors, length and depth of interaction/meetings, final product.)
   a. Describe your participation in the group.
   b. Did it go as you expected?
   c. How have you liked working with your group mates?
   d. What did you learn from the activity?
   e. If you divided it up into parts, how did that go?
   f. If it did/did not go well, then why? What would have made it better?
(Repeat for 2+ collaborative learning activities.)

3. Think back on your collaborative learning assignments so far this semester.
   a. (If applicable) How do they compare to each other? (e.g., best, worst)
   b. What kind of structure has been provided? (e.g., expectations, roles, topics, grading)? What do you like or dislike about this?
c. How have you interacted with or socialized with others during your group meetings (e.g., chit chat? talk about non-academic topics)? If so, please describe.

d. Have you used online tools or technologies to complete any of these assignments? If so, please describe.

4. Think back on your class participation so far this semester.

a. What is your preferred way to participate in classes?

b. If you are taking online classes (or have taken them in the past), do you participated in group activities or discussions? How do they differ for you from in-person activities?

c. Would you like for your professors to encourage you to speak out more in class or in small groups?

5. How do you think your professors view collaborative learning?

6. You’re still in the thick of things with your assignments for this semester. How will you approach your participation in classes for the rest of this semester? In group assignments and discussions?

(Before the student departs: Review instructions and prompt for reflections.

Soon after participating in a group activity for a class, write a few thoughts about what it was like. What did you do? What did you like? What didn’t you like?

Text or email your responses to ___ at ____.)
Appendix C: Third Interview Questions

1. Last time we spoke, you were in the thick of things for the semester, and you described several different collaborative learning assignments that you were participating in. So let's talk about how they finished up.

   a. In your reflection about this assignment, you stated _______________. Please describe what occurred in the group that prompted you to describe it in these terms. (Or: Tell me how your collaborative learning activity finished up.)

   b. How did the assignment finish?

   c. What kinds of instructions did you get from your professor to complete it?

   d. Were any elements unexpected?

   e. How did you feel about it in the end?

   f. What did you learn from or get out of this assignment?

(Repeat for 2+ collaborative learning activities.)

2. Overall, how do you think this semester went?

3. What were your most and least favorite learning experiences/assignments this semester? When did you feel that you were most engaged/or most distanced from learning?

4. Thinking of your classes as a whole, what do you think you got out of learning with other people this semester?

5. Please think back on group learning situations from this semester or previous semesters.

   a. When working with group partners, did you divide the work into parts or have everyone work on the whole thing? How did this work for you?
b. Were there certain kinds of topics that you were more or less willing to talk about in small groups?

c. If your group mates were doing something wrong in your group project, would you let them know?

d. If your group mates said or wrote something you disagree with, would you express your opinion?

6. Please think back on your class participation as a whole from this semester or previous semesters.

   a. How would you assess your participations in your classes this semester?

   b. Did any of your classes this semester give out a participation grade? If so, how did that go?

   c. Was there a difference between how much you spoke out in classes in your major versus core or other classes?

   d. If you were required by your professors to speak out, would you prefer that it be in a whole-class discussion or a small group discussion? Why?

7. Thinking back of this semester as a whole, how do you best like to learn? Under what circumstances do you learn the best?
Appendix D: Personal Report of Communication Apprehension

This instrument is composed of twenty-four statements concerning feelings about communicating with others. Please indicate the degree to which each statement applies to you by marking whether you:

