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# The Development of The Personal Strengths Intervention (PSI) to Improve Self-Determination and Social-Emotional Levels in Postsecondary Students with Learning Disabilities and/or ADHD: A Multiple Baseline Study

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The Development of The Personal Strengths Intervention (PSI) to Improve Self-  
Determination and Social-Emotional Levels in Postsecondary Students with Learning  
Disabilities and/or ADHD: A Multiple Baseline Study

by

Jennie L. Farmer

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
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## DEDICATION

To my brother who makes me a better teacher

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## ABSTRACT

Students with learning disabilities and/or attention deficit hyperactivity disorder (ADHD) experience decreased academic and social-emotional outcomes when compared to their peers without disabilities. Self-determination, positive psychology, and cognitive theories of learning offer suggestions for improving these outcomes. The purpose of this study was to develop The Personal Strengths Intervention (PSI) and investigate its impact on levels of self-determination and the social-emotional functioning of postsecondary students with learning disabilities and/or ADHD. PSI integrates key elements of self-determination, positive psychology, and cognitive theories. ADHDA multiple baseline design with seven participants was used to examine the intervention effects over time. Results indicate PSI demonstrates content, face, and social validity. The results from the examination of the impact of participation in PSI on self-determination and social-emotional levels were inconsistent. Visual analyses, effect sizes, and multilevel modeling of the time series data indicated there was little to no intervention effect across participants. However, results from the visual analyses and effect sizes revealed there were some intervention effects for particular participants. For participants who demonstrated intervention effects, effects ranged from small to large for self-determination dependent variables and small to moderate for social-emotional dependent variables. Pre- post-assessment results indicated there was an increase in self-determination and positive affect associated with participation in PSI. There were no changes in subjective well-being or negative affect. Results from a longitudinal

qualitative trend analysis and final interviews with participants indicated improved self-determination and social-emotional levels. A discussion of possible explanations for the finding and implications is included. Suggestions for future research are provided.



## CHAPTER 1: INTRODUCTION

Students with learning disabilities represent approximately 4% of school-age students (U.S. Department of Education, 2009a), and students with attention deficit hyperactivity disorder (ADHD) represent approximately 10% of the school-age population (Visser, Bitsko, Danielson, Perow, & Blumberg, 2010). These students have an average to above average intelligence and specific difficulties in one or more of the basic psychological processes (for learning disabilities) or with inattention, hyperactivity and/or impulsivity (for ADHD). Students with learning disabilities and/or ADHD may experience difficulties with specific skills, such as organizational, social, and academic tasks (Bender, 2004; Turnock, Rosen, & Kaminski, 1998). They are at an increased risk for social and emotional concerns as well. Specifically, these students experience anxiety, depression, and lack of hope at higher rates than their non-disabled peers (Al-Yagon & Mikulincer, 2004; Lackaye, Margalit, Ziv, & Ziman, 2006; Pastor & Reuben, 2008; Weyandt & DuPaul, 2006). In addition, they may also experience decreased levels of self-regulated learning, self-efficacy, self-awareness, and self-advocacy. Further, these students also experience decreased academic achievement (Bender, 2004; Lackaye & Margalit, 2006; Loe & Feldman, 2007) and increased negative post-school outcomes (e.g., dropout, low postsecondary attendance) than their peers without disabilities (Loe & Feldman, 2007; Kessler et al., 2005; Newman, Wagner, Cameto, & Knokeys, 2009; U.S. Department of Education, 2009a).

Research in the areas of self-determination and positive psychology offer suggestions for improving the outcomes for students with learning disabilities and/or ADHD. Self-determination is the characteristics that enable people to act as the primary casual agent in their life and improve the quality of their life (Wehmeyer & Field, 2007). It includes four essential characteristics: (1) utilizes autonomous behavior, (2) demonstrates self-regulated behaviors, (3) acts in a psychologically empowered manner, and (4) displays self-realizing behaviors. Within each of these four essential characteristics are more specific behaviors that a person with self-determination may exhibit, such as choice-making, knowing one's strengths and weaknesses, goal setting and attainment, and self-efficacy. Previous studies have indicated that people with disabilities who are self-determined experience more positive quality of life outcomes (e.g., employment status, independent living; Wehmeyer & Schwartz, 1997), academic achievement (Palmer, Wehmeyer, Gipson, & Agran, 2004), and skills for school success (e.g., relating accommodations to learning styles; Hapner & Imel, 2002; problem-solving skills; Agran, Blanchard, Wehmeyer, & Hughes, 2002).

The field of positive psychology entails studies of people's strengths and their positive functioning (Snyder & Lopez, 2007). Positive psychology differs from traditional fields of psychology in that it focuses on moving a person from being "okay" to flourishing rather than simply attending to psychopathological concerns. Part of flourishing includes increasing one's life satisfaction and subjective well-being, which is the scientific term for happiness. Research indicates that increased levels of life satisfaction are related to increased quality of life indicators (see Gilman & Huebner, 2003). Current topics in positive psychology focus on several areas including character

strengths, Hope Theory, and savoring. Character strengths are those characteristics of people that allow them optimal functioning (Peterson & Seligman, 2004). They are typically greatly underused as most people tend to focus on their weaknesses instead. Hope Theory includes goal setting, motivation, and attainment (Snyder & Lopez, 2007). It is a learned pattern of behavior which requires a sense of self-efficacy and knowing one's strengths. Savoring is about enjoying the present moment (Seligman, 2002). It is where you stop what you are doing and take notice of and enjoy an accomplishment. Daily use of character strengths, Hope Theory, and savoring has been shown to increase life satisfaction in adults (Lyubomirsky, 2008). The majority of positive psychology research has focused on adults. New research in this area is beginning to focus on adapting these interventions for children and adolescents (e.g., Gillham et al., 2007; Savage, 2011) and students with disabilities (e.g., Short, 2007).

### **Problem Statement**

Students with learning disabilities and/or ADHD often lack the academic and independent skills needed to be successful at the postsecondary level (Field, Sarver, & Shaw, 2003; Gregg, 2007). They experience difficulty with academic, organizational (Bender, 2004), self-regulation, and self-advocacy skills (Field et al., 2003). In addition, they experience increased social-emotional concerns. Students with learning disabilities and/or ADHD often experience a lower self-concept (Elbaum & Vaughn, 2003; Weyandt & DuPaul, 2006) and increases rates of psychopathology (Maag & Reid, 2006). These academic and social-emotional characteristics often lead to decreased outcomes for students with learning disabilities when compared to their peers without disabilities. They have lower high school graduation (U.S. Department of Education, 2009a; National

Center for Education Statistics, 2010) and postsecondary attendance rates (Loe & Feldman, 2007; Newman et al., 2009) when compared to their peers without disabilities. Further, people with learning disabilities tend to earn less money than their peers without disabilities (Newman et al., 2009).

### **Purpose Statement**

The purpose of this study was to develop The Personal Strength Intervention (PSI) which integrates key elements of self-determination, positive psychology, and cognitive theories of learning. It also investigated PSI's impact on levels of self-determination and the social-emotional functioning of postsecondary students with learning disabilities and/or ADHD.

### **Research Questions**

1. To what extent does The Personal Strengths Intervention (PSI) incorporate identified elements of the literature bases on self-determination, positive psychology, and postsecondary students with learning disabilities and/or ADHD based on expert review?
2. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the self-determination levels of postsecondary students with learning disabilities and/or ADHD?
3. What, if any, is the impact of The Personal Strengths Intervention on the social-emotional outcomes for postsecondary students with learning disabilities and/or ADHD?
  - a. What is the impact of The Personal Strengths Intervention (PSI) on the life satisfaction level of students with learning disabilities and/or ADHD?

- b. What is the impact of The Personal Strengths Intervention (PSI) on the positive and negative affect of students with learning disabilities and/or ADHD?
4. How do postsecondary students with learning disabilities and/or ADHD perceive The Personal Strengths Intervention (PSI)?
- a. What components of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the most beneficial?
  - b. What components of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the least beneficial?

### **Overview of Research Design**

This study utilized a multiple baseline design to develop and examine the effectiveness of PSI. A multiple baseline design allows for the intense examination of intervention effects over time and has been suggested as a method to develop interventions in special education (Horner et al., 2005). Baseline and treatment phase lengths were pre-determined due to the nature of the intervention and academic semester constraints. Participants were randomly assigned to baseline phase lengths and administered the intervention independently. The validity of the intervention was examined through expert review (i.e., content and face validity) and the participants' perceptions of PSI following the implementation of the intervention (i.e., social validity).

## **Theoretical Framework**

This study utilized a theoretical framework drawn from cognitive theory, self-determination theory, and Hope Theory. These theories supported the initial development of PSI which seeks to improve self-determination and social-emotional outcomes for postsecondary students with learning disabilities.

Cognitive theory is a theory that explains how learning occurs. It includes topics such as memory, meaning making, reasoning, judgment, and problem-solving (Hergenhahn, 2005). It has been part of psychology throughout history and is present in the work of Fechner, Ebbinghaus, James, and Piaget. Bruning and colleagues (2004) identify seven themes encompassed within cognitive theory:

1. Learning is a constructive, not receptive, process.
2. Mental frameworks organize memory and guide thought.
3. Extended practice is needed to develop cognitive skills.
4. Development of self-awareness and self-regulation is critical to cognitive growth.
5. Motivation and beliefs are integral to cognition.
6. Social interaction is fundamental to cognitive development.
7. Knowledge, strategies, and expertise are contextual (pp. 6-8).

The first theme indicates that learning is constructed based on what is known, what is encountered, and what is done with it. This means that learning is based on the constructions of meaning made when new information is encountered. Learning requires rote information and deeper understandings of material. The second theme includes how information is stored. It is stored and organized through schemata, which is how

information is perceived and where attention is focused. Through the use of prior learning and strategies, mental frameworks guide thinking and permit comprehension. The third theme indicates that learning requires practice. This practice can be implicit or explicit, meaning many opportunities for practicing learning skills occur naturally within and outside of school; however, learning skills may also be explicitly taught. Effective learners utilize automated processes for perception, attention, memory, and problem solving. In order for these processes to become automatic practice using them is necessary. The fourth theme states that learners must be aware of and actively engage in their learning. Learners who are self-aware and can self-regulate are successful at learning new information and tasks. This includes the development of metacognition, which is the ability to think about one's own thinking and use that information to guide behavior. The fifth theme is that learning requires motivation and positive beliefs about oneself. Learners who have a positive self-efficacy and internal locus of control and are active learners who engage in goal setting and self-regulation will be successful. Learning requires social interaction as indicated by the sixth theme. Better learning outcomes are achieved when learners interact with others through activities such as class discussions and cooperative learning tasks because students are exposed to thoughts other than their own and, therefore, must make sense of them. The process used to help students make sense of this information creates a deeper level of learning. The final theme illustrates the belief that learning is contextual. Rarely are learners faced with the exact same task. While learners need the tools to learn effectively (i.e., self-regulation and strategies), they also need to understand how to apply them effectively to different learning tasks.

Cognitive theory includes theory about how people process information (Bruning, Schraw, Norby, & Ronning, 2004). Information processing theory outlines a process for how new information is understood. It explains the relationship between short-term, working, and long-term memory. It details how information is encoded and retrieved for use. It is a complex and inter-related process where new information is held in short-term and working memories while being related to information in long-term memory. As new information is related to information held in long-term memory meaning is made. Through rehearsal information is stored in long-term memory. There are two types of rehearsal – maintenance and elaborative. Maintenance rehearsal is used for the direct recall of information, such as memorizing important dates in American History. Elaborative rehearsal is used for understanding how information relates to other information such as how the political climate of America influenced the Civil War. The retrieval process occurs when information in long-term memory is accessed. The retrieval process includes recognition, recall, and reconstruction. Recognition involves knowing that the information is familiar when it is presented. Recall is producing the information when needed.

Typically, most learners gain these cognitive skills and strategies needed for successful learning with age and experience (Pressley & Harris, 2006). With time students learn to use multiple strategies at one time to help them accomplish a given task. Students with learning disabilities and/or ADHD, however, do not always gain effective cognition skills naturally (Wong, Harris, Graham, & Butler, 2003). Not only do they lack effective strategy use, but their difficulties in learning are often compounded by academic failure, self-doubt, learned helplessness, low self-efficacy, external locus of control, and



low motivation and engagement (Pressley & Harris, 2006). They often need to be taught these skills explicitly. Research has indicated that effective cognitive strategies can be taught, and they are one of the most effective instructional practices for students with learning disabilities and/or ADHD (Swanson, 2000).

Another aspect of the theoretical framework for this study is self-determination theory. While there are several theories of self-determination, this study utilizes the functional theory of self-determination (Wehmeyer, 2003c; 2003a). This theory provides a model of self-determination where self-determination is defined as a dispositional characteristic which allows people to be “causal agents” in their lives (Wehmeyer, 2003a, p. 177). People who are self-determined demonstrate the characteristics of autonomy, self-regulation, self-realization, and psychological empowerment. Self-determination interventions target component elements which are specific skills a person who is self-determined demonstrates such as choice-making skills, self-advocacy, self-efficacy, and leadership skills (see Table 1 in Chapter 2). Increased levels of self-determination have been correlated with outcomes that students with learning disabilities and/or ADHD typically experience difficulties with, such as increased academic performance (Konrad, Fowler, Walker, Test, & Wood, 2007), internal locus of control (Karvonen, Test, Wood, Browder, & Algozzine, 2004), success at the postsecondary level (Sarver, 2000), and quality of life outcomes (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997).

The final theory of this study’s theoretical framework is Hope Theory. It is a theory within positive psychology that defines hope through goal-oriented thinking by the utilization of pathways thinking (i.e., the ability to select appropriate behavior to accomplish goals) and agency thinking (i.e., the motivation to use those behaviors to

accomplish goals; Snyder & Lopez, 2007). Individuals with higher levels of hope have been shown to have higher academic achievement and more positive social-emotional functioning (Snyder, Rand, & Sigmon, 2005), important areas of need for students with learning disabilities.

This study created and implemented PSI which integrates components of cognitive, self-determination, and Hope theories for the purpose of improving outcomes for students with learning disabilities and/or ADHD. Specifically, the intervention utilizes elements from all the theories within each session. Students are introduced and taught skills and strategies using methods similar to cognitive strategy instruction in order to gain a better understanding of their strengths and set and achieve appropriate goals.

### **Importance of the Study**

This study examined an intervention designed to implement the use of personal strengths in order to improve self-determination and social-emotional levels in postsecondary students with learning disabilities and/or ADHD. Postsecondary students with learning disabilities and/or ADHD often experience difficulty with both self-determination and social-emotional development. Further, research suggests that successful postsecondary students with learning disabilities demonstrate self-determined behavior (Anctil, Ishikawa, & Scott, 2008; Trainin & Swanson, 2005) and have less social-emotional concerns (Foley, 2006). Therefore, the development of effective interventions that target these skills is needed.

### **Limitations**

This study was designed to minimize threats to both internal and external validity; however, it is not without limitations. The participants were volunteers from Students

with Disabilities Services (SDS). The fact that the participants volunteer for the study may be an indication of a higher level of self-determination than students who do not volunteer. Another limitation was the use of fixed baseline and treatment phases. This was done to ensure the study could be completed during on academic semester; however, the fixed nature of the baseline phase did not allow all participants' baseline levels to stabilize. This study utilized self-report instruments. Responses provided in self-report measures are susceptible to social desirability; that is participants' responses may reflect what they think is the correct answer rather than how they are truly feeling.

### **Definitions of Terms**

ADHD is a neurobehavioral disorder which is characterized by difficulties with inattention, hyperactivity, and/or impulsivity (American Psychiatric Association [DSM-IV-TR], 2000). There are three types of ADHD: Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, and Combined Type.

Character strengths are personality traits that are morally valued, such as hope, leadership, and fairness (Peterson & Seligman, 2004). There are currently 24 identified character strengths.

Cognitive strategy instruction is direct instruction that teaches a proceduralized way to learn. It is responsive to students' needs in that the specific strategies taught are based on the skills individual students need to be successful.

Guided cognitive instruction is used in the personal strengths intervention. It is adapted from cognitive strategy instruction and executive function coaching. It is student-directed and utilizes questioning to help students determine which skills and strategies they think they need to be successful. These skills and strategies are

then taught explicitly to students who are provided opportunities for guided practice.

Hope Theory is a theory that explains goal-directed thinking as the utilization of pathways thinking (i.e., the capacity to determine how to achieve goals) and agency thinking (i.e., the motivation to enact specific behaviors to achieve goals; Snyder & Lopez, 2007).

Learning disabilities is a broad term that includes many specific disabilities that may manifest differently in different students. Learning disabilities are characterized by a deficit in basic psychological processing which results in a discrepancy between expected performance and actual achievement. This discrepancy is not due to ineffective instruction, cultural differences, or other disabilities.

Learning strengths are the learning skills and processes that people do effectively and that help them to learn new content.

Life satisfaction refers to a cognitive global appraisal of one's satisfaction with his/her life (Snyder & Lopez, 2007).

Positive psychology is the study of positive emotions, positive character traits, and positive institutions (Seligman, Steen, Park, & Peterson, 2005).

Savoring is the act of living in the moment and the conscious attention to experiences of pleasure.

Self-determination is a dispositional characteristic that is often defined by functional behaviors. Self-determination is “a combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior” (Field, Martin, Miller, Ward, & Wehmeyer, 1998, p. 2). People who are

self-determined understand their strengths and weaknesses and have a sense of psychological empowerment

Signature strengths are a person's top five character strengths provided by the *Values in Action Inventory of Strengths* (VIA-IS; Peterson & Seligman, 2005)

Subjective well-being is the scientific term for happiness

## CHAPTER 2: LITERATURE REVIEW

### **Introduction**

This chapter reviews the relevant literature used in the development of The Personal Strengths Intervention (PSI) for college students with learning disabilities and/or attention deficit hyperactivity disorder (ADHD). The chapter begins with a discussion of students with learning disabilities and/or ADHD. It discusses prevalence rates, eligibility requirements, characteristics of students with learning disabilities and/or ADHD, and effective practices. A separate section on postsecondary students with learning disabilities and/or ADHD is included to highlight issues, characteristics, and effective practices specific to this population. The chapter then includes reviews of self-determination and positive psychology, which are used in PSI. Theories of self-determination are discussed, with emphasis on the functional theory, and current research is reviewed. Next, positive psychology is introduced and research on subjective well-being, life satisfaction, Hope Theory, and character strengths is examined. The chapter concludes with a section on the commonalities between self-determination and positive psychology and an introduction to PSI.

### **Students with Learning Disabilities and/or ADHD**

Students with learning disabilities and/or ADHD make up the largest percentage of students who receive special services while in the K-12 setting (CEC, 2010; U.S. Department of Education, 2009a). Exact prevalence rates vary by reporting source and will be discussed in detail below. However, while prevalence rates of learning disabilities

have remained relatively stable since 1997, prevalence rates of ADHD have been increasing (Pastor & Reuben, 2006; Visser, Bitsko, Danielson, Perow, & Blumberg, 2010). Additionally, while definitions and diagnosis procedures are different for learning disabilities and ADHD, students with learning disabilities and/or ADHD share many characteristics and life outcomes.

### **Prevalence Rates and Definitions of Learning Disabilities**

Approximately 4% of the school-age population is identified as having a learning disability, and 46.4% of all students with a disability have a learning disability (U.S. Department of Education, 2009a). Further, approximately 5% of all school-age students, (49.2% of all students with a disability) are identified with a learning disability in the State of Florida ( $n = 179,783$ ; U.S. Department of Education, 2009b). While the prevalence rates of students with learning disabilities in K-12 are available, prevalence rates for postsecondary students with learning disabilities are less consistent due to differences in documentation requirements at various institutions and self-disclosure concerns (Madaus & Shaw, 2006), which will be discussed in detail later in this chapter. Findings from the National Longitudinal Transition Study-2 (NLTS2), a 10-year study of a nationally representative sample of students with disabilities, indicate students with disabilities represent approximately 11% of the postsecondary population (Newman et al., 2009). Students with learning disabilities represent approximately 40% of all students with a disability at the postsecondary level. This indicates that approximately 4% of students in postsecondary institutions have been identified as having a learning disability.

Learning disabilities is a broad term which encompasses many types of specific learning disabilities that may manifest differently in particular students. Students with

learning disabilities have an average to above average intelligence level but may experience difficulty with specific academic areas, organizational tasks, information processing, memory tasks, and social skills (Bender, 2004). While there are several specific definitions for learning disabilities, most state that a learning disability is caused by a deficit in a basic psychological process such as language, auditory, motor, or visual; it is not the result of cultural differences or lack of quality instruction, and there is a discrepancy between expected ability and actual performance (Bender, 2004). Two commonly known definitions for learning disabilities are the federal definition provided in the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004) and the definition by the National Joint Committee on Learning Disabilities (NJCLD).

The IDEA 2004 definition defines a specific learning disability as:

a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations (IDEA, 2004, sec. 602[30]).

The NJCLD (1998) defines a learning disability as:

a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical skills (p. 187).

Prior to the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 much of the emphasis in identifying a learning disability was placed on a discrepancy model. Mercer and colleagues (1996) surveyed all state departments, including Washington, D.C., and found the use of a discrepancy between ability and



performance to be the most frequently used model for identifying students with a learning disability. The 2004 reauthorization of IDEA prohibits the use of a discrepancy model as the sole indicator of a learning disability and requires that more emphasis be placed on ensuring any deficits are not due to ineffective instruction by requiring schools to implement Response to Intervention (RTI) initiatives. Through RTI students are provided with evidence-based instruction with increasing levels of intensity and frequency. In 2009 the Florida Department of Education (FL DOE; 2009) revised the definition and eligibility requirements for learning disabilities to reflect this emphasis. Specifically, language referring to academic achievement “significantly below the student’s level of intellectual functioning” and criteria for the size of a discrepancy between intellectual and achievement test scores was removed (p. 234) and replaced with language referring to a pattern of “strengths and weaknesses” as well as a “performance discrepancy” based on the student’s chronological age or grade level and multiple sources of data (pp. 321 – 322). The lack of a single definition for learning disabilities and the transition from an emphasis on the discrepancy model to RTI has resulted in various methods of identifying students as having a learning disability (Gormley, Hughes, Block, & Lendmann, 2005; Mercer, Jordan, Allsopp, & Mercer, 1996). This raises particular concerns for college students with learning disabilities who do not qualify for special education services under IDEA 2004 which will be discussed in detail in a following section of this chapter.

### **Prevalence Rates and Definition of ADHD**

Exact prevalence rates for ADHD vary by source; however, it is one of the most common neurobehavioral disorders in children (Centers for Disease Control and Prevention [CDC], 2010). The DSM-IV-TR (2000) reports between 3% and 7% of

school-age children have ADHD. Findings from the National Survey of Children's Health indicate that 9.5% of children between the ages of 4 and 17 in the United States are diagnosed with ADHD (Visser et al., 2010). The National Comorbidity Survey Replication (NCS-R) estimates 4.4% of adults age 18 to 44 are diagnosed with ADHD (Kessler et al., 2006). The prevalence rate of ADHD in children was 11.6% in Florida in 2007 (Visser et al., 2010).

Prevalence rates have increased by 21.8% since 2003 (Visser et al., 2010). ADHD is more common among boys than girls (Pastor & Reuben, 2008; Visser et al., 2010). Additionally, diagnoses among older children are increasing. Of children identified with ADHD, approximately 46% have mild symptoms, 40% have moderate symptoms, and 14% have severe symptoms (Visser et al., 2010). Further, approximately one-third of students diagnosed with ADHD are also identified with a learning disability (Pastor & Reuben, 2008).

ADHD is a neurobehavioral disorder that causes difficulties with attention, hyperactivity, and/or impulsivity (CEC, 2010). It is diagnosed through criteria defined by the *Diagnostic and Statistical Manual-IV-TR* (DSM-IV-TR; American Psychiatric Association, 2000). To be diagnosed with ADHD persons must present six or more symptoms of either inattention or hyperactivity and impulsivity for six months or longer in more than one setting (e.g., home, school, work). Some of these symptoms have to be present prior to the age of 7 years of age.

There are three types of ADHD based on the symptoms present in each person. The three types of ADHD are: Predominantly Inattentive Type, Predominantly Hyperactive-Impulsive Type, and Combined Type (DSM-IV-TR, 2000). People

diagnosed with ADHD, Predominately Inattentive Type often have difficulty sustaining attention or failing to give close attention to details. They are often distracted by external stimuli. They often seem like they are not listening when being spoken to directly. They may fail to follow through on instructions and assigned tasks (e.g., schoolwork, work tasks) or seem forgetful. They may have difficulty with organization and often lose needed objects.

People diagnosed with ADHD, Predominately Hyperactive-Impulsive Type often seem restless and as if they cannot sit still (DSM-IV-TR, 2000). They may often fidget with their hands and feet or other objects. They may often leave their seat when expected to remain seated and seem as if they are “on the go”. They may talk excessively or blurt out responses prior to the completion of a question or statement. They may have difficulty waiting their turn to speak and frequently interrupt conversations.

### **Characteristics**

Students with learning disabilities and/or ADHD possess both academic and social-emotional characteristics that impact their educational performance and interpersonal relationships. These characteristics typically require that interventions and effective practices be put into place to assist students. While students may excel in some areas, they are often described by their deficits (Gottlieb & Weinberg, 1999; Meltzer et al., 2004).

**Academic characteristics.** Students with learning disabilities and/or ADHD may experience difficulties in specific academic content areas such as reading, writing, or mathematics (Bender, 2004; Bussing et al., 2010) resulting in lower academic achievement and grades (Hagemann, Hay, & Levy, 2002; Lackaye & Margalit, 2006; Loe

& Feldman, 2007; Turnock, Rosen, & Kaminski, 1998). They may have difficulties with specific academic skills such as word identification, comprehension, language usage, number sense, or mathematical calculations. In addition, students with disabilities often lack the strategies needed to succeed at academic tasks. For example, in a study of over 100 college students with and without dyslexia, a type of learning disability that affects reading (e.g., phonological components) and writing (e.g., spelling) abilities, students with dyslexia self-reported identifying the main idea of reading passages and utilizing test-taking strategies less than students without dyslexia (Kirby, Silverstri, Allingham, Parrila, & La Fave, 2008). Geary (2004) reported students with mathematics learning disabilities tended to use immature strategies, such as counting up from one when solving an addition problem, for longer periods of time than their nondisabled peers; however, their use of appropriate strategies tended to improve with time if proper instruction was provided. Hagemann and colleagues (2002) reported students with ADHD experience difficulty with executive functioning tasks such as planning and self-monitoring, which are needed for successful academic performance. Turnock and colleagues (1998) reported students with ADHD have difficulties with organization, self-regulation, and procrastination which lead to decreased academic performance.

Another academic characteristic of students with learning disabilities and/or ADHD is the increasing support that many students with learning disabilities and/or ADHD demonstrate memory and processing deficits which may be responsible for their difficulties in content areas (Geary, 2004; Swanson, Jerman, & Zheng, 2009; Rapport et al., 2008; Swanson & Sáez, 2003). Students may have deficits with either short-term or long-term memory. Memories are complex and inter-related, meaning information stored

in long-term memory impacts the understanding made in short-term memory; and, the meaning made of information in short-term memory impacts how it is stored in the long-term memory. Short-term memory is sometimes referred to as working memory (Bruning, Schraw, Norby, & Ronning, 2004); however, Swanson and Sáez (2003) describe them as distinct memories. Short-term memory is where information is held for short periods of time while meaning is being made during periods of active information processing. Short-term memory tasks focus on recalling information, and working memory tasks focus on using information that is held in the short-term memory to make meaning of incoming information (Swanson & Sáez, 2003). Both short-term memory and working memory are involved in self-regulated learning. Most people can hold about seven pieces of information in their short-term memory, and therefore, need to continually sort through the information being held to decide what they need to attend to and what they can ignore (Bruning et al, 2004). Short-term and working memories are considered good predictors of learning and correlate with academic achievement. Long-term memory, by contrast, contains permanently stored cognitive information. Here information is stored by the meaning made in short-term memory. People with learning disabilities and/or ADHD tend to have similar abilities on recall tasks as their nondisabled peers when tasks involve low amounts of mental effort such as when remembering three digits, but have increased difficulty recalling information during high-effort activities such as remembering seven or more digits (Rapport et al., 2008; Shuchardt, Maehler, & Hasselhorn, 2008; Swanson & Sáez, 2003). In addition, when presented with relevant and irrelevant information, people with learning disabilities often recall more irrelevant information than their nondisabled peers suggesting they have

difficulty attending to and updating relevant information (Geary, 2004; Swanson & Sáez, 2003). Overall, people with learning disabilities also demonstrate more difficulty with verbal memory (e.g., naming objects) than nonverbal memory (e.g., abstract objects; Swanson & Sáez, 2003). For example, in a study examining differences in verbal and nonverbal memory tasks, students with learning disabilities were shown a series of abstract shapes on cards. The cards were then turned over. Students were shown one of the shapes on a card by a researcher and asked to point to the position where the shape was from the turned-over cards in front of them. In another task, students were shown the same shapes on cards, but asked to name the shapes. The students demonstrated significantly less recall when the shapes were named versus when the shapes were unnamed (O'Shaughnessy & Swanson, 1998). Further, students with reading disabilities experience more difficulty with verbal working memory while students with mathematic learning disabilities experience more difficulty with visual-spatial memory (Schuchardt et al, 2008).

While students with learning disabilities experience more difficulty with verbal memory when compared with nonverbal memory, the opposite appears true for students with ADHD (Rapport et al., 2008). Students with ADHD have been found to experience more difficulty with visual memory when compared to verbal memory. For example, students with ADHD had more difficulty recalling the location of black dots in a picture task than recalling the sequences of numbers or letters.

Finally, academic characteristics of students with learning disabilities and/or ADHD also include the way they are perceived. Students with learning disabilities and/or ADHD are often described by their deficits (Gottlieb & Weinberg, 1999; Meltzer et al.,

2004). Students with learning disabilities are also often perceived as exerting less effort towards their schoolwork than their peers without disabilities, especially in areas where they experience difficulties (Meltzer et al., 2004). Meltzer and colleagues found that teachers were more likely to rate students as exerting less effort than their peers without disabilities when they experienced lower academic achievement, whereas teachers rated students with learning disabilities as exerting as much effort as peers without disabilities when they were achieving academically. Loe and Feldman (2007) reported that students with ADHD were more likely to be suspended, expelled, or have to repeat a grade due to behaviors associated with their disorder. Results from 12 case studies of high-ability students with learning disabilities revealed that all participants recalled negative school experiences where they were punished for not completing work on time or struggling with learning the content, including being called lazy and told they could achieve if they tried harder (Reis, Neu, & McGuire, 1997). In a study of 124 students with learning disabilities, results indicated that the amount of effort students put forth was related to academic achievement, self-efficacy, negative moods, and hope (Lackaye & Margalit, 2006). Students with higher levels of academic achievement, self-efficacy, and hope and lower instances of negative moods tended to exert more effort toward academic tasks (Lackaye & Margalit, 2006; Meltzer et al., 2004). However, students with negative views about their academic abilities tended to exert less effort towards academic tasks and higher levels of effort towards non-academic tasks such as extracurricular activities (Meltzer et al., 2004). However, it appears the relationship between academic achievement and effort can be mediated by the use of learning strategies. Specifically, students who utilize more learning strategies tend to have a more positive perception of

their academic abilities and feel they exert more effort towards schoolwork (Meltzer et al., 2004). Using hierarchical linear modeling, Meltzer and colleagues found self-reported frequency of strategy use to be the best predictor of perceived academic ability ( $\beta = 0.48$ ) when compared to grade level ( $\beta = -0.11$ ), perceived academic difficulty ( $\beta = -0.19$ ), and exerted effort ( $\beta = .12$ ) in middle school students with learning disabilities.

**Social-emotional characteristics.** Along with academic characteristics, many students with learning disabilities and/or ADHD have additional social emotional needs that impact their lives and academic careers (Bender, 2004). They often experience lower self-concepts (Elbaum & Vaughn, 2003) and increased rates of psychopathology (Maag & Reid, 2006). Kessler and colleagues (2005) reported approximately 32% of students with ADHD received treatment for emotional disorders (e.g., anxiety, depression) as adults. Students with learning disabilities and/or ADHD tend to demonstrate lower academic self-concepts, social self-concepts, and global self-concepts (Elbaum & Vaughn, 2003). Due to their disabilities, students often experience more failure and rejection in the school environment (Bender, 2004; Reis et al., 1997; Turnock et al., 1998). This increased failure may lead to decreased self-efficacy. They are typically the last ones to get picked for group work and often do not perform well on tests. Students with learning disabilities may attempt to hide their disability from their peers by limiting interactions, which leads to isolation, stress, and increased loneliness (Lackaye & Margalit, 2006). In a study of 190 college students with learning disabilities, Heiman and Prezel (2003) found that students reported higher levels of stress, frustration, and helplessness during exams than their peers without learning disabilities. The students also reported that they felt nothing could help them learn material faster and that they needed



accommodations to be successful. However, students with learning disabilities with higher self-concepts tend to exert more effort and learning strategies in schools, which leads to increased academic performance and higher perceptions of abilities from their teachers (Meltzer et al., 2004). In addition, those with higher levels of self-concept and self-efficacy have been shown to have lower mental health concerns and better physical health (Snyder & Lopez, 2007).

In addition to lower academic self-concept, students with learning disabilities and/or ADHD also struggle with social self-concept (Bryan, Burstein, & Ergul, 2004; Elbaum & Vaughn, 2003; Weyandt & DuPaul, 2006; CDC, 2010). Many students lack social skills necessary to form and maintain peer relationships (Bryan et al., 2004; Meadan & Halle, 2004). Specifically, they may lack skills related to nonverbal social perception, social cognition, and communication (Bryan et al., 2004), as well as decreased levels of self-control (CDC, 2010; Meadan & Halle, 2004). These students may be rejected by peers or have very limited support groups resulting in an increase in isolation, loneliness, and depression and decreased attachment security (Al-Yagon & Mikulincer, 2004; CDC, 2010). Students with learning disabilities and/or ADHD who have secure attachments and a sense of coherence in their lives, such as those with increased social self-concepts, tend to be more resilient and experience better outcomes (Al-Yagon & Mikulincer, 2004).

Along with decreased levels of academic and social self-concepts, students with learning disabilities and/or ADHD often display poor views of themselves and their abilities in general (Elbaum & Vaughn, 2003). They display more negative emotions and experience more emotional distress than their peers without disabilities (Bryan et al.,

2004; Svetaz, Ireland, & Blum, 2000; Weyandt & DuPaul, 2006). Students with learning disabilities and/or ADHD also tend to have an external locus of control and less task persistence than their peers without disabilities (Lackaye et al., 2006). They also tend to demonstrate less hope and increased suicidal thoughts and violence than their peers (Svetaz et al., 2000). Even students with learning disabilities and/or ADHD who are achieving academically experience these negative feelings and moods (Lackaye et al., 2006; Reis et al., 1997). Lower self-concept of students with learning disabilities and/or ADHD has been correlated to decreased academic effort, strategy use (Lackaye et al., 2006), and academic achievement (Al-Yagon & Mikulincer, 2004), as well as lowered teacher perception (Meltzer et al., 2004). For example, Peetsma, Vergeer, Roeleveld, and Karsten (2001) reported in their longitudinal study of students with high incidence disabilities, including learning and behavioral difficulties, students with problematic psychosocial development (i.e. motivation, self-concept) have more difficulties in school than those with cognitive difficulties alone.

Additionally, students with learning disabilities and/or ADHD are at risk for increased instances of psychopathology. These students experience higher levels of anxiety (Al-Yagon & Mikulincer, 2004; CEC, 2010; Kessler et al., 2005) and depression (CEC, 2010; Kessler et al., 2005; Maag & Reid, 2006; Svetaz et al., 2000) than their peers without disabilities. Sideridis and colleagues (2006) conducted five studies examining whether motivation, metacognition, and psychopathology are predictors of having a learning disability or being at risk for a learning disability. They investigated learning disabilities in general and reading and mathematics disabilities specifically. They found that decreased levels of motivation (i.e., self-efficacy and self-concept), deep

meta-cognition (e.g., elaboration, decoding), and increased levels of psychopathology (i.e., depression) were good predictors of having a learning disability or for being at risk for a learning disability. Goal orientation (i.e., motivation behind creating specific goals), surface meta-cognition (e.g., rehearsal, monitoring), and anxiety were not good predictors of having a learning disability (Sideridis, Morgan, Botsas, Padeliadu, & Fuchs, 2006).

## **Outcomes**

The academic and social-emotional characteristics of students with learning disabilities and/or ADHD contribute to the post-high school outcomes they experience. While outcomes for students with learning disabilities and/ADHD are improving, they still experience decreased outcomes when compared to their peers without disabilities. Students with learning disabilities and/or ADHD tend to experience decreased graduation rates, postsecondary attendance, and employment outcomes.

**Graduation rates.** Students with learning disabilities and/or ADHD graduate from high school at a lower rate than their peers without disabilities (Loe & Feldman, 2007; U.S. Department of Education, 2009a). Between 1995 and 2004 the number of students with learning disabilities graduating from high school steadily increased from 47.7% to 59.6% while the number of students with learning disabilities dropping out of school decreased from 44.7% to 29.1% (U.S. Department of Education, 2009a). In 2004 49.7% of the students with learning disabilities who exited school graduated with a standard diploma in Florida while 27.2% dropped out of school (U.S. Department of Education, 2009b). This is compared to 86.1% students without disabilities graduating nationally (National Center for Education Statistics [NCES], 2010) and 71.9% in the state.