**Strongly agree = 1  Agree = 2  Are Neutral = 3  Disagree = 4  Strongly disagree = 5**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I dislike participating in small group discussions.</td>
<td>1</td>
</tr>
<tr>
<td>2. Generally, I am comfortable while participating in group discussions.</td>
<td>1</td>
</tr>
<tr>
<td>3. I am tense and nervous while participating in group discussions.</td>
<td>1</td>
</tr>
<tr>
<td>4. I like to get involved in group discussions.</td>
<td>1</td>
</tr>
<tr>
<td>5. Engaging in a group discussion with new people makes me tense and nervous.</td>
<td>1</td>
</tr>
<tr>
<td>6. I am calm and relaxed while participating in group discussions.</td>
<td>1</td>
</tr>
<tr>
<td>7. Generally, I am nervous when I have to participate in a class.</td>
<td>1</td>
</tr>
<tr>
<td>8. Usually, I am comfortable when I have to participate in a class.</td>
<td>1</td>
</tr>
<tr>
<td>9. I am very calm and relaxed when I am called upon to express an opinion in a class.</td>
<td>1</td>
</tr>
<tr>
<td>10. I am afraid to express myself in classes.</td>
<td>1</td>
</tr>
<tr>
<td>11. Communicating in classes usually makes me uncomfortable.</td>
<td>1</td>
</tr>
<tr>
<td>12. I am very relaxed when answering questions in a class.</td>
<td>1</td>
</tr>
<tr>
<td>13. While participating in a conversation with a new acquaintance, I feel very nervous.</td>
<td>1</td>
</tr>
<tr>
<td>14. I have no fear of speaking up in conversations.</td>
<td>1</td>
</tr>
<tr>
<td>15. Ordinarily I am very tense and nervous in conversations.</td>
<td>1</td>
</tr>
<tr>
<td>16. Ordinarily I am very calm and relaxed in conversations.</td>
<td>1</td>
</tr>
<tr>
<td>17. While conversing with a new acquaintance, I feel very relaxed.</td>
<td>1</td>
</tr>
<tr>
<td>18. I'm afraid to speak up in conversations.</td>
<td>1</td>
</tr>
<tr>
<td>19. I have no fear of giving a speech.</td>
<td>1</td>
</tr>
<tr>
<td>20. Certain parts of my body feel very tense and rigid while giving a speech.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td>21. I feel relaxed while giving a speech.</td>
<td></td>
</tr>
<tr>
<td>22. My thoughts become confused and jumbled when I am giving a speech.</td>
<td></td>
</tr>
<tr>
<td>23. I face the prospect of giving a speech with confidence.</td>
<td></td>
</tr>
<tr>
<td>24. While giving a speech, I get so nervous I forget facts I really know.</td>
<td></td>
</tr>
</tbody>
</table>


Appendix E: Personal Report of Communication Apprehension Scoring

**Scoring Instructions:** Transfer your scores as indicated by the question number below each space. Start with the number 18, add the first 3 numbers, and subtract the next 3 numbers. Total your 4 individual scores to come up with your overall total.

**Group:**

\[18 + \quad (#2) + \quad (#4) + \quad (#6) - \quad (#1) - \quad (#3) - \quad (#5) = \quad ______] \quad (Between 6-30)

**Classes:**

\[18 + \quad (#8) + \quad (#9) + \quad (#12) - \quad (#7) - \quad (#10) - \quad (#11) = \quad ______] \quad (Between 6-30)

**Interpersonal:**

\[18 + \quad (#14) + \quad (#16) + \quad (#17) - \quad (#13) - \quad (#15) - \quad (#18) = \quad ______] \quad (Between 6-30)

**Public Speaking:**

\[18 + \quad (#19) + \quad (#21) + \quad (#23) - \quad (#20) - \quad (#22) - \quad (#24) = \quad ______] \quad (Between 6-30)

**Total = \quad ______] \quad (Between 24-120)

Scores can range from 24-120.

Scores below 51 represent people who have very low levels of communication apprehension.
Scores between 51-80 represent people with average communication apprehension.
Scores above 80 represent people who have high levels of communication apprehension.
Appendix F: Recruitment Script

Hi, my name is Ann Medaille, and I'm here today to talk briefly about a research study that I'm doing. I'm studying students who are quiet or introverted and how they respond to collaborative learning situations. I'm looking for students who might be willing to be interviewed as part of my study.

But before I talk about it, I have a self-assessment for you to complete which you can use to determine whether you fit the study description. This assessment is called the Personal Report of Communication Apprehension and it asks you to score yourself in relation to 24 statements regarding your feelings about different communication situations.

On one sheet are the questions and on another sheet is the scoring information, so once you complete the assessment you can figure out what your score is. You'll need to transfer your scores, and for each category, you'll add three numbers and subtract three numbers. After you complete it, I'll tell you a little bit more about the study I'm working on.

(after the students have completed the assessment)

So once you've figured out your score, you can look at the bottom and see which category you fit into. If you have high to high/average levels of communication apprehension, you could be a quiet or introverted person. You could still be quiet or introverted and not have apprehension, however.

If you flip over the scoring sheet, you'll see a little more information about the study, which will involve being interviewed three times over the course of the fall semester. Compensation will be provided. If you might be interested in participating,
please list your name and contact information on this sheet and I'll get in touch with you. If you're not interested or if it doesn't seem applicable to you, you can just leave that information blank.
Appendix G: Student Contact Information for Interested Students

Opportunity to Participate in a Research Study

If you are interested in participating in a study about the ways that quiet and/or introverted college students experience collaborative learning/group work in their classes, please list your contact information below.

Students will be interviewed three times over the course of the fall semester. Compensation ($60) will be provided.

You must consider yourself to be quiet or introverted, be of junior or senior status by the Fall 2017, and be a full-time student with a declared major.