**Postsecondary attendance.** According to the results from the NLTS2, students with disabilities are attending postsecondary institutions at a lower rate than their non-disabled peers (44.7% and 53.0% respectively; Newman et al., 2009). Further, students with disabilities are more likely to attend a 2-year or community college than a 4-year college (32% and 14% respectively; Newman et al., 2009). Results indicate that 47.3% of students with learning disabilities attended some type of postsecondary institution with 15.9% attending a 4-year college or university (Newman et al., 2009). Of those who attended a postsecondary institution, 25.2% of students with learning disabilities graduated from or completed their program successfully four years after high school (Newman et al., 2009) compared to 36.2% of students without disabilities (NCES, 2010). Further, not only are students with learning disabilities and/or ADHD graduating postsecondary institutions at a lower rate than their nondisabled peers, but it typically takes a longer period of time for them to graduate with a four-year degree (Foley, 2006; Loe & Feldman, 2007).

**Employment.** People with learning disabilities and/or ADHD tend to earn less than their nondisabled peers (Newman et al., 2009; Kessler et al., 2005). For example, people with learning disabilities reported earning an average of \$8.10 per hour whereas their peers reported earning \$9.20 per hour on average. In addition, 55% of people with learning disabilities reported making less than \$8.00 per hour and 87.9% were making less than \$25,000 annually (Newman et al., 2009) whereas people without disabilities reported an average income of \$37,300 annually (NCES, 2010). Results from the NCS-R found persons with ADHD lost an average of 35 days of work per year which resulted in a loss of \$5661 in annual income due to absenteeism (i.e., absence from work) and

presenteeism (i.e., low work performance) related to their disorder (Kessler et al., 2005). This translated to 120.8 million days of work missed and \$19.6 billion in income lost per year due to ADHD symptoms in the United States.

### **Effective Instructional Practices**

While students with learning disabilities experience decreased post-high school outcomes as compared to their peers without disabilities, these outcomes can be improved when students are provided appropriate instruction. One of the most effective instructional practices for students with learning disabilities is cognitive strategy instruction (Swanson, 2000). Cognitive strategy instruction provides a proceduralized way to learn. It is based on general information processing theory and combines cognition, metacognition, and social-emotional aspects of learning (Pressley et al., 1995). It teaches students how to learn and how to monitor their learning (Wong et al., 2003). Most “good learners” will acquire these skills naturally as they develop. They will analyze the task at hand, make connections between previous learning, create a plan to accomplish the task, act on their plans (all elements of cognition), and evaluate their plan and learning (metacognition). In addition, they will feel positively about their ability to learn and the learning experiences (social-emotional aspect of learning; Pressley et al., 1995). Students with learning disabilities, however, do not develop these skills naturally (Wong et al., 2003) – they must be taught them explicitly.

Research indicates that cognitive strategy instruction interventions have led to increased positive learning experiences for students (Wong et al., 2003). Students with learning disabilities who have received strategy instruction have increased achievement on mathematics, reading, and writing tasks. They have also demonstrated increased

academic skills, such as brainstorming and editing and revising written work (Wong et al., 2003). In addition, students with learning disabilities have improved their coping skills, self-concept, self-efficacy, self-regulation, and metacognition (Graham & Harris, 1989; Pressley et al., 1995; Wong et al., 2003). Moreover, these increases have been demonstrated with elementary, secondary, and postsecondary students and have been maintained over time (Wong et al., 2003).

Minskoff and Allsopp (2003) identified six different types of strategies that should be explicitly taught to students: (1) mnemonics, (2) visualizations, (3) verbalizations, (4) graphic organizers, (5) structured steps, and (6) multisensory. Mnemonics are strategies which help to make abstract concepts concrete, as well as assist in the memory of multi-step procedures. The most common mnemonics are letter strategies where an acronym is used to remember information. Visualization may involve using images from the past or creating new images to help remember information. Verbalization includes verbal rehearsal (e.g., repeating/reading information aloud) or think-alouds (i.e., talking through the steps needed to learn a concept). Graphic organizers visually show relationships between material. A common example of this is a Venn diagram. Students are provided the specific steps to follow when the structured steps strategy is used. When using multisensory learning strategies, students engage in visual, auditory, kinesthetic, and tactile learning. This may include singing a song while creating specific body movements that match the words, such as when singing “Head, Shoulders, Knees, and Toes” in French while touching those body parts.

Explicit strategy instruction alone, however, is not enough for students with learning disabilities (Butler, 2002). Students need to learn how to select, adapt, and

invent strategies particular to their needs, as well as apply them to various contexts. Therefore, strategy instruction should be an iterative process in which students are actively included in the learning process (Minskoff & Allsopp, 2003; Pressley et al., 1995; Wong et al., 2003). Effective cognitive strategy instruction includes building on what students already know, explicitly defining the strategy, modeling how to use the strategy appropriately, providing opportunities for guided and independent practice, and monitoring of strategy use (Harris & Pressley, 1991; Minskoff & Allsopp, 2003; Pressley et al., 1995; Wong et al., 2003). Strategy instruction should be part of tasks that are authentic and meaningful to the student. In addition, it is important that teachers realize that students working on the same tasks may need to utilize different strategies so strategy instruction should be flexible to each student's needs (Butler, 2002). Further, teachers should help students see the connections between strategy use and increased success (Pressley et al., 1995).

### **Postsecondary Students with Learning Disabilities and/or ADHD**

Postsecondary students with learning disabilities and/or ADHD share many characteristics of students with learning disabilities and/or ADHD in K-12 settings; however, the postsecondary environment poses some additional challenges to these students. Specifically, students in the K-12 and postsecondary settings access accommodations and needed services differently. In addition, the increased academic demands and required independence levels at postsecondary institutions lead to difficulties for many students with learning disabilities and/or ADHD due to the nature of their disability. However, researchers have begun to identify characteristics of successful

students with learning disabilities and/or ADHD and effective instructional practices at the postsecondary level.

**Eligibility for accommodations at the postsecondary level.** Students with learning disabilities and/or ADHD face additional challenges as they transition from the K-12 setting to postsecondary institutions. Many of the challenges they face are due to the differences in the federal laws through which they receive services. Until the completion of grade 12, or the age of 22, students with disabilities are entitled to a free and appropriate public education (FAPE) in the Least Restrictive Environment (LRE) (U.S. Department of Education, Office of Civil Rights, 2001). Students with learning disabilities receive special education services under IDEA 2004. Students with ADHD may receive services under IDEA 2004 through an Other Health Impaired (OHI) identification or under Section 504 of the Rehabilitation Act. Once students with learning disabilities and/or ADHD are in a postsecondary setting, services and accommodations are provided under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act (U.S. Department of Education, 2007). At the postsecondary level ADA and Section 504 are civil rights legislation that require access to public institutions (Gormley et al., 2005). Students in the K-12 setting receiving special education services under IDEA 2004 are required to have an Individual Education Program (IEP), and students receiving services under Section 504 have a Section 504 Plan. Both the IEP and Section 504 Plan are legal document which define the student's needs and services he/she receives. The IEP is more extensive including current performance in school, goals for the year, accommodations, and who is responsible for ensuring the student is getting the services he/she needs and is making progress towards goals. Section 504 Plans are



reviewed periodically, and IEPs are reviewed annually. The fact that school personnel are required by law to implement IEPs and Section 504 Plans diminish the need for students to develop self-advocacy skills because the responsibility for meeting students' needs is placed on school personnel rather than the students. However unlike in the K-12 setting, postsecondary students with disabilities must advocate for themselves in order to receive accommodations. They must prove they have a disability that impacts a major life function and creates a functional limitation in an academic setting in order to receive services. Further, postsecondary institutions are not required to provide any accommodations that may "lower or effect substantial modifications to essential requirements" (U.S. Department of Education, 2007, ¶ 13), whereas K-12 schools provide the accommodations needed for success. This requires postsecondary students with learning disabilities and/or ADHD to become actively involved in the accommodation process and self-advocate for themselves. Due to the fact that in their past school experiences accommodations and appropriate services have been done to and for them rather than with them, many students struggle with self-advocacy (Field et al., 2003; Saver, 2000).

Having access to accommodations in postsecondary institutions is further complicated because schools are allowed to set "reasonable standards" for the documentation required (U.S. Department of Education, 2007, ¶ 17). A review of studies on postsecondary students with learning disabilities indicates that there is not one agreed upon definition of learning disabilities on which decisions regarding access to services is made (Mull, Stilington, & Alper, 2001). In a review of 104 postsecondary institutions, Gormley and colleagues (2005) found a variety of requirements in order for students to

qualify for disability services. Only four states (California, Colorado, New Jersey, and Wyoming) had state requirements regarding required documentation. The remaining states allowed each institution to decide what documentation would be required. Sixty-one percent of institutions required aptitude (IQ), achievement, and information processing test results while 22% required aptitude and achievement testing. The majority of institutions (67%) provided a list of required or suggested assessments to determine eligibility. The presence of a disability that requires accommodations in the postsecondary setting was identified most often by the requirements in ADA and Section 504, indicating that a disability must have a “functional impact” on a major life activity in order for a student to receive services (p. 67). The office of disability services made the final decision regarding the need for accommodations at 96% of the institutions. The offices of disability services typically used the written report, their professional judgment, and the reasonableness of accommodations to determine which accommodations would be available to a student. Often institutions have different requirements for documentation that do not always match the documentation standards provided by secondary schools (Madaus & Shaw, 2006). Since the authorization of IDEA 2004, secondary schools have been allowed to continue to provide special education services to students without conducting a three-year re-evaluation of students’ needs if the schools documented that current special education services were appropriate; however, many postsecondary institutions require that evaluations are completed within three to five years. In addition, unlike K-12 schools, postsecondary schools are not required to pay for assessments. Therefore, students must initiate the evaluation themselves and pay for it. Due to their lack of self-advocacy skills and potential financial

difficulties with paying for a professional evaluation (which can often be hundreds of dollars in cost), the differences in documentation practices between secondary and postsecondary schools may result in students with learning disabilities who experience a delay in receiving appropriate services or who may not receive services at all (Madaus & Shaw, 2006).

**Characteristics of students with learning disabilities and/or ADHD in postsecondary institutions.** Researchers identify postsecondary students with learning disabilities and/or ADHD to be included in their research in various ways. In their review of studies on college students with learning disabilities, Sparks and Lovett (2009a) found 23 different criteria used by researchers to identify students as having a learning disability. In particular, they found that researchers most often reported using discrepancy criteria for identification with varying guidelines regarding the size of the discrepancy. This is consistent with typically identification practices for K-12 students (Mercer et al., 1996). Receiving services from their university's office of disability services was the second most common method used to identify college students as having a learning disability. This is problematic because of the varying methods discussed above. Sparks and Lovett (2009b) reviewed classification practices at the postsecondary level and determined using different identification practices (i.e., different amounts of discrepancies between IQ and achievement scores and DSM-IV) would result in different numbers of students receiving access to disability services. They found that 42% of students would be identified if the discrepancy criteria ranged from 1.0 to 1.49 standard deviations and 55% of students would not be eligible for services regardless of the method used.

In addition, several studies included in the review indicated that many students were not identified with learning disabilities until they entered college. Sparks and Lovett raise concern about this trend since they view learning disabilities as a developmental disorder that should emerge in childhood. However, some students with learning disabilities are able to compensate for their disability through secondary school and experience academic success (Reis et al., 1997). Once they reach postsecondary institutions and the academic demands increase, they no longer are able to compensate and seek out services to assist them to be successful.

Postsecondary institutions require “more *self-determination* than is expected of students in secondary schools” (Field et al., 2003, p. 340). This is particularly true regarding elements of self-determination such as self-advocacy and self-regulation which will be discussed in greater detail later in this chapter. Sparks and Lovett (2009a) reported that postsecondary students with learning disabilities had average IQ scores and achievement scores on standardized measures, but were still performing below the level of their peers without disabilities (Sparks & Lovett, 2009a). Students with ADHD are more likely to be on academic probation when compared to peers without disabilities (Weyandt & DuPaul, 2006). Many students with learning disabilities and/or ADHD lack the academic skills needed for postsecondary education (Gregg, 2007; Mull et al., 2001; Weyandt & DuPaul, 2006). While more students with learning disabilities and/or ADHD are accessing the general education curriculum, they are still lacking the skills and strategies needed to be successful in postsecondary education (e.g., self-regulation, organization, study skills) (Weyandt & DuPaul, 2006). Further, they often experience memory (Mull et al., 2001; Parker, 2004) and executive functioning deficits (Weyandt &

DuPaul, 2006) which negatively impact their learning. In interviews with first-year college students with learning disabilities, students reported not knowing what information was important when professors were lecturing, and therefore, did not know what to include in their notes (Hadley, 2007). They reported feeling dependent on the level and type of support they received in high school, such as needing the level of accommodations received, especially for tests, but not having access to them. Similar findings had been reported regarding college students with ADHD (Parker, 2004). Students stated barriers to their success in college included limited self-awareness and difficulties knowing how to and completing studying tasks. Postsecondary students with learning disabilities and/or ADHD also tend to exhibit social skills deficits (Mull et al., 2001), such as lacking the independent skills needed to navigate postsecondary life.

Most studies on students with learning disabilities indicate they tend to have an external locus of control (Lackaye et al., 2006). However, some studies indicate that postsecondary students with learning disabilities fair as well as or better than their peers without disabilities in several areas including locus of control (Estrada, Dupoux, & Wolman, 2006), resiliency, and stress level; moreover, these students can have an increased desire for academic achievement (Hall, Spruill, & Webster, 2002). Hall and colleagues (2002) investigated levels of autonomy among postsecondary students with learning disabilities. They found no statistically significant difference in the autonomy of students with and without learning disabilities. This may be because fewer students with learning disabilities attend postsecondary institutions than their peers without learning disabilities and those that do attend may have greater levels of autonomy, resiliency, and internal locus of control. It is also possible that these students report less stress regarding

academics because they are “protective pessimists” (Trainin & Swanson, 2005, p. 270). This term refers to individuals who expect to fail or do poorly as a way to protect themselves. Pessimistically, they protect themselves from the potential fear and let-down they experience if they actually attempted to be successful but were not. Both the Estrada and Hall studies included small sample sizes ( $N = 61$  students; 31 with learning disabilities and 30 without &  $N = 34$ ; 17 with learning disabilities and 17 without, respectively). Therefore, it is also possible that the lack of statistical significance between students with and without learning disabilities was due to a lack of statistical power. Therefore results should be interpreted cautiously. Given what is known about students with learning disabilities and the demands of postsecondary education, students need instruction in self-advocacy, learning strategies, study skills, appropriate accommodations, and technology (Foley, 2006; Gregg, 2007; Mull et al., 2001).

**Characteristics of successful postsecondary students with learning disabilities and/or ADHD.** In order for students with learning disabilities and/or ADHD to be successful in postsecondary education, supports at both the personal and school level are needed as well as specific academic skills. It is important for students to experience support from family and friends (Foley, 2006). Students with more secure attachments and social supports tend to be more resilient and achieve more with less social-emotional concerns (Masten & Reed, 2002). Students also need access to appropriate supports at the school level such as advocacy assistance, testing accommodations, academic assistance, priority registration, and counseling services (Anctil, Ishikawa, & Scott, 2008; Foley, 2006). Postsecondary students with learning disabilities and/or ADHD who are successful in college and university settings tend to demonstrate self-knowledge and

awareness. Successful college students with learning disabilities and/or ADHD understand their strengths and weaknesses (Anctil et al., 2008; Parker, 2004). They prefer to use their strengths, they are persistent, and they set appropriate goals. These students demonstrate appropriate use of strategies (Anctil et al., 2008; Parker, 2004). There is some evidence that shows a positive correlation between self-regulated strategy use and academic achievement (Trainin & Swanson, 2005). These students tend to use mnemonics and graphic organizers to aid memorization of important facts (Heiman & Preceel, 2003). Further, successful college students with learning disabilities use metacognitive skills, such as monitoring their learning, and using reading strategies at a similar level to college students without learning disabilities (Trainin & Swanson, 2005). They tend to use self-regulated strategies more frequently than students without learning disabilities.

**Effective instructional practices for postsecondary students with learning disabilities and/or ADHD.** In comparison to the literature on K-12 students with learning disabilities and/or ADHD, few studies have examined effective practices specifically for postsecondary students with learning disabilities and/or ADHD. Those that have include two types of data – self-report data from postsecondary students with learning disabilities and/or ADHD about what they believe was effective and correlational and experimental/quasi-experimental studies which investigated the effectiveness of specific practices on student success outcomes such as academic achievement.

Prevatt and colleagues (2005) interviewed 47 college students with learning disabilities in order to identify which accommodations were most effective. Students

identified the following practices as most effective: course waivers/substitutions, study aids, time spent studying, creating examples when studying, sitting in the front of the class, accessing disability services in order to receive accommodations, informing instructors of their disability, reasoning through answers to questions, using strategies associated with learning modalities, and utilizing a planner. The accommodations that students found to be the least effective were study skills courses, relaxation training, and counseling. Students indicated the following reasons for not using accommodations: they were not interested in the accommodation; they did not think the accommodation would help; they had tried the accommodation previously; and, they believed that too many accommodations had been recommended (Prevatt, Johnson, Allison, & Proctor, 2005). Based on these responses it is logical to conclude that accommodations must be explained to students so they can understand the potential benefits. The fact that some postsecondary students with learning disabilities prefer oral and visual explanations to understand new concepts (Heiman & Precel, 2003) means that such an approach has the potential for helping them to understand the value accommodations can have for them and their success. Interviews with college students with ADHD indicated meaningful learning contexts, such as topics of personal interest and field trips to museums, were helpful in creating life-long knowledge rather than learning for a test (Parker, 2004).

Ruban and colleagues (2003) investigated which strategies (i.e., conceptual skills, memorization, and compensation strategies) used by both students with and without learning disabilities ( $N = 470$ ) were related to increased academic achievement through the use of structural equation modeling. Conceptual skills were defined as cognitive skills such as knowing how they select an answer to a question. Compensation strategies were



defined as technology and people supports (e.g., tutors). Academic achievement was defined as GPA. Results indicated that increased use of conceptual skills was related to higher GPAs for both students with and without learning disabilities ( $\beta = 0.30, 0.55,$  and  $0.32$  for the total group, students with learning disabilities, and students without learning disabilities respectively). Memorization was not statistically significant. Compensation strategies had a negative relationship with GPA ( $\beta = -0.31, -0.33,$  and  $-0.33$  for the total group, students with learning disabilities, and students without learning disabilities respectively) meaning that students who utilized more compensation strategies (i.e., technology and people) had lower GPAs. Interestingly, however, students with learning disabilities perceived compensation strategies to be to most useful and beneficial of all the strategies measured ( $\beta = 0.73$ ). This indicates that students with learning disabilities may not be aware of which strategies are the most beneficial to their learning or they may be making decisions about which accommodations to use based on convenience which may lead them to not using those accommodations that could be more effective for them.

A review of studies on postsecondary students with learning disabilities indicates that students benefit from instruction in learning strategies, study skills, organizational skills, memory strategies, test-taking skills, and self-advocacy skills (Mull et al., 2001). These students also benefit from learning to cope with their disability and lessening their reliance on supports provided to them.

In an effort to provide students with the skills they need, some studies have examined the effectiveness of specific college courses designed to teach students the skills they are lacking. Reed and colleagues (2009) examined the difference in outcomes among students with learning disabilities who enrolled in a university success course ( $n =$

8), participated in individual sessions with disability services personnel ( $n = 8$ ), or sought out disability services personnel as needed ( $n = 11$ ). The university success course took place over 12 weeks for a total of 39 hours. It included topics such as: research skills, effective use of literature, essay and report writing, learning styles, and academic skills (e.g., study skills, time management, test-taking skills). Individual sessions were based on the individual needs of the students and included topics such as academic coaching, learning strategies, and assistive technology. Students were required to meet with disability services personnel at least once a month. Students who opted for the as needed services met with disability service personnel an average of 1.4 times a semester and had individual sessions similar to those in the individual sessions group. Findings indicate that students who enrolled in the course increased their self-efficacy and academic resourcefulness compared to students who did not enroll in the course. In addition, students who attended the course were less likely to attribute failure to bad luck suggesting that the students exerted greater levels of internal locus of control. No statistically significant results were found for level of anxiety and GPA and the intensity of supports received. It is possible that the lack of statistical significance in these results is due to lack of statistical power; therefore, more studies are needed before definite conclusions are drawn.

Allsopp and colleagues (2005) investigated the relationship between receiving individualized explicit strategy instruction and improvements in GPA. Forty-six college students with learning disabilities and/or ADHD participated in the study. They met one to three times a week for one to two hours with a graduate student in special education. The key to this intervention was that it was individualized to each student. Students

focused on different areas of learning and course content depending on their learning needs. Strategies were individually tailored to address students' needs with respect to the specific courses they were taking. The strategies taught during sessions came from the existing literature, some were adapted, and new ones were created based on students' needs. Explicit strategy instruction was implemented through the use of advance organizers, strategy modeling, guided practice, independent practice, and monitoring of student progress. Overall, students' cumulative GPA improved as well as their grades for the course in which they were applying the strategies from the intervention. The students that were successful in improving their GPA were able to use the strategies independently, whereas students who did not make improvements in their GPA were not able to use or had difficulty using the strategies independently. Further, the intervention had the largest effects for students who remained in the program for a second semester and those who were on academic probation at the beginning of the study.

Another practice which has been shown to be effective with college students with learning disabilities and ADHD is executive function coaching (Parker & Boutelle, 2009; Swartz, Prevatt, & Proctor, 2005). Executive coaching is based on cognitive theory and athletic coaching. It is conducted by trained executive coaches who view their role as collaborators with the students. Coaches use a process of continuous questioning to guide students to the appropriate strategies to achieve their goals. It also encourages reflective thinking. Typically coaching sessions occur weekly for approximately one hour for a period of eight weeks, but can span several semesters if the student desires. Students write a long-term goal and have weekly objectives to help them achieve their goal. In some instances students are rewarded for making steps towards their goals and penalized

for not meeting weekly objectives or for missing coaching sessions. Both rewards and negative consequences are agreed upon by the student and coach. Swartz and colleagues utilized aversive consequences (i.e., financial penalties) to ensure students completed the coaching sessions. Both studies reported that students who completed the coaching sessions achieved their goals. They also were able to set personal goals and achieve them independently. Some students chose not to continue the coaching program after one semester. Interestingly, many students who choose not to continue the coaching program decided not to because they believed they could independently set goals. Follow-up interviews revealed that students who completed the coaching process liked the process. They particularly liked that it was personalized to their needs. Participants felt more autonomous, self-determined, self-regulated, self-aware, and had decreased stress and anxiety regarding academic work. They disliked that the coaching sessions only lasted an hour and wanted the strategies to be taught directly. Allsopp and colleagues (2005) report similar findings in interviews with students in their study.

### **Summary of Literature on Students with Learning Disabilities and/or ADHD**

Students with learning disabilities and/or ADHD have an average to above average IQ and experience difficulties in academic and social-emotional areas. Academic concerns include difficulties with specific content areas, lack of strategy use, and memory deficits that effect remembering and efficiently processing information. Social-emotional concerns include decreased self-concepts and self-efficacy and increased psychopathology. These difficulties lead to lower graduation rates, postsecondary attendance, and employment status when compared to their peers without disabilities. These concerns are present in both K-12 and postsecondary students with learning

disabilities and/or ADHD. The current research based demonstrates that cognitive strategy instruction can be an effective practice with both K-12 and postsecondary students with learning disabilities and/or ADHD and can lead to increased academic performance and social-emotional outcomes.

### **Self-Determination**

Self-determination, while gaining popularity in the special education literature over the past two decades, is not a new concept, but one that has been around throughout history within the work of Plato, Aristotle (Sarver, 2000), and components of self-determination were present in the work of John Locke, Sigmund Freud, and B. F. Skinner (Wehmeyer, 2003c). It is researched within psychology as a theory of motivation (Deci & Ryan, 2008) and special education (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Konrad et al., 2007).

Self-determination has been defined in various ways; however, a central focus of most definitions is one's ability to make decisions for him/herself free from undue pressure or involvement of others. Field, Martin, Miller, Ward, and Wehmeyer (1998) combined several definitions and define self-determination as:

a combination of skills, knowledge, and beliefs that enable a person to engage in goal-directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations together with a belief in oneself as capable and effective are essential to self-determination (p. 2).

Along with the various individual definitions of self-determination, there are several models of how self-determination operates which will be discussed further later in this chapter. However, prior to discussing what self-determination is and how it is

conceptualized, it is important to clarify common misconceptions of self-determination. Wehmeyer (2003c) identified three common misconceptions of self-determination: (1) It requires independent performance of all behaviors; (2) It is only about making choices; and (3) It is something a person does. People are complex social beings who interact with others regularly; rarely do people ever act completely independent of others. Being self-determined is related to the amount of control over choices one exerts and the decision-making process. This includes the right to choose none of the options available. Self-determination does not require that people function independently of others. Moreover, while choice- and decision-making are components of self-determination, they are only part of a more complex construct that includes several components such as self-advocacy and goal attainment. Finally, self-determination is not an activity that people do or an action that people are trained to perform. It is about who they are and “enabling people to make things happen in their lives” (Wehmeyer, 2003c, p. 20).

### **Functional Theory of Self-Determination**

Self-determination is a construct that describes the level of control people believe they have and exert over their lives. In the special education literature researchers use or refer to specific theories of how self-determination exists and is developed (Abery & Stancliffe, 2003; Mithaug, 2003; Wehmeyer, 2003a, 2003b, 2003c). For the purposes of this study, the functional theory of self-determination will be discussed in depth as this theory of self-determination is incorporated into this study’s personal strengths intervention (introduced at the end of this chapter).

The functional theory of self-determination is based on personality, social, and developmental psychology (Wehmeyer, 2003a) and serves an important foundation to

this study's personal strengths intervention. Functional theory views self-determination as a dispositional characteristic and defines it based on functional characteristics of people that allow them to be "causal agents" in their lives (p. 177). It is composed of four essential characteristics and 12 component elements (see Table 1). The four essential components are: (1) autonomy, (2) self-regulation, (3) self-realization, and (4) psychological empowerment (Wehmeyer, 2003b). Autonomous behavior is when someone acts independently and knows what they want and need. Self-regulated behavior is associated with self-management skills such as monitoring and regulating one's actions. Self-realizing behavior is that which includes knowledge of one's strengths and weaknesses. When people act in a psychologically empowered manner, they feel in control, like they have the skills necessary to complete tasks, and expect outcomes based on their abilities. All four essential characteristics must be present within a self-determined individual even though the level at which the characteristics are present may change over time and are based on the current circumstances (e.g., task at hand, environment). It is at the component element level where self-determination interventions take place. Each component element represents a skill set or belief about oneself that is enhanced as one's self-determination increases. The 12 component elements are as follows:

1. Choice-making skills – These are skills that determine a student's preference. These skills are not usually taught explicitly to students; however, it may be necessary to teach them explicitly to younger students. Choice-making activities can include choosing an activity, choosing when to complete an activity, and choosing whether or not to participate in an activity.

Table 1

*Self-Determination Essential Characteristics and Component Elements*

Essential Elements	Component Characteristics
Autonomy	Choice-making skills Decision-making skills Problem-solving skills
Self-regulation	Goal setting & attainment skills Independence, risk-taking, & safety skills Self-observation, evaluation, & reinforcement Self-instruction skills
Self-realization	Self-awareness Self-knowledge
Psychological Empowerment	Self-advocacy & leadership skills Internal locus of control Self-efficacy

2. Decision-making skills – These skills include elements of choice-making and problem-solving skills (Wehmeyer & Schalock, 2001), as well as determining the appropriate course of action for a specific situation. Decision-making skills are more appropriate for secondary students and include determining the problem and possible courses of action, consequences for each action, likelihood of each consequence, relative importance of each consequence, and an appropriate course of action based on the previously mentioned steps.
3. Problem-solving skills – These skills include the identification, analysis, and resolution of a problem (Wehmeyer & Schalock, 2001). Wehmeyer and Schalock (2001) state these skills, unlike choice-making skills, are taught explicitly. They include both impersonal and interpersonal problem-solving. Interpersonal problem-solving skills, such as skills needed in social interactions, are more



common in the education of students with disabilities than impersonal problem-solving skills, such as those used in academic activities like determining the characteristics of an expository writing piece (Bender, 2004; Wehmeyer & Schalock, 2001).

4. Goal setting and attainment skills – These skills center on the skills needed to plan, set, and achieve goals. This includes both long-term and short-term goals. Goal setting skills are not only for academic achievement, but for daily life activities as well. These skills can also be used by students to participate in and determine their goals and objectives on their individual education plans (IEP).
5. Independence, risk taking and safety skills – These are skills that allow one to act according to one's desires and try new activities without unnecessary risks.
6. Self-observation, evaluation, and reinforcement skills – These skills are monitoring skills that teach students to track and record their behavior, such as time on task, as well as evaluate their behaviors (e.g., they assess their progress on set goals). Self-reinforcement skills are the administration of consequences for actions. Consequences can be either positive or negative and can include verbal praise or reminders and tangible rewards such as stickers or food treats.
7. Self-instruction skills – These skills require students to verbally prompt themselves in order to solve both academic and social problems. Such skills can include reminders for how and when to use specific academic strategies or how to appropriately begin a conversation with peers.
8. Self-awareness – This is recognizing one has interests, strengths, weaknesses, and a disability (Wehmeyer & Schalock, 2001).

9. Self-knowledge – This is the ability to recognize and understand one’s strengths, weaknesses, and disability. This can occur through disability awareness training and learning style inventories.
10. Self-advocacy skills – These skills focus on knowing what you need, when you need it, and how to get it. Students learn various accommodations they need to be successful. This can include asking for extra time on assignments or asking for separate due dates for smaller segments of a large project.
11. Internal locus of control – This is the belief that one is in control of his/her environment. This means one believes he/she can control outcomes in their life such as whether or not they earn a good grade on a test. The level of locus of control one has affects their affective responses. Positive affective responses, such as pride, are associated with an internal locus of control, while negative affective responses, such as doubt, are associated with external locus of control (Bruning et al., 2004).
12. Self-efficacy – This is the belief that one is able to perform a task in a specific domain (Bandura, 1997). Increased self-efficacy yields increased performance and achievement in a given area. It also leads to increased task engagement and persistence (Bruning et al, 2004). Bandura cautions that self-efficacy in one area does not necessarily lead to self-efficacy in another area; however, it predisposes people to increased persistence and engagement with difficult tasks where an individual possesses a high level of self-efficacy. This means a person with high self-efficacy in math believes he/she is able to perform successfully in math.

Further, he/she is more likely to participate in difficult math problems and persevere through challenges; therefore, his/her chance of success is increased.

### **Self-Determination Models Based on Functional Theory**

While there are various models and curricula for teaching self-determination (Algozzine et al., 2001), two models based on functional theory will be discussed. They are the Self-Determined Learning Model of Instruction (Wehmeyer, Palmer, Agran, Mitaug, & Martin, 2000) and the Field and Hoffman model (1994). Following the discussion of each model, the commonalities among them will be described. These commonalities are incorporated into the personal strengths intervention which is the focus of this study.

**Self-Determined Learning Model of Instruction.** The Self-Determined Learning Model of Instruction was developed from the Adaptability Instruction Model (Wehmeyer et al., 2000). While the Adaptability Instruction Model focuses on decision-making, independent performance, self-evaluation, and adjustments of goal selection and behavior, the Self-Determination Learning Model for Instruction focuses on these same elements but also include the skills one needs to act within and on the environment to achieve goals and satisfy needs and desires. This model includes three phases: (1) Set a Goal, (2) Take Action, and (3) Adjust Goal or Plan. It uses a problem-solving approach in each phase to help students answer a series of questions meant to help them achieve their goals. The questions are designed in a manner so that students can learn and modify the questions based on their needs. For example, in Phase One students solve the problem “What is my goal?” by answering the questions:

What do I want to learn?

What do I know about it now?

What must change for me to learn what I don't know?

What can I do to make this happen? (Palmer & Wehmeyer, 2003, p. 116).

This model is student-directed and the teacher works with the students to assist them in gaining the strategy skills necessary to be successful; therefore, the heart of the model is that students learn to teach themselves and apply and modify strategies according to their needs. This model is implemented through “educational supports” which are different component elements of self-determination (e.g., teaching choice-making; Wehmeyer et al., 2000, p. 444)

The Self-Determination Learning Model for Instruction was field tested with 40 adolescents with disabilities (Wehmeyer et al., 2000). Students were identified as having intellectual disabilities ( $n = 13$ ), learning disabilities ( $n = 17$ ), and emotional or behavioral disorders ( $n = 10$ ). Students focused on social skills, behavioral, and academic goals. Students achieved or exceeded expectations for 55% of the goals they set. Students made progress on but did not achieve 25% of the goals they set. Students did not make progress on 20% of their goals. Students' global levels of self-determination increased and they demonstrated increased internal locus of control levels.

**Field and Hoffman model.** The Field and Hoffman (1994) model of self-determination is based on internal factors that are thought to influence self-determination. The authors purposefully omit the environment from this model's framework because they assert that self-determination can take place in any environment as long as people have the appropriate skills. This model emphasizes goal setting. Field and Hoffman (1994) define self-determination as, “the ability to define and achieve goals based on a

foundation of knowing and valuing oneself' (p. 164). The model consists of five steps: (1) Know Yourself, (2) Value Yourself, (3) Plan, (4), Act, and (5) Experience Outcomes and Learn. During the first step people are encouraged to learn about their strengths and weaknesses as well as preferences and needs so that the goals they set are reflective of their desires. The second step focuses on self-acceptance and believing in one's abilities. People set appropriate and meaningful goals in the third step. Step four is when people attempt to achieve their goal. During this step people will engage in risk-taking, skill negotiation, and conflict resolution. Evaluation of one's actions occurs in step five. It is during this step that people review their behavior and outcomes and decide if changes should be made to their actions in the future.

This model of self-determination was developed using a multi-step process. Relevant literature was reviewed and interviews with people with disabilities as well as their service providers, parents, and educators were conducted. Interviews focused on asking for definitions of self-determination, its components, and factors that support or inhibit its development. Students with and without disabilities were observed to determine the specific behaviors displayed that indicated self-determination. Finally, both internal and external experts reviewed a draft of the model and made suggestions for its improvement.

Both the Self-Determination Learning Model for Instruction and Field and Hoffman model have several similarities. Both are described as more student-directed than teacher directed. The students determine the goal to be accomplished and the teacher helps to facilitate the strategies needed to be successful. Both models seek to provide scaffolded practice with the hope that students will be able to take what they learn in the

model and make it their own and adapt it as needed for new situations. Further, both models emphasize self-evaluation. Students are asked to reflect on their behaviors and actions in relation to their outcomes and make decisions for future behaviors and strategy use.

### **Research on Self-Determination**

Research on the effectiveness of self-determination interventions has been positive. It can be reasonably concluded that while self-determination is a dispositional trait, its component elements can be taught and the teaching of them leads to increases in global self-determination levels, which is a desirable outcome (Chambers, Wehmeyer, Saito, Lida, Lee, & Singh, 2007; Malian & Nevin, 2002). A discussion of the research on the effectiveness of self-determination interventions and programs, as well as the relationship between self-determination and academic achievement and outcome skills follows.

**Self-determination interventions.** Algozzine and colleagues (2001) conducted a meta-analysis of studies on self-determination interventions that used both group designs and single-case designs. Results indicate that the majority of studies were conducted with adolescents and adults, people identified with intellectual and learning disabilities, and examined choice-making and self-advocacy skills. Effect sizes were calculated using Cohen's *d* for group designs. Effect sizes ranged from -2.23 to 26.48 with a mean of 1.38 and a median of 0.60. Single-case designs had PND values from 64% to 100% with a median of 95%. This indicates a wide range of effectiveness of self-determination interventions. On average the group designs yielded moderate to large effects and the single-case designs yielded large effects. Studies which included multiple components of

self-determination (i.e.  $\geq 4$ ) tended to have higher effect sizes than those that only included a few components. In addition, longer interventions yielded larger effect sizes. Large effects sizes were associated with interventions that lasted at least six weeks in group design studies. Specific lengths of single-case design interventions could not be determined based on the information provided by the authors; however, 61% of the studies had PND values of 90% or higher. It should also be noted that only 10 studies (19.6%) included in the meta-analysis collected data on the fidelity of the intervention implementation. This lack of fidelity information makes it difficult to determine if the interventions were actually implemented as designed. Variability in the implementation of similar interventions may have contributed to the variability in effect sizes for the group designs.

**Self-determination programs.** A review of studies on specific self-determination programs and models reveals insights into the impact such programs and models have on the development of self-determination of students with disabilities. For example, Palmer, Wehmeyer, Gipson, and Agran (2004) studied the effect of the Self-Determined Learning Model of Instruction on 22 middle school students with intellectual disabilities to improve problem-solving and study plans related to district standards for social studies, science, or language arts. The intervention took place in the general education classroom ( $n = 19$ ) and resource room ( $n = 3$ ) for 35 minutes per week for five weeks. Results indicated that students achieved their educational goals at expected or higher levels. In addition, students were reported to have increased self-determination skills. Further, the authors suggest that students should be able to generalize their knowledge to various settings. Agran, Blanchard, Wehmeyer, and Hughes (2002) also examined the effect of

the Self-Determined Learning Model of Instruction and found similar results. Four students with intellectual and developmental disabilities achieved 100 percent mastery of their individual goals on following directions and contributing to class they created as part of the intervention.

Hapner and Imel (2002) explored a series of lesson plans designed to teach self-determination skills and increase student participation in IEP development. They found that students who were taught self-determination skills demonstrated the ability to connect accommodations to their learning styles. The students with self-determination skills asked for the types of learning environments they needed. Results showed increases in the academic achievement and locus of control in these students. Moreover the authors report that the students became more comfortable with the risks involved in choice-making and, therefore, made connections and expanded their learning.