Your name: ___________________________________________________________

Your major: ___________________________________________________________

Your status: Freshman Sophomore Junior Senior

Your age range: 18-25 25-30 30-35 35-40 40+

When do you plan to graduate? _________________________________________

Your email address: ____________________________________________________

Your phone: ___________________________________________________________
Appendix H: Student Data Sheet for Recruited Students

Name: ________________________________________________________________

Email address: __________________________________________________________

Phone: __________________________________________________________________

Consider yourself to be quiet or introverted? ________________________________

Have a smartphone? ______________________________________________________

Age range?  18-25  25-30  30-35  35-40  40+

Contact preference: ______________________________________________________

Race: __________________________________________________________________

Major: __________________________________________________________________

Year in school: __________________________________________________________

Preferred meeting location and times: ______________________________________

Preferred cash or gift card? ______________________________________________

List of classes taking in the fall: __________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Next steps: I’ll contact you in late August about a time to meet during the first couple of weeks of school, or even before that, if preferred.
Appendix I: Consent Form

Title of Study: Collaborative Learning and Quiet Students
Principle Investigator: Janet Usinger, Ph.D., (775) 682-9083
Co-Investigators / Study Contact: Ann Medaille, M.L.S., (775) 682-5600
Study ID Number: [1048793-1]
Sponsor: N/A

Introduction
You are being invited to participate in a research study. Before you agree to be in the study, read this form carefully. It explains why we are doing the study and the procedures involved.

At any time, you may ask one of the researchers to explain anything about the study that you do not understand.

It’s important you are completely truthful about your eligibility to be in this study.

You do not have to be in this study. Your participation is voluntary.

Take as much time as you need to decide. If you agree now but change your mind, you may quit the study at any time. Just let one of the researchers know you do not want to continue.

Why are we doing this study?
We are doing this study to find out how quiet and/or introverted college students experience collaborative learning in their class work. The benefits of this research cannot be guaranteed but we hope to learn more about ways to improve learning experiences for quiet and introverted students in particular and all types of students in general.

Why are we asking you to be in this study?
We are asking you to be in this study because you consider yourself to be a quiet and/or introverted college student and are a full-time, upper-division student with a declared major as of the Fall 2017 semester.

How many people will be in this study?
We expect to enroll 10 participants.

What will you be asked to do if you agree to be in the study?
If you agree to be in this study, you will be asked to participate in three interviews over the course of the Fall 2017 semester. Interviews will take place at the beginning, middle, and end of the semester and will be audio recorded. Each interview will last approximately 60 minutes. You will also be asked to make brief reflections about your experiences with collaborative learning via text message or vocal recordings at several points during the semester and send them to the researchers.

**How long will you be in the study?**
The study will take a total of about 4 to 4.5 hours of your time; you’ll participate over the course of 15 weeks.

**What if you agree to be in the study now, but change your mind later?**
You do not have to stay in the study. You may withdraw from the study at any time by contacting Ann Medaille at amedaille@unr.edu or (775) 682-5600.

**Is there any way being in this study could be bad for you?**
There are no known risks associated with this study.

**Will being in this study help you in any way?**
We cannot promise you will benefit from being in this study, but you may become more aware of your learning style, preferences, and strengths.

**Will you be paid for being in this study?**
You will receive $15 following completion of the first interview, $20 for the second interview and reflections, and $25 for the third interview and reflections. You will receive the payment via cash or bookstore gift certificates at the end of each interview.

**Who will know that you are in this study and who will have access to the information we collect about you?**
The researchers, the University of Nevada, Reno Institutional Review Board, and the US Department of Health and Human Services (DHHS) will have access to your study records.

**How will we protect your private information and the information we collect about you?**
We will treat your identity with professional standards of confidentiality and protect your private information to the extent allowed by law. We will do this by removing all personally identifiable information from interview and reflection transcriptions. Personal information will be replaced with codes, and the list linking the participant names and
codes will be stored securely and separately from the research data. The research data will be stored on a stand-alone password-protected laptop and on university cloud storage.

We will not use your name or other information that could identify you in any reports or publications that result from this study.

**Who can you contact if you have questions about the study or want to report an injury?**

At any time, if you have questions about this study, contact Ann Medaille at amedaille@unr.edu or (775) 682-5600, or Janet Usinger at usingerj@unr.edu or (775) 682-9083.

**Who can you contact if you want to discuss a problem or complaint about the research or ask about your rights as a research participant?**

You may discuss a problem or complaint or ask about your rights as a research participant by calling the University of Nevada, Reno Research Integrity Office at (775) 327-2368. You may also use the online *Contact the Research Integrity Office* form available from the *Contact Us* page of the University’s Research Integrity Office website.

**Agreement to be in study**

If you agree to participate in this study, you must sign this consent form. We will give you a copy of the form to keep.

<table>
<thead>
<tr>
<th>Participant’s Name Printed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of Participant</td>
</tr>
<tr>
<td>Signature of Person Obtaining Consent</td>
</tr>
</tbody>
</table>