Karvonen and colleagues (2004) reviewed self-determination programs six schools utilized. They summarized the effects of the programs across schools. Students with disabilities who exhibited self-determination skills demonstrated an internal locus of control. Furthermore, the students' decision-making skills increased. The students knew what they wanted out of their education, presented teachers with options for assignments that satisfied accommodation needs, and asked for additional accommodations on their IEPs during their annual meetings.

**Self-determination and academic achievement.** While reviews of self-determination research and programs have indicated positive results, self-determination has also been linked to increased academic achievement. In a review of 31 studies of self-determination's effects on academic achievement for students with learning disabilities



and/or ADHD, effects ranged from “very weak” to “very strong” (Konrad, Fowler, Walker, Test, & Wood, 2007, p. 105). Specifically, percentage of nonoverlapping data (PND) values for single-case studies ranged from 0% to 100% with a median of 60%. Group effect sizes (Hedges  $g$ ) ranged from -1.15 to 0.92 with a mean of -0.22. Further examination of effect sizes indicated that interventions which combined self-management with another component of self-determination were more effective than single component interventions (median of 81.5%). Researchers caution the interpretation of their findings since effect sizes could not be calculated for every study. It is also important to note that information was not provided about the intensity and duration of the interventions and only three studies included measures of the fidelity of the treatment.

Sarver (2000) measured self-determination levels in 88 university students with learning disabilities who had completed at least 30 hours of university coursework. She found that students with higher levels of self-determination had higher academic achievement as indicated by their GPA. Through interviews with four students Sarver found self-determined students were problem-solvers who sought the assistance they needed to be successful, such as seeking support from tutors. In addition, the students were able to set and achieve appropriate goals, displayed autonomy, and demonstrated resiliency in instances of failure.

**Self-determination and outcome skills.** Increased self-determination skills are associated with a range of positive skills. Wehmeyer and colleagues (2004) report students who engage in choice-making activities, an element of self-determination, are motivated and more likely to achieve their goals than students who do not. Similar results were found by West, Barcus, Brooke, and Rayfield (1995). They found that students with

self-determination skills were motivated, empowered, and goal oriented. Students with disabilities who possess self-determination skills, unlike those who do not have self-determination skills, become excited about school and interact with peers (Karvonen et al, 2004; Agran et al., 2002).

Finally, higher levels of self-determination have been correlated with increased quality of life outcomes such as independent living and employment (Chambers et al., 2007; Malian & Nevin, 2002). Longitudinal studies conducted by Wehmeyer and others (Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997) concluded that increased self-determination skills were associated with increased positive adult outcomes. Specifically, people who had higher levels of self-determination were more likely to live independently, be financially independent, and be employed. Further, those with high levels of self-determination had higher salaries, increased job benefits (i.e., sick leave, vacation time, and health benefits), and job satisfaction.

In conclusion, suggestions have been made for future areas of research on self-determination. Algozzine and colleagues (2001) after reviewing 51 studies on self-determination interventions made several recommendations. One recommendation is that self-determination research should explore whether or not self-determination interventions make a difference in the lives of individuals with disabilities. We know that people who are more self-determined have better quality of life outcomes, but can teaching self-determination components lead to these changes. A second recommendation is that self-determination research should include more social validity data. Of the studies reviewed only 23 (45.1%) collected social validity data. It seems contradictory that self-determination research, which is supposed to support the construct of individuals

becoming causal agents in their lives does not explore if participants in research view the intervention as beneficial. A third recommendation is that self-determination intervention research should evaluate more of the self-determination models and programs that have been developed, as well as provide information on the level of fidelity with which the intervention was implemented.

### **Summary of Literature on Self-Determination**

Self-determination is a dispositional characteristic indicated by behaviors that are based on autonomy, self-regulation, self-realization, and psychological empowerment. Research indicates self-determination components can be taught and lead to an increase in component characteristics, global self-determination, and academic achievement. People who are self-determined achieve academically at higher levels and have better quality of life outcomes.

### **Positive Psychology**

Positive psychology is the study of positive emotions, positive character traits, and positive institutions (Seligman et al., 2005). It studies people's strengths and their positive functioning. This includes the interactions among an individual's positive traits and areas of weakness or psychopathology. The goal of interventions in positive psychology is to create interventions that increase positive affect (e.g., happiness) and decrease negative affect (e.g., unhappiness) and psychopathology (Seligman et al., 2005; Snyder & Lopez, 2007). This section provides: (1) a brief history of positive psychology; (2) responds to its criticisms, which helps to further define the field; and (3) reviews the concepts of and research on life satisfaction and subjective well-being, character strengths, Hope Theory, and savoring – all areas studied under positive psychology.

## **History of Positive Psychology**

While many aspects of positive psychology (i.e., happiness, love, emotional intelligence, flow, and optimism) have been studied for years, the positive psychology movement began when Martin Seligman was elected president of the American Psychological Association in 2000 (Gable & Haidt, 2005; Peterson & Park, 2003; Snyder & Lopez, 2007). During his presidency, Seligman called attention to the imbalance in psychology, which focused on the disease model, and for its correction. He, along with other researchers in the field (i.e., Csikszentmihalyi, Diener), called for a more complete psychology which focused on promoting strengths as well as treating mental illness (Seligman & Csikszentmihalyi, 2000).

The imbalance of psychology is traced to World War II (Peterson & Park, 2003; Seligman & Csikszentmihalyi, 2000; Snyder & Lopez, 2007). Prior to this war, psychology had three intentions: “curing mental illness, making the lives of people more productive and fulfilling, and identifying and nurturing high talent” (Seligman & Csikszentmihalyi, 2000, p. 6). However, after WWI and the creation of the Veterans Administration (now Veterans Affairs) and the National Institute of Mental Health (NIMH) psychologists began to focus their research on mental illness almost exclusively partly due to the high incidence of soldiers returning from the war with emotional and psychiatric disorders and partly due to the availability of research funding from the Veterans’ Administration and NIMH to study mental illness. Peterson and Park (2003) refer to this as psychology joining “forces with psychiatry” (p. 143). Gable and Haidt (2005) also suggest that the imbalance in psychology remained because negative events are recalled more easily than positive ones and even though people typically experience

more positive events in their lives than negative ones, people tend to remember exceptions in their days rather than regularities.

### **Criticisms of Positive Psychology**

Since the organization of positive psychology, several criticisms have surfaced (Gable & Haidt, 2005). The first is the belief that if there is positive psychology, previous psychology must be negative (i.e., focus on deficits or mental illness). Another criticism of positive psychology is that it ignores negative aspects of life and the implications for people. The third criticism of positive psychology is that it requires professionals to decide what is “*described*” as good and should be “*prescribed*” as good (Gable & Haidt, 2005, p. 107). Positive psychologists have responded to these criticisms (Gable & Haidt, 2005; Peterson & Park, 2003; Seligman & Csikzentmihalyi, 2000). They remind critics that positive psychology is not about believing traditional psychology is negative or that it should be abandoned, but rather that it should have a more balanced approach between psychopathology and strengths. Further, positive psychology is not about finding one “cure” for everyone. It is about learning and using individual personal strengths to achieve positive life outcomes such as increased happiness.

### **Life Satisfaction, Subjective Well-Being, and Happiness**

Much of positive psychology is focused on improving the life satisfaction and subjective well-being (SWB), or happiness, of people. Life satisfaction, subjective well-being, and happiness are all outcomes measured by positive psychologists. While they are distinct constructs, they are often used interchangeably in the literature. This section includes a brief description of each and findings from research on the constructs. Life satisfaction refers to how happy a person is with his/her life. This includes feeling

content, safe, and successful. It also includes possessing a positive self-concept and positive self-esteem (Diener, Lucas, & Oishi, 2005). Snyder and Lopez (2007) differentiate between happiness and SWB. While they do not elaborate on a definition for happiness, stating it is subjectively defined by each person, they state subjective well-being is the “combination of positive affect . . . and general life satisfaction” (p. 129). SWB includes life satisfaction, satisfaction with important domains, positive affect, and low levels of negative affect (Diener, 2000). Myers and Diener (1995) define SWB as the “relative presence of positive affect, absence of negative affect, and satisfaction with life” (p. 11). It is important to note that positive and negative affects are independent of each other (Snyder & Lopez, 2007). They are not direct opposites of each other; however, the two constructs do demonstrate weak inverse correlations indicating some level of overlap.

Myers and Diener (1995) summarized several studies and determined factors that impact happiness/subjective well-being. Happiness is better determined by personality traits compared to demographic information. Predictors of happiness (e.g., personality type, marriage, spirituality, peer relationships) change based on age. Myers and Diener (1995) also conclude that happiness is not present more often in a particular gender or race, but is influenced by culture. Money is also not a predictor of happiness once people are over the poverty threshold. Happier people are those who like themselves, feel in control of their lives, are optimistic, extroverted, are married, experience flow, and have faith.

Research indicates happiness levels are influenced by people’s temperament, distribution of positive and negative life events, and goal achievement and adaptability

(Diener, 2000). Temperament, which is one of the strongest factors influencing happiness, is at least partially determined by genetics (Diener, 2000). Both extraversion and positive life events correlate with increased levels of happiness. Research indicates that people seem to have a level of happiness they are predisposed to. Happiness levels may change temporarily with the occurrence of positive or negative life events; however, people's happiness levels appear to return to levels close to their predisposition level. For example, some people appear to be naturally happier than others. These people may experience a negative life event (e.g., an accident) and their happiness level may be temporarily reduced. With time their happiness level will return to where it was prior to the accident. Those with higher initial levels of happiness seem to react better to negative life events than those with lower initial levels of happiness. Further, if people experience several positive events close together, their happiness levels may increase on a more permanent level. Similarly, several negative events in a row may permanently decrease overall levels of happiness. Research indicates that people with effective coping skills experience increased levels of happiness (Snyder & Lopez, 2007). In addition, goal achievement and the ability to adapt goals as situations unfold have been correlated with increased levels of happiness (Diener, 2000).

The majority of research on life satisfaction, which is slightly different from happiness yet is often used interchangeably, has been conducted with adults and has recently begun to include children and adolescents. Current findings indicate that most children and adolescent, like adults, are satisfied with their lives (Gilman & Huebner, 2003). Global life satisfaction levels are influenced the most by cumulative effects of daily experiences rather than by major life events. In addition, adolescents' life

satisfaction is influenced by family, peer, and school environments with more positive and structured environments related to higher levels of life satisfaction. Adolescent life satisfaction is also related to social-emotional characteristics and psychopathology. Specifically, students who have higher levels of self-esteem, self-reliance, and self-efficacy and an internal locus of control tend to have higher levels of life satisfaction. Further, students with lower levels of depression, anxiety, and social stress also tend to have higher levels of life satisfaction.

Students' life satisfaction influences academic achievement. Students who have higher life satisfaction levels perform better in school (Kirkcaldy, Furnham, & Siefen, 2004). Furthermore, Huebner, Gilman, and Laughlin (1999) found students with higher perceived academic competence achieved higher academically than students with lower perceived competence. These studies illustrate the importance of life satisfaction for students.

Two studies were located that examined the relationship between students with and without learning disabilities and life satisfaction (Cooper, 2006; McCullough & Huebner, 2003). Both studies compared the global life satisfaction levels of students with learning disabilities and matched peers without disabilities. Results from both studies indicate there is no statistically significant difference between the life satisfaction levels of students with and without learning disabilities. This is a promising finding. It is important to note that the studies contained relatively small sample sizes ( $N = 36$ , Cooper;  $N = 160$ , McCullough & Huebner) with 93 students with learning disabilities represented.



Seligman and colleagues (2005) have begun to examine interventions to improve life satisfaction. They compared the effects of five interventions to one non-treatment group on levels of life satisfaction and depression. Participants were recruited from and participated in the study via the internet ( $N = 411$ ). They were randomly assigned to one of six groups. Treatment groups included: *Gratitude visit*, *Three good things in life*, *You at your best*, *Using signature strengths in a new way*, and *Identifying signature strengths*. The non-treatment group completed journaling about early memories every day for one week, which was expected to have a placebo effect. Participants in the *gratitude visit* group wrote a letter of gratitude during the week and delivered it to the person it was written to. The *three good things in life* group wrote down three things that went well and their causes every day. Participants in the *you as your best* group wrote a story about a time when they were at their best and the personal strengths they displayed. The story was reviewed nightly for one week. The *using your signature strengths in a new way* group completed a character strengths inventory and used one of their top five strengths in a new way every day for a week. The *identifying signature strengths* group also completed the character strengths inventory, but was instructed to try and use their strengths more often. Overall, results were positive. The *gratitude visit* had the biggest immediate effect on increasing happiness and decreasing depression. This effect lasted for three months. In addition, both the *three good things in life* and *using signature strengths in a new way* led to increased happiness and decreased depression. However, these effects did not appear for one month, but were maintained for six months which was the completion of the study. *Identifying signature strengths* and *you at your best* resulted in small immediate effect in increased happiness and decreased depression, but

these effects were not maintained. Finally, *journaling about early memories* created an increase in happiness after the first week but happiness levels of participants returned to their baseline levels after that time period.

### **Character Strengths**

Character strengths are the aspects of personality that are morally valued (Park & Peterson, 2008). They are based on the virtues, or “core characteristics valued by moral philosophers and religious thinkers”, of wisdom, courage, humanity, justice, temperance, and transcendence (Peterson & Seligman, 2004, p. 13). Peterson and Seligman (2004) identify 24 character strengths (see Table 2). The researchers wanted to ensure they captured every possible character strength. Therefore, they created the list of character strengths by: (1) generating a list of strength behaviors by researchers; (2) reviewing existing inventories of virtues and strengths; (3) reviewing goals of character education programs; and (4) reviewing virtue-relevant messages in “Hallmark greeting cards, bumper stickers, *Saturday Evening Post* covers by Norman Rockwell, personal ads, popular song lyrics, graffiti, Tarot cards, the profile of Pokémon characters, and the residence halls of Hogwarts” (p. 15).

Research on character strengths indicates gratitude, humor, and love were frequently reported as character strengths and prudence, forgiveness, religiousness, and self-regulation were less frequently reported in adults and children (Park & Peterson, 2006; Park, Peterson, & Seligman, 2004). Children more frequently reported hope, teamwork, and zest as character strengths (Park & Peterson, 2006), while adults more frequently reported appreciation of beauty, authenticity, leadership, and open-mindedness (Park et al., 2004). Hope, gratitude, love, zest, and curiosity are all positively related to

Table 2

*Character Strengths and Virtues*

Virtues	Character Strengths	Definitions of Character Strengths
Wisdom	Creativity	Thinking of novel & productive ways to conceptualize & do things; includes artistic achievement but is not limited to it
	Curiosity	Taking an interest in ongoing experience for its own sake; finding subjects & topics fascinating; exploring & discussion
	Open-mindedness	Thinking things through and examining them from all sides; <i>not</i> jumping to conclusions; being able to change one's mind in light of evidence; weighting all evidence fairly
	Love of Learning	Mastering new skills, topics, and bodies of knowledge, whether on one's own or formally; obviously related to the strength of curiosity but goes beyond it to describe the tendency to add <i>systematically</i> to what one knows
Courage	Perspective	Being able to provide wise counsel to others; having ways of looking at the world that make sense to oneself and to other people
	Bravery	Not shrinking from threat, challenge, difficulty, or pain; speaking up for what is right even if there is opposition; acting on convictions even if unpopular; includes physical bravery but is not limited to it
	Persistence	Finishing what one starts; persisting in a course of action in spite of obstacles; "getting it out the door"; taking pleasure in completing tasks
	Integrity	Speaking the truth but more broadly presenting oneself in a genuine way & acting

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		in a sincere way; being without pretense; taking responsibility for one's feelings and actions
	Vitality	Approaching life with excitement and energy; <i>not</i> doing things halfway or halfheartedly; living life as an adventure; feeling alive and activated
Humanity	Love	Valuing close relations with others, in particular those in which sharing and caring are reciprocated; being close to people
	Kindness	Doing favors and good deeds for others; helping them; taking care of them
	Social Intelligence	Being aware of the motives and feelings of other people and oneself; knowing what to do to fit into different social situations; knowing what makes other people tick
Justice	Citizenship	Working well as a member of a group or team; being loyal to the group; doing one's share
	Fairness	Treating all people the same according to notions of fairness and justice; <i>not</i> letting personal feelings bias decisions about others; giving everyone a fair chance
	Leadership	Encouraging a group of which one is a member to get things done and at the same time maintain good relations within the group; organizing group activities and seeing that they happen
Temperance	Forgiveness & Mercy	Forgiving those who have done wrong; accepting the shortcomings of others; giving people a second chance; <i>not</i> being vengeful
	Humility/ Modesty	Letting one's accomplishments speak for themselves; <i>not</i> seeking the spotlight; <i>not</i> regarding oneself as more special than one is

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	Prudence	Being careful about one's choices; <i>not</i> taking undue risks; <i>not</i> saying or doing things that might later be regretted
	Self-regulation	Regulating what one feels and does; being disciplined; controlling one's appetites and emotions
Transcendence	Appreciation of Beauty & Excellence	Noticing and appreciating beauty, excellence, and/or skilled performance in various domains of life, from nature to art to mathematics to science to everyday experience
	Gratitude	Being aware of and thankful for the good things that happen; taking time to express thanks
	Hope	Expecting the best in the future and working to achieve it; believing that a good future is something that can be brought about
	Humor	Liking to laugh and tease; bringing smiles to other people; seeing the light side; making (not necessarily telling) jokes
	Spirituality	Having coherent beliefs about the higher purpose and meaning of the universe; knowing where one fits within the larger scheme; having beliefs about the meaning of life that shape conduct and provide comfort

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*Note.* From Peterson & Seligman, 2004

life satisfaction for adults and children. Modesty, creativity, judgment, appreciation of beauty, love of learning, and prudence were associated with less life satisfaction (Park et al., 2004). Perseverance, fairness, gratitude, honesty, hope, and perspective were all associated with increased academic achievement in students (Park & Peterson, 2006).

Park and Peterson (2006) examined correlations between character strengths and social skills. Fairness, gratitude, honesty, social intelligence, teamwork, and perspective were all associated with cooperation. Leadership and zest were associated with assertion, and kindness and love were associated with empathy. Self-control was associated with perseverance, prudence, and self-control.

The relationship between character strengths and psychopathology, as evidenced by the Child Behaviour Checklist (CBCL) was examined (Park & Peterson, 2006). Fewer internalizing behaviors, such as anxiety and depression, were associated with the character strengths of hope, zest, and leadership. Persistence, authenticity, prudence, and love were related to lower levels of externalizing behavior such as aggression and violence. One study was located which used character strengths in an intervention to improve the self-concepts of students with learning disabilities (Short, 2007). Thirty-one students participated with 15 students in the treatment group and 16 students in the control group, ranging in age from 9 to 15 years old. Students in the treatment group met once a week for five weeks for approximately one hour. The first and last sessions consisted of students completing pre- and post-test measures of self-concept. The second session served as an introduction to character strengths. Students completed the Values in Action (VIA) during the third session, and reviewed their results during the fourth

session. No statistical difference was found between the treatment and control groups on pre- and post-measures of self-concept.

### **Hope Theory**

Hope is defined as “goal-directed thinking in which the person utilizes pathways thinking (the perceived capacity to find routes to desired goals) and agency thinking (the requisite motivations to use those routes)” (Snyder & Lopez, 2007, p. 189). Hope theory includes achieving goals through pathways and agency thinking (Snyder, Rand, & Sigmon, 2005). Pathways thinking is the ability to generate ways to achieve goals. Agency thinking is the “perceived capacity to use one’s pathways” to reach goals (Snyder, Rand, & Sigmon, 2005, p. 258). Hope, like self-efficacy, is a learned pattern of behavior. Hope has been shown to predict positive outcomes in academics, athletics, physical health, adjustment, and psychotherapy. Snyder and Lopez (2007) state that in order for hope to exist, the goals set must be important to the individual. While many will agree few students want to fail at school, many students with disabilities experience low motivation rates due to their previous failures with academics. People with higher levels of hope achieve more academically and athletically. They also report better physical health and psychological adjustment. Furthermore, people with high hope levels tend to have more social competence, more perceived levels of social support, and less loneliness.

One study was located that examined the effect of a hope theory intervention, Making Hope Happen, with participants with learning disabilities (Buchanan, 2008). The Making Hope Happen curriculum introduces the concept of hope and contains group and individual activities to help students become more hopeful (Pedrotti, Edwards, & Lopez,

2008). Students write a positive goal to work on during the 5-week intervention and share their progress with a hope buddy. They also write a hope story which includes their progress towards their goal during the intervention. Twenty middle school students with disabilities, including 12 with learning disabilities, participated in the study. They were divided into treatment ( $n = 8$ ) and control ( $n = 12$ ) groups based on class assignment. Students in the treatment group completed five one-hour sessions of the curriculum over a five-week period. Results indicated there were no statistically significant increases in either levels of hope or life satisfaction. The small sample size may have limited the power of the statistical tests (MANOVAs) and therefore likely influenced the findings.

### **Savoring**

Savoring is the “awareness of pleasure and of the deliberate conscious attention to the experience of pleasure” (Seligman, 2002, p. 107). It is the act of living in the moment. There are four types of savoring: basking (e.g., receiving praise), thanksgiving (e.g., gratitude), marveling (e.g., being lost in the moment), and luxuriating (e.g., indulging the senses). One can savor past, present, and future events (Lyubomirsky, 2008). When you savor the past, you experience gratitude. Savoring the present results in mindfulness, and savoring the future demonstrates optimistic thinking. Gratitude, mindfulness, and optimism have all been shown to be related to increased levels of happiness.

Savoring is not just for the major life events, but for all life events and can be accomplished in many ways. It should be practiced for graduations as well as arriving to work safely or receiving a compliment (Lyubomirsky, 2008). Positive events can be shared with others including family, friends, and coworkers. Social relationships have a great impact on happiness levels and savoring within those relationships can lead to



greater increased in happiness. Memory building, such as creating a visual image of or taking a token from something positive, is another savoring activity. Self-congratulating also results in savoring. Desired elements of an event, activity, object, or accomplishment can be focused through sharpening perceptions. Savoring can also be accomplished by enjoying and noticing the little things in life by being mindful of surroundings. This includes noticing the beauty around no matter how small. Absorption is when one is lost in the moment and allows the self to be completely taken in by the positive experience. This is accomplished by removing oneself from the current environment and remembering the positive feelings experienced another time and place.

Research on the impact of savoring activities on overall well-being is limited; however, the research that has been completed indicates that those who engage in savoring activities have higher levels of life satisfaction and well-being than those who do not (Quoidbach, Hansenne, & Mikoajczak, 2010). Quoidbach and colleagues (2010) investigated the relationship between savoring activities and life satisfaction and well-being in 282 adults. Results indicated that people who engaged in savoring more frequently had higher levels of life satisfaction and well-being. Additionally, being present and Positive Mental Time Travel (Positive MTT), which is when a person remembers or anticipates a positive event, positively predicted increased positive affect.

### **Summary of Literature on Positive Psychology**

Positive psychology is the study of positive emotions, positive character strengths, and positive institutions. It explores how strengths and weaknesses intersect and seeks to not only decrease negative emotions, but increase positive one leading people to happier lives. Individual components of the field have been studied for years, however, the field

was not organized until 2000. Research has primarily focused on adults, but is beginning to focus on children and adolescents. Promising research has been conducted in areas of life satisfaction and SWB, character strengths, Hope Theory, and savoring.

### **Connections Between Self-Determination and Positive Psychology: Implications for Students with Learning Disabilities and/or ADHD**

While self-determination has been studied more extensively among students with disabilities compared to positive psychology, both contain elements that have potential for addressing characteristics of students with learning disabilities and/or ADHD and both have the potential to create positive outcomes for students. Shogren and colleagues (2006) investigated the correlation among self-determination and variables of interest within positive psychology in students with ( $n = 75$ ) and without ( $n = 285$ ) disabilities. Results indicated higher levels of self-determination are related to higher levels of hope ( $r = .61$ ) and optimism ( $r = .58$ ) and inversely related to lower levels of external loci of control ( $r = -.61$ ). Figure 1 illustrates the elements of self-determination and positive psychology and the elements that are common to both constructs. Self-determination and positive psychology use different jargon to describe key components. The common threads section of the figure provides a list of the overlap of these two areas.

Both self-determination and positive psychology seek to empower individuals. They focus on both self-knowledge and self-awareness by attending to strengths and weaknesses. Both areas encouraged people to use their strengths rather than simply repair their weaknesses. Further, both areas employ goal setting and attainment to help people achieve more positive outcomes. Self-determination and positive psychology encourage

self-monitoring and evaluation. This is accomplished is positive psychology through Hope Theory.

The intersection of self-determination and positive psychology is a good model for education in general, but especially for special education. Special education typically uses the deficit model to determine which students are eligible for services. This makes sense when one considers special education services are for students that need instruction that is not readily available in the general education curriculum. However, there are several concerns with this methodology. First, it means schools are encouraged to wait for students to fail before appropriate supports are provided. In addition, a deficit only model reinforces teachers to focus on deficits. Many instructional strategies focus on “fixing” the student and getting them back on grade level, or as close to it as possible. Both self-determination and positive psychology acknowledge and attend to student difficulties such as social-emotional and psychopathology concerns. However, they both attend to students’ strengths and empower students to use those strengths to not only meet expectations, but exceed expectations. Incorporating such a perspective within current instructional practices for students with learning disabilities and/or ADHD had the potential for establishing a better balance between a focus on “deficits” and a focus on “strengths.”

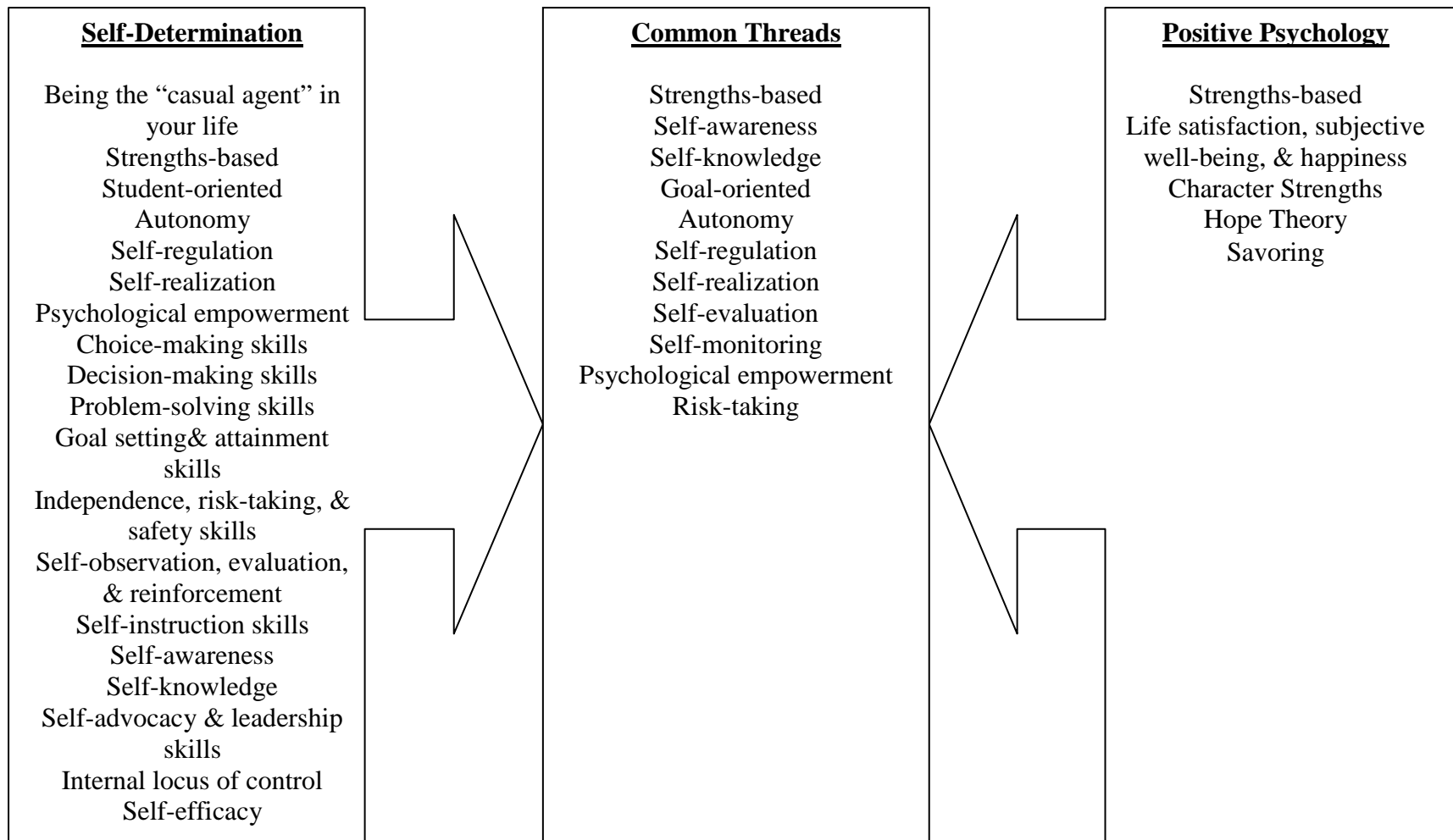


Figure 1. The common threads among the elements of self-determination and positive psychology.

## **The Intersection of Learning Disabilities, ADHD, Self-Determination, and Positive Psychology: The Personal Strengths Intervention (PSI)**

PSI which is developed and tested in this study includes elements from self-determination, positive psychology, and cognitive theories to improve self-determination and social-emotional levels for postsecondary students with learning disabilities and/or ADHD. Figure 2 illustrates the major components of PSI and their relationship with self-determination and positive psychology. Specifically, PSI seeks to increase self-knowledge and self-awareness by helping students identify character and learning strengths. Further, it is a student-directed intervention where students will decide weekly goals for incorporating and using their strengths in their everyday life and their college courses. Students will decide what content area, as defined by the courses they are taking, they will write their goal. Guided cognitive instruction methods, which are derived from cognitive strategy instruction and executive function coaching, will be used to help students gain the academic skills they need to achieve their goals. The goal setting and attainment process (a component of self-determination) will include elements of Hope Theory from positive psychology. Finally, students will engage in self-monitoring and evaluation when they reflectively examine why they were able to meet or not meet their weekly goal. Savoring techniques (positive psychology) will be used when goals are accomplished. Problem-solving skills (self-determination) will be used to determine why goals were not accomplished and how behavior and acts should be modified in the future in order to achieve goals. This includes self-regulation, self-monitoring, self-evaluation from self-determination and Hope Theory from positive psychology. The intent of PSI is to increase self-determination skills and positive affect experiences while decreasing

negative affect experiences. Based on the current development stage of PSI, it will not be investigated in relationship to academic achievement in this study. The course material participants will bring to intervention session will be used to create meaningful contexts for using personal strengths.

### **Summary**

Based on the research reviewed, the majority of interventions for students with learning disabilities and/or ADHD focus on remediating deficits. Teachers tend to view students from a deficit perspective and students suffer from increased levels of negative affect due to their experiences with academic and social-emotional difficulties and the focus on them. Many students with learning disabilities and/or ADHD experience success and higher levels of positive affect when engaged in extracurricular activities. It is in these activities where students get to focus on their strengths rather than their deficits (Bender, 2004; Reis et al., 1997). Much of the self-determination interventions do not make explicit use of emphasizing student strengths. In the reviews conducted, even when self-awareness was mentioned it was either not explicitly stated that students' strengths were the focus or explicitly stated that students were taught to compensate or cope with their weaknesses. PSI seeks to take the lessons learned from positive psychology and use a strength-based approach to improve both self-determination levels and positive affect.

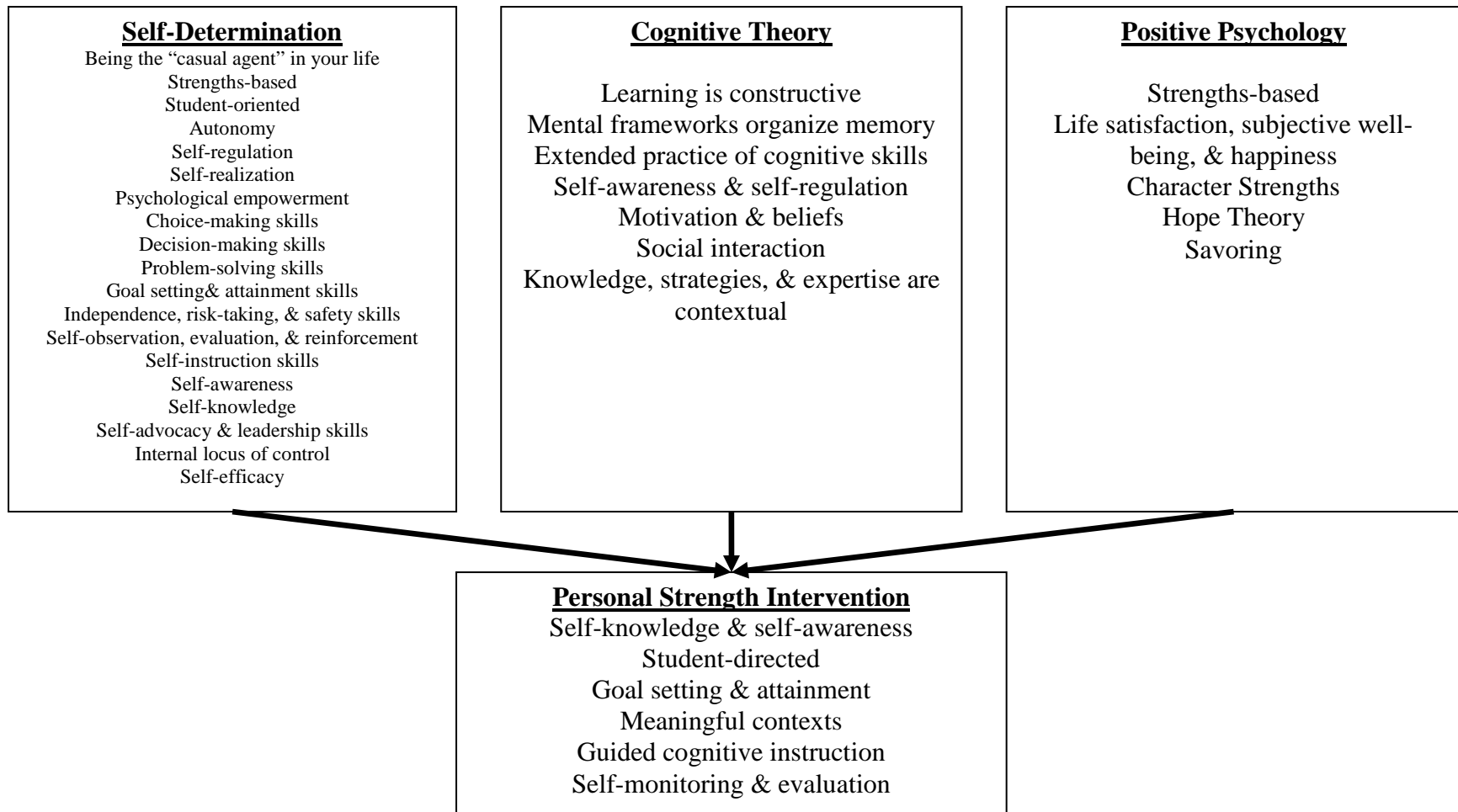


Figure 2. The relationship of the components of The Personal Strengths Intervention (PSI) to self-determination and positive psychology

## CHAPTER 3: METHODS

### **Introduction**

The purpose of this study was to develop The Personal Strengths Intervention (PSI) and investigate its impact on levels of self-determination and the social-emotional functioning of postsecondary students with learning disabilities and/or ADHD. The development of PSI included a review by researchers with expertise in self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD, which are the foundational anchors of the intervention. Additionally, PSI was piloted with two participants. The impact of PSI on self-determination and social-emotional levels was investigated using a multiple baseline research design. The social validity of PSI was examined through final interviews with the participants. Research questions for this study are provided below.

### **Research Questions**

1. To what extent does The Personal Strengths Intervention (PSI) incorporate identified elements of the literature bases on self-determination, positive psychology, and postsecondary students with learning disabilities and/or ADHD based on expert review?
2. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the self-determination levels of postsecondary students with learning disabilities and/or ADHD?



3. What, if any, is the impact of The Personal Strengths Intervention on the social-emotional outcomes for postsecondary students with learning disabilities and/or ADHD?

a. What is the impact of The Personal Strengths Intervention (PSI) on the life satisfaction level of students with learning disabilities and/or ADHD?

b. What is the impact of The Personal Strengths Intervention (PSI) on the positive and negative affect of students with learning disabilities and/or ADHD?

4. How do postsecondary students with learning disabilities and/or ADHD perceive The Personal Strengths Intervention (PSI)?

a. What portions of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the most beneficial?

b. What portions of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the least beneficial?

c. What, if anything, do postsecondary students with learning disabilities and/or ADHD feel needs to be added to The Personal Strengths Intervention (PSI)?

Since the first research question focuses on the development of PSI, a description of PSI is provided next. Then, the remainder of the chapter describes the study which investigated the impact of PSI on the self-determination and social-emotional levels of postsecondary students with learning disabilities and/or ADHD.

## **Part I - The Personal Strengths Intervention (PSI)**

The Personal Strengths Intervention (PSI) focuses on helping postsecondary students with learning disabilities and/or ADHD/ADD identify and learn to use their strengths in their everyday life in order to improve self-determination and social-emotional levels. It is anchored in self-determination, positive psychology, and cognitive theories. Students meet individually with the researcher once a week for approximately one hour for eight weeks. The sessions are designed to be interactive and responsive to each student's needs and are, therefore, not scripted.

### **Development of PSI**

PSI was created using an iterative process of development, review, and refinement. This included a theoretical grounding in the research literature on self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD/ADD, as well as an examination of validity and pilot testing.

**Theoretical grounding.** The initial conception of the intervention was based on the functional theory of self-determination (Wehmeyer, 2003a; 2003b), positive psychology (Snyder & Lopez, 2007), and cognitive theory (Bruning et al., 2004). A review of the literature on self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities was conducted. Key areas of self-determination, positive psychology, and postsecondary students with learning disabilities were identified from this review. The instructional/learning process components of the intervention were formatted using the effective practice literature for postsecondary students with learning disabilities. Researchers with expertise in learning disabilities,

intervention development, and research methodology were consulted throughout the review process to help direct the development of the intervention. Table 3 provides support from the literature base for the elements of PSI.

**Content and face validity.** Content validity is a systematic examination of an intervention to determine if specific elements of the construct(s) that are supposed to be included in the intervention are represented (Gall, Gall, & Borg, 2007). Face validity seeks to determine if an intervention appears to represent the construct it seeks to improve through a more subjective and general manner than content validity.

The content and face validity of PSI were examined by three experts. The experts were purposefully selected based on their knowledge and research within self-determination, positive psychology, or postsecondary students with learning disabilities. All the content experts are faculty members at universities. Their years of experience range from nine to 24 years in their respective areas. Experts were provided information on PSI and asked to respond to four questions about the content and face validity of the intervention (see Appendix A). The information provided to the content experts included: (1) a cover letter explaining the general purpose of PSI and how to respond to the content and face validity questions, (2) information on the theoretical basis for PSI, (3) a description of the intervention sessions, (4) a description of the interventionist's and participant's roles and responsibilities during PSI, and (5) a copy of the session notes used to document information from each session.

Results from the content expert review provided evidence of the content and face validity of PSI. The experts reported that it contains elements of self-determination, positive psychology, and effective practices for postsecondary students with learning

Table 3

*Evidence from the Literature for the Elements of The Personal Strengths Intervention (PSI)*

	Elements	Evidence from Literature
Anchors	Self-determination	Agran et al., 2002; Algozzine et al., 2001; Chambers et al., 2007; Hapner & Imel (2002); Konrad et al., 2007; Malian & Nevin, 2002; Palmer et al., 2004; Sarver, 2000; Wehmeyer & Palmer, 2003; Wehmeyer et al., 2000; Wehmeyer & Schwartz, 1997
	Positive psychology	Buchanan, 2008; Cooper, 2006; Diener, 2000; Diener et al., 2005; Gilman & Huebner, 2003; Huebner et al., 1999; Kirkcaldy et al., 2004; Lyubomirsky, 2008; McCullough & Huebner, 2003; Myers & Diener, 1995; Park & Peterson, 2006; Park et al, 2004; Peterson & Seligman, 2004; Seligman, 2002; Seligman et al., 2005; Short, 2007; Snyder & Lopez, 2007; Snyder et al., 2005
	Cognitive theory	Bruning et al., 2004; Hergenbahn, 2005; Pressley & Harris, 2006; Swanson, 2000; Wong et al., 2003
Areas	Strengths-based	Park & Peterson, 2006; Park et al., 2004; Peterson & Seligman, 2004; Seligman et al., 2005
	Student-directed	Field & Hoffman, 1994; Parker & Boutelle, 2009; Swartz et al., 2005; Wehmeyer et al., 2000
	Goal-oriented	Field & Hoffman, 1994; Palmer & Wehmeyer, 2003; Palmer et al., 2004; Snyder & Lopez, 2007; Snyder et al., 2005; Wehmeyer et al., 2000; Wehmeyer et al., 2004; West et al., 1995
	Guided cognitive instruction	Allsopp et al., 2005; Butler, 2002; Graham & Harris, 1989; Harris & Pressley, 1991; Minskoff & Allsopp, 2003; Pressley et al., 1995; Swanson, 2000; Wong et al., 2003
Components	Session topics	Allsopp et al., 2005; Anctil et al., 2008; Butler, 2002; Graham & Harris, 1989; Hadley, 2007; Hapner & Imel, 2002; Karvonen et al., 2004; Park & Peterson, 2006; Park & Peterson, 2008; Peterson & Seligman, 2004; Seligman et al., 2005; Wong et al., 2003
	Goal setting	Field & Hoffman, 1994; Palmer & Wehmeyer, 2003; Palmer et al., 2004; Snyder & Lopez, 2007; Snyder et al., 2005; Wehmeyer et al., 2000; Wehmeyer et al., 2004; West et al., 1995
	Planning to achieve	Field & Hoffman, 1994; Wehmeyer et al., 2000
	Monitoring of practice	Field & Hoffman, 1994; Harris & Pressley, 1991; Minskoff & Allsopp, 2003; Pressley et al., 1995; Wehmeyer et al., 2000; Wong et al., 2003
	Reflection on progress	Argan et al., 2002; Field & Hoffman, 1995; Lyubomirsky, 2008; Palmer et al., 2004; Seligman, 2002; Wehmeyer et al., 2000

disabilities and/or ADHD. In addition, they stated that it is reasonable to expect that PSI will improve outcomes for postsecondary students with learning disabilities and/or ADHD, such as self-determination and social-emotional levels. Specific strengths of the intervention cited by the reviewers include: (1) combination of self-determination and meta-cognitive practices; (2) integration a strengths perspective on self and learning goals; (3) use of specific, concrete, and manageable goal setting activities; and (4) the use of savoring.

The content experts included suggestions for improving PSI. One content expert suggested clarifying the qualities and skills required by someone implementing the intervention, providing more information on the types of savoring activities in which students will participate, and creating a stronger theoretical connection between school and daily life. Another content expert suggested that participants develop a long-term goal for the duration of the intervention and short-term goals (i.e., weekly) designed to assist them in accomplishing their long-term goal. Further, it was suggested that students should be taught how to appropriately set goals early in the intervention. In addition, one reviewer suggested that the meaningful contexts component of the intervention be extended to include a component that has students identify why the goals they set are meaningful to them. One content expert questioned how the savoring activities might be received by students with learning disabilities and/or ADHD as these activities may be new and contradictory to their typical behavior; therefore, she suggested that a cautious introduction to savoring activities be used.

**Pilot testing of PSI.** Pilot testing of PSI occurred during the fall of 2010. Pilot testing is an important component to intervention development as it allows researchers to

make adjustments to methods and interventions prior to using them with study participants. Pilot testing participants were asked to provide feedback on selected components of PSI. This feedback was used to revise the intervention.

PSI was pilot tested with two participants. Pilot Participant 1, an undergraduate student in his junior year, responded to a recruitment email, but did not meet study requirements as he has a diagnosis of bipolar disorder rather than a learning disability and/or ADHD. However, he was deemed suitable for the purposes of the pilot. Pilot Participant 1 experiences difficulty with memory retrieval. Pilot Participant 2, a doctoral student, was purposefully selected to participate in the pilot study due to his interest in and knowledge of postsecondary students with learning disabilities and/or ADHD. While he does not have an identified disability, he experiences difficulty with time management and task completion. The pilot test of the intervention was structured similarly to this study in that one participant began intervention sessions before the other. Specifically, Pilot Participant 1 completed three intervention sessions before Pilot Participant 2 began receiving intervention sessions. This allowed the researcher to examine how the study design schedule seemed to operate, to make changes to the intervention based on experiences with the first pilot participant, and explore the efficacy of those changes with the second pilot participant. Participants met individually with the researcher once a week for six weeks for approximately 45 minutes to an hour. Following the intervention sessions, each participant participated in a semi-structured interview to gain feedback about PSI (see Appendix B for interview questions).

Results from the interviews indicated that PSI was positively perceived and included appropriate activities for postsecondary students with learning disabilities and/or

ADHD. The strategies provided during the intervention sessions were perceived as the most beneficial aspect of the intervention. One participant felt the character strengths sessions were effective; however, the other participant felt these sessions were the least beneficial aspect of the intervention. His particular signature strengths were associated with spirituality, honesty, forgiveness, and citizenship. He responded that he had difficulty associating specific actions related to his signature strengths with his academic tasks. The closest association he made between his signature strengths and academics was to “hope and pray.” One participant suggested administering the Active Learner Student Questionnaire-II (ALSQ-II; see **Instruments part of PSI** section) at the beginning of the intervention rather than during the learning strengths sessions because some strategies provided during the initial sessions impacted how the participant responded to the ALSQ-II.

The researcher also used her personal experiences and observations during the pilot phase to note possible changes to the intervention. Three weeks of character strengths seemed repetitive, especially since character strengths continued to be part of the discussion in future sessions. Additionally, the researcher realized the intervention lacked emphasis on generalization of the skills and strategies learned during the intervention to the participants’ lives after the intervention. Lack of generalizing is a documented concern for students with disabilities (Ellis, Deshler, & Schumaker, 1989). During the piloting, the researcher also noticed that both students focused their efforts on one larger goal (i.e., creating a balance between school and personal life or task completion) and created smaller goals to help accomplish this larger one. This observation is consistent with one of the content expert’s suggestions to include both

long- and short-term goals in the intervention.

Based on the information from the content expert review and the pilot study, changes were made to PSI. These changes included: the administration of ALSQ-II during the first intervention session, deletion of the third character strengths session, addition of a session on generalization, inclusion of long- and short-term goals, and a statement by the participant regarding the meaningfulness of the goals. A detailed description of PSI as it was implemented in this study follows.

### **Detailed Description of PSI**

PSI incorporates components of self-determination, positive psychology, and cognitive strategy instruction in order to improve self-determination and social-emotional levels. PSI is anchored in self-determination, positive psychology, and cognitive theories (see Figure 3). Components of these theoretical *anchors* were selected and integrated into the intervention. These *key areas* include: a strength-based perspective, an emphasis on student-directed learning, goal setting, and guided cognitive instruction. PSI focuses on using students' strengths to achieve goals. It is student-directed because the student determines the nature of each session. However, this occurs within a structured process with scaffolded support from the interventionist. Specifically, the student is responsible for developing a goal to accomplish in relation to the session topic by incorporating the use of one or more strengths. The nature of both the student's goal and strengths are used to determine the types of strategies and behaviors that may need to be taught during each session. Strategies and behaviors necessary to successfully accomplish self-identified goals are taught using guided cognitive instruction. Guided cognitive instruction employs methods similar to cognitive strategy instruction and executive function coaching. Direct,



explicit instruction and purposeful questioning are used to help students identify the type of strategies and behaviors needed to achieve goals.

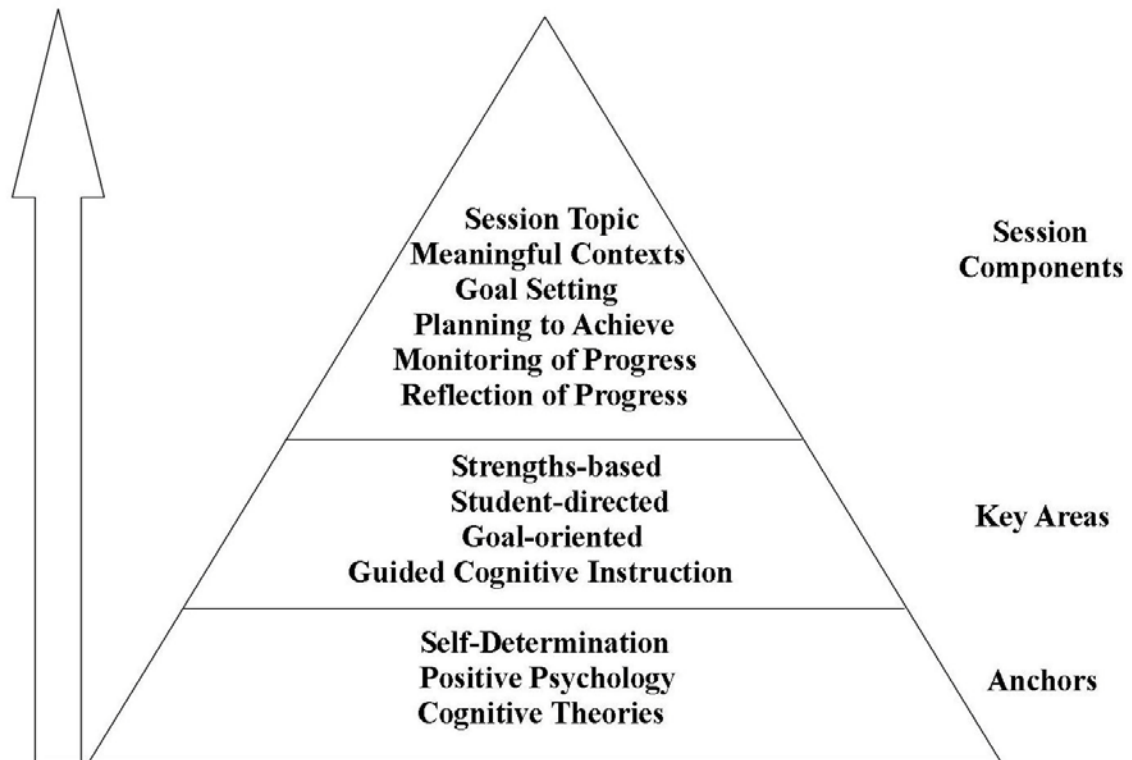


Figure 3. The Personal Strengths Intervention.

**Session components.** PSI is not a scripted intervention, but a process that is responsive to the student's needs, that emphasizes students' participation in decision-making, and that is systematic in nature. Each session is structured according to the following *session components*: (1) a *session topic*, (2) *meaningful contexts*, (3) *goal setting*, (4) *planning to achieve*, (5) *monitoring of progress*, and (6) *reflection on progress*. Table 4 provides a detailed description of the roles and responsibilities the interventionist and student have during an intervention session.

Table 4

*Description of Session Components and the Roles of Students and the Interventionist*

Session Components	Description	Students' Role	Interventionist's Role
Session Topic	<ul style="list-style-type: none"> <li>• Guide for goals and strategies discussed during each session</li> </ul>	<ul style="list-style-type: none"> <li>• Relate goal to the topic</li> </ul>	<ul style="list-style-type: none"> <li>• Identify appropriate session topics based on effective practices for postsecondary students with learning disabilities</li> <li>• Assist the participants in relating session activities to the topic</li> </ul>
Meaningful Contexts	<ul style="list-style-type: none"> <li>• Materials related to the courses participants are enrolled</li> </ul>	<ul style="list-style-type: none"> <li>• Identify courses they are enrolled and would like to focus on during sessions</li> <li>• Bring materials related to identified course(s) to intervention sessions</li> <li>• Relate session activities to the identified course(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Assist the participants in identifying a course/s and course material to bring to intervention sessions</li> <li>• Assist the participants in relating session activities to the identified course(s) through guided cognitive instruction</li> </ul>
Goal Setting	<ul style="list-style-type: none"> <li>• Practice of developing a goal related to the session topic and strengths of each participant</li> </ul>	<ul style="list-style-type: none"> <li>• Develop goal to accomplish during the week that is related to their strengths and the session topic</li> <li>• Revise goal as necessary to ensure its appropriateness (i.e., can be accomplished in one week, appropriate difficulty level for each individual, includes observable and measurable behaviors)</li> </ul>	<ul style="list-style-type: none"> <li>• Assist the participants with developing an appropriate goal through guided cognitive instruction</li> </ul>
Planning to Achieve	<ul style="list-style-type: none"> <li>• Specific plan of action that will allow the participants to achieve their identified goal during the week</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a plan to achieve their goal during the week</li> <li>• Revise plan as necessary to ensure its appropriateness (e.g., includes specific skills and strategies needed to achieve</li> </ul>	<ul style="list-style-type: none"> <li>• Assist participants with developing an appropriate plan of action through guided cognitive instruction</li> <li>• Teach skills and strategies need to achieve goal through explicit,</li> </ul>

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		goal, includes timeline for goal achieving behaviors)	systematic instruction
Monitoring of Progress	<ul style="list-style-type: none"> <li>• Plan to determine whether or not a goal was accomplished</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a plan to monitor whether or not a goal was accomplished</li> <li>• Revise monitoring plan as necessary to ensure its appropriateness (e.g., feasible for them to implement, clear criteria for whether goal was achieved)</li> <li>• Bring documents identified in the monitoring plan to the next session in order to determine whether or not the goal was achieved</li> </ul>	<ul style="list-style-type: none"> <li>• Assist participants with developing an appropriate monitoring plan through guided cognitive instruction</li> </ul>
Reflection of Progress	<ul style="list-style-type: none"> <li>• Review of whether a goal was accomplished or not</li> <li>• Participants who accomplish their goals will savor their successes</li> <li>• Participants who do not accomplish their goals will engage in problem-solving activities to identify why their goal was not accomplished and what they could do in the future to accomplish their goals</li> </ul>	<ul style="list-style-type: none"> <li>• Determine whether or not goal was accomplished according to monitoring plan</li> <li>• Savor successes</li> <li>• Problem-solve when goals are not achieved</li> </ul>	<ul style="list-style-type: none"> <li>• Assist participants in determining whether they met their goal or not</li> <li>• Assist participants in savoring activities when goals are accomplished by helping them identify savoring activities that are meaningful to them and using explicit, systematic instruction to teach savoring activities if needed</li> <li>• Assist participants in problem-solving activities when goals are not achieved through guided cognitive instruction</li> <li>• Use explicit, systematic instruction to teach any skills or strategies needed to achieve future goals that were identified during problem-solving activities</li> </ul>

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The *session topics* serve as a guide for the goals and strategies discussed during each session. Each session topic was selected based on the characteristics of successful postsecondary students with learning disabilities and/or ADHD (see Table 5). PSI includes session topics on: disabilities awareness, character strengths, learning strengths, assertive communication/negotiation skills, using feedback appropriately, and generalizing. The disabilities awareness topic focuses on what learning disabilities and/or ADHD are and are not, as well as investigating the students' own perceptions of their learning disability and/or ADHD. Realizing what a learning disability and/or ADHD actually is versus how it is typically stereotyped and knowing how it manifests can be an empowering experience for students, which can assist in it becoming a strength rather than a deficit. The next two sessions are on character strengths. Character strengths are personality traits that are morally valued, such as hope, leadership, and fairness (Peterson & Seligman, 2004). This topic will include identifying each student's signature strengths (i.e., top five character strengths) and learning how to incorporate them into daily life. The fourth and fifth sessions are on learning strengths. The learning strengths topic focuses on identifying the ways each student learns and developing strategies for using this knowledge in the classroom and daily life. The assertive communication/negotiation skills are the topic of the sixth session. This topic focuses on developing the communication skills needed for students to effectively discuss their accommodation needs with course instructors and Students with Disabilities Services (SDS). Using feedback appropriately, the topic of the seventh session, includes learning to use feedback provided on assignments to better future performance. Generalizing is the final session topic and focuses on creating a plan for how to continue to use the strategies the students

have learned during the intervention sessions in the future without the structure of the weekly intervention session meetings.

Table 5

*Session Topics and Evidence from the Literature*

Session Topic	Evidence from Literature
Disability awareness	Anctil et al., 2008; Hapner & Imel, 2002; Karvonen et al., 2004
Character strengths	Park & Peterson, 2006; Park & Peterson, 2008; Peterson & Seligman, 2004; Seligman et al., 2005
Learning strengths	Allsopp et al., 2005; Anctil et al., 2008; Wong et al., 2003
Assertive communication/negotiation skills	Butler, 2002; Hadley, 2007
Using feedback appropriately	Butler, 2002; Graham & Harris, 1989
Generalizing	Ellis, Deshler, & Schumaker, 1989

The session interventions are situated within *meaningful contexts* because each student is invited to bring work from one of the classes they are enrolled in to each session. Therefore, the intervention activities are completed within the context of the content from students' classes. For example, a student may decide to bring content from his/her College Algebra course to the session on disability awareness. After determining the difference between what a disability actually is versus what it is stereotyped to be, the student may create a goal to discuss his/her specific disability and how it affects his/her performance in class with the College Algebra instructor. In another example a student may bring the same content to a session on learning strengths. After identifying his/her learning strengths, the student would create a goal to use an identified learning strength

either during the College Algebra course or while completing assignments from it. This facilitates the development of meaningful connections between the intervention and each student's current academic experiences. Such connections have been shown to increase the effectiveness interventions for students with learning disabilities and/or ADHD (Field et al., 2003; Prevatt et al., 2005).

Another component within each session is *goal setting*. *Goal setting* is a component of self-determination (Field & Hoffman, 1994; Wehmeyer, 2003c) and positive psychology through Hope Theory (Snyder et al., 2005). *Goal setting* has been linked to increased levels of self-determination (Wehmeyer et al., 2000; West et al., 1995) and life satisfaction (Bronk et al., 2009). During each session a student identifies a goal that incorporates the session topic and his/her strengths. Then the student develops a goal that incorporates the session topic and his/her strengths to be achieved prior to the next intervention session. The developed goals: (1) are of appropriate difficulty, (2) can be accomplished in the available timeframe, and (3) contain both observable and measurable behaviors. An example of a possible goal is, "I will use my strengths in organizational skills to help me study for an exam in my College Algebra course by organizing my notes in a meaningful way and creating a study plan to ensure I study throughout the week rather than the night before."

*Planning to achieve* includes creating an action plan to achieve the goal set by each student during the session. This is where students, with assistance from the interventionist using guided cognitive instruction, identify specific strategies and behaviors needed to accomplish their goal. The plan is concrete in nature and suggests various options for behaviors and strategies to use. Specifically, students, with support

from the interventionist, create a set of steps and actions that will allow them to achieve their goal during the week. For example, if a student's goal is to prepare for an upcoming exam using organizational strengths then the plan to achieve the goal would include specific steps the student would take to use organizational skills when studying for the exam. This might include using a planner to schedule specific study tasks, as well as creating effective graphic organizers for test content. Creating plans to accomplish goals is another element of both self-determination (Field & Hoffman, 1994; Wehmeyer, 2003c) and Hope Theory (Snyder et al., 2005).

*Monitoring of progress* is the fifth component of PSI. During this component students create and implement a plan to monitor whether or not they met their goal. This is created during one session and reviewed during the following session. For example, a student may decide they must complete all the steps in the *Planning to Achieve* component and earn a passing grade on an assignment in order to consider their goal accomplished. Another student may decide to complete four out of five steps in the *Planning to Achieve* component and earn a B or better on an assignment. In addition, students identify the documents they will bring to the next session in order to determine whether or not they have met their goal. Continuing with the example from above where a student is using organizational strengths to prepare for an exam, the student may decide to bring in his/her study schedule with completed tasks indicated and any graphic organizers created. This component encourages self-regulated learning, an element of self-determination, (Wehmeyer, 2003c) and pathways and agency thinking from Hope Theory (Snyder et al. 2005). An emphasis on developing self-monitoring skills is an effective practice for students with learning disabilities and/or ADHD because it helps

them to build metacognitive awareness, a common area of difficulty for these students (Reid, 1996).

The final component of PSI is *reflection on progress*. Students will determine whether or not they accomplished their goal based on their monitoring plan. During the reflection component, successes are savored. Savoring has been shown to increase overall life satisfaction (Seligman, 2002). Savoring is the act of living in the moment and the conscious attention to experiences of pleasure. There are four types of savoring: basking (e.g., receiving praise), thanksgiving (e.g., gratitude), marveling (e.g., being lost in the moment), and luxuriating (e.g., indulging the senses). One can savor past, present, and future events (Lyubomirsky, 2008). Students who do not achieve their goals engage in problem-solving to determine why the goal was not accomplished and how their strengths could be applied to help them accomplish their goals in the future.

**Session activities.** PSI includes eight sessions focusing on learning disabilities awareness and/or ADHD; character strengths; learning strengths; assertive communication and negotiation skills; using feedback appropriately; and generalizing. Table 6 provides an outline of each session's activities. Sessions are designed to be conducted on a one-on-one basis and be approximately one hour long. It is expected that students will meet with the interventionist weekly. PSI is student-directed and responsive to their needs. The students are responsible for developing and refining goals and activities for each session component. The interventionist assists and guides students in this development and refinement process using guided cognitive instruction (see Table 4).



Table 6

*Session Topics and Activities*

Session	Topic	Activity
1	Disability Awareness	<p>Student takes the Active Learner Student Questionnaire II (ALSQ-II). It is a 70-item instrument. It explores learning strengths in four areas: organization, reading, writing, and advanced thinking. Students respond to each item either: Y for <b>yes</b> if the statement always applies to them; S for <b>sometimes</b> if the statement sometimes applies to them; or N for <b>no</b> if the statement never applies to them. Sample items include: (a) I use a planner or calendar effectively; (b) I know how to organize information from books and notes in a way that helps me to learn; and (c) I understand the overall ideas when I read material for my classes. The results will be reviewed during Session 4.</p> <p>Students create a metaphor of what learning disabilities and/or ADHD mean to them currently. Discussion between student and interventionist about what learning disabilities and/or ADHD means to them vs. what learning disabilities and/or ADHD are occur. Interventionist teaches students about how to appropriately set a goal. Students select and develop a goal to help them apply what they have learned about learning disabilities and/or ADHD. Interventionist helps assist students in goal writing and developing a plan for achieving it.</p>
2	Introduction to Character Strengths	<p>Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. The participant takes the Values in Action (VIA). The VIA is a 240 item instrument which uses a 5-point Likert type scale (1 = “not like me at all”; 5 = “very much like me”) to measure the degree to which participants endorse each of the 24 character strengths. Results identify each student’s signature strengths (i.e., top five character strengths). It takes approximately 30 to 40 minutes to complete, but can be taken with breaks or over several sessions. Sample items include: (a) I make decisions only when I have all the facts; (b) I finish things despite obstacles in the way; and (c) I am proud</p>

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		to say that I am an ordinary person. Due to the length of the instrument, results are reviewed briefly. Students create a goal for how to use the results of the VIA in their everyday life. For example, students may brainstorm possible ways to incorporate their signature strengths in their daily routines. Interventionist assists with the goal writing and helps develop a plan for achieving it.
3	Character Strengths	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. Students select a signature strength/s and create a goal for incorporating it into their daily life over the next week. Interventionist assists with the goal writing and helps develop a plan for achieving it.
4	Introduction to Learning Strengths	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. The results from the ALSQ-II (administered during Session I) are reviewed. Students reflect on a time when they learned something well outside of school. Students select a learning strength and create a goal for how to incorporate it into their coursework during the next week. Interventionist assists with the goal writing and helps develop a plan for achieving it.
5	Learning Strengths	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. Students reflect on a time when they learned something well inside school. Students select a different learning strength from the previous week and create a goal for how to incorporate it into their coursework during the next week. Interventionist assists with the goal writing and helps develop a plan for achieving it.
6	Assertive Communication/ Negotiation Skills	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. Students create a goal for incorporating appropriate

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		assertive communication/negotiation skills from the session into their daily life over the next week. Interventionist assists with the goal writing and helps develop a plan for achieving it.
7	Using Feedback Appropriately	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. Students bring in an example of feedback they have received in their coursework. They create a goal for using the feedback appropriately in improving their work. Interventionist assists with the goal writing and helps develop a plan for achieving it.
8	Generalizing	Students and interventionist review goal from previous week and discuss why it was or was not obtained. Successes are savored. Students are encouraged to problem-solve when goals are not accomplished. Students create a plan for how they will continue to use the strategies learned during the intervention in the future outside the structure of the intervention sessions. Interventionist assists with the development of the plan and teaches any additional strategies needed to implement the plan.

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**Instruments part of PSI.** There are two instruments that are administered as part of PSI – the Active Learner Student Questionnaire II (ALSQ-II) and the Values in Action Inventory of Strengths (VIA-IS). The ALSQ-II is administered during the first intervention session. It is utilized to help determine students’ learning strengths. The VIA-IS is administered during the second intervention session in order to determine students’ signature strengths.

*Active Learner Student Questionnaire II (ALSQ-II).* The learning strengths of each student are identified using the Active Learner Student Questionnaire II (ALSQ-II; Appendix C). The questionnaire was adapted with permission from the Active Learner Student Questionnaire (Minskoff & Allsopp, 2003) specifically for this study.

Adaptations consisted of wording changes to reflect a strength perspective versus a deficit perspective. For example, “I don’t use a planner or calendar” was rewritten to say, “I use a planner or calendar effectively.” It is a 70-item instrument that explores learning strengths in four areas: organization, general learning, reading, and writing. Students respond to each item either: Y for **yes** if the statement always applies to them; S for **sometimes** if the statement sometimes applies to them; or N for **no** if the statement never applies to them.

The Active Learner Student Questionnaire (Minskoff & Allsopp, 2003) was developed using a multi-step process (D. H. Allsopp, personal communication, June 2, 2010). The researchers first conducted a review of literature to identify the factors that were associated with success at the postsecondary level for students generally and students with learning disabilities and/or ADHD specifically. From this information they generated a list of areas of learning that seemed to be most important to the success of students with learning disabilities and/or ADHD such as study skills (i.e., general study skills, organization, identifying resources, note taking, and test taking), computer skills, reading, and writing. Next, students were interviewed about how they learned in each of these areas. These interviews allowed Minskoff and Allsopp to identify key areas of learning difficulties for each student. These key areas were then collapsed into common areas of learning difficulty. Items for each common area of learning difficulty were written using student language. The Active Learner Student Questionnaire was then field-tested with college and high school students with learning disabilities and/or ADHD. As part of the field testing, students were asked if the results were beneficial to them. The researchers also gathered feedback from the students’ teachers to see if they felt the

instrument yielded useful information. Wording changes were made to items based on student suggestions. The Active Learner Student Questionnaire was then field-tested to see if it identified areas of learning needs. Students completed the inventory and their areas of learning difficulties were identified. Students, their special education teachers (or graduate students working with college students with learning disabilities), and their general education teachers or college professors were asked if they felt the instrument correctly identified areas of need for each student.

*Piloting of the Active Learner Student Questionnaire-II (ALSQ-II).* The ALSQ-II, which is used in this study, was piloted tested in two phases with a total of seven participants. Six of the seven participants were purposefully selected based on their knowledge of either instrument/survey development and measurement concerns or students with learning disabilities and/or ADHD. The remaining participant responded to a recruitment email for the study, but did not officially meet criteria to participate due to his diagnosis of bipolar disorder rather than a learning disability and/or ADHD. However, since he experienced difficulty with memory retrieval he was invited to participate in the pilot testing of PSI and thus completed the ALSQ-II as part of the pilot testing of the intervention and provided feedback on it. Table 7 provides details about the changes made to the ALSQ-II during phase one and two of the piloting.

During the first phase the ALSQ-II was reviewed by three graduate students with expertise in instrument/survey development and measurement concerns. Participants were provided a copy of the ALSQ-II and asked to review it for measurement concerns. They were then asked to provide feedback on five questions related to the clarity and appropriateness of the items and answer choices (see Appendix D). Overall, participants

believed the ALSQ-II reflected learner strengths. The answer choices were considered appropriate; however, it was suggested that they be in bold font. All participants commented that the placement of adverbs made some questions confusing. For example, participants questioned whether the item, “I stay focused when I study regularly,” meant students maintain focus while studying or that they are able to focus only when they studied regularly. Participants also questioned the meaning of the some qualifying words such as “successfully” in items which focused on test taking skills, and “well” in the item, “I write paragraphs well.” It was reported that the mathematics items were double-barreled. It was also suggested that the *Advanced Thinking* section be renamed and move the items closer to the *Organization* section. Participants also suggested additional items be added to the ALSQ-II to include learning strengths reflective of learning modalities, learning by details versus big ideas, and independent versus group learning. This information resulted in 10 items being reworded, 10 items added to the instrument, the two double-barreled mathematics items rewritten as four items, and the *Advanced Thinking* section being renamed as *General Learning* and moved to after the *Organization* section.

During the second pilot test phase for the ALSQ-II, the revised ALSQ-II was pilot tested with three graduate students with knowledge of students with learning disabilities and/or ADHD (one of which participated in the pilot test of PSI) and one undergraduate student with a disability who participated in the pilot test of PSI. In this phase participants completed the ALSQ-II and completed a cognitive interview about the items (see Appendix D). The two graduate students who did not participate in the pilot test of the intervention reported that the revised ALSQ-II had clearly worded items, appropriate

answer choices, reflected learner strengths, and no changes needed to be made to the instrument. The students who participated in the pilot study of PSI indicated they thought the revised ALSQ-II reflected learner strengths and was able to identify their learning strengths. One participant believed the answer choices were appropriate while the other recommended a five-point scale. Both participants indicated that the mathematics section included items required for college entrance and did not provide additional information to the overall purpose of the ALSQ-II. The participants did indicate that some items needed rewording. One participant felt the item, “I do not get extremely nervous when I take tests,” was worded negatively and, therefore, was not consistent with the intent of the instrument. One participant indicated that the item, “I keep an organized, separate notebook for each class,” should be updated to include digital notebooks. In addition, it was suggested that the item, “I learn successfully when new information is presented visually,” should delineate between visual representation of text and graphics. The participants indicated some additional items should be added to the ALSQ-II. Both participants felt it would be helpful if the instrument contained items that examined if students use strategies to assist them in school related tasks. For example, it was suggested to add an item that indicated whether or not student had skills needed to figure out unknown words when reading rather than just whether or not they understand difficult words when they read. Similar suggestions included whether students have a system to assist them with proofreading such as a friend, if they are able to brainstorm ideas for writing, understand the structure of an essay, and understand sentence structure. General recommendations included varying the sentence structure of items to avoid sounding repetitive and deleting section headings.

Table 7

*Changes Made to the Active Learner Student Questionnaire II (ALSQ-II)*

Original ALSQ-II	Revised ALSQ-II (After Phase 1 Piloting)	Final ALSQ-II (After Phase 2 Piloting)
<ul style="list-style-type: none"> <li>• I set appropriate goals for myself regularly.</li> </ul>	<ul style="list-style-type: none"> <li>• I set appropriate goals for myself.</li> </ul>	
<ul style="list-style-type: none"> <li>• I bring items I need to class regularly.</li> <li>• I do not get extremely nervous when I take a test.</li> </ul>	<ul style="list-style-type: none"> <li>• I bring items I need to class.</li> </ul>	<ul style="list-style-type: none"> <li>• My nervousness does not affect my ability to perform well on tests.</li> </ul>
<ul style="list-style-type: none"> <li>• I complete tests on time regularly.</li> </ul>	<ul style="list-style-type: none"> <li>• I complete tests on time.</li> </ul>	
<ul style="list-style-type: none"> <li>• I understand multiple-choice questions successfully.</li> </ul>	<ul style="list-style-type: none"> <li>• I typically answer multiple-choice questions correctly.</li> </ul>	
<ul style="list-style-type: none"> <li>• I successfully complete true/false tests.</li> </ul>	<ul style="list-style-type: none"> <li>• I typically answer true/false questions correctly.</li> </ul>	
<ul style="list-style-type: none"> <li>• I successfully complete essay tests.</li> </ul>	<ul style="list-style-type: none"> <li>• I usually perform well on essay tests.</li> </ul>	
<ul style="list-style-type: none"> <li>• I stay focused when I study regularly.</li> </ul>	<ul style="list-style-type: none"> <li>• I stay focused regularly when I study.</li> </ul>	
<ul style="list-style-type: none"> <li>• My notes are organized and easy to understand.</li> </ul>	<ul style="list-style-type: none"> <li>• The notes I take are organized and easy to understand.</li> </ul>	
<ul style="list-style-type: none"> <li>• I understand what I read from a computer screen.</li> </ul>	<ul style="list-style-type: none"> <li>• I understand what I read from a computer screen or projector screen.</li> </ul>	
<ul style="list-style-type: none"> <li>• I write paragraphs well.</li> </ul>	<ul style="list-style-type: none"> <li>• I write paragraphs with clear topic sentences and appropriate supporting details.</li> </ul>	



- I can calculate answers to problems with whole numbers or fractions using addition, subtraction, multiplication, and division.
- I am able to solve word or story problems with whole numbers or fractions correctly.

- I can calculate answers to problems with **whole numbers** using addition, subtraction, multiplication, and division.
- I can calculate answers to problems with **fractions** using addition, subtraction, multiplication, and division.
- I am able to solve word or story problems with **whole numbers** correctly.
- I am able to solve word or story problems with **fractions** correctly.
- I learn successfully when the “big picture” is explained first and the small details are explained second.
- I learn successfully when the small details are explained first and the “big picture” is explained second.
- I learn successfully when I get to work with others.
- I learn successfully when I get to work independently.
- I learn successfully when I present information to others.
- I learn successfully when I discuss new information.
- I learn successfully when I participate in hands-on activities.
- I learn new information successfully through problem-solving activities.
- I learn successfully when new information is presented visually.
- I learn successfully when new information is presented orally.

- All mathematics items removed
- I learn successfully when new information is presented visually through the use of pictures, figures, charts, or other graphics.
- I learn successfully when new information is presented through the use of text/print.

- *Advanced Thinking*

- Renamed *General Learning*
  - Items moved to follow the *Organization* section
- 

- When I am reading and encounter a difficult or unknown word I know how to figure out its meaning.
- I know what aids I need to use to help me to learn.
- I know what aids I need to use when I write to help me.
- I brainstorm ideas prior to writing.
- I have someone else read my writing to help me proofread my work.

Based on this information changes were made to the revised ALSQ-II. Table 7 details the changes made. The item, “I do not get extremely nervous when I take a test,” was rewritten to state, “My nervousness does not affect my ability to perform well on tests.” The item, “I learn successfully when new information is presented visually,” was rewritten as two items to delineate between information presented through text and that which is presented through pictures, figures, charts, and other graphics. The items in the mathematics section were deleted. Items were added to reflect the use of strategies related to learning tasks. Section headings were not removed because when they were removed the instrument became a long list of questions that appeared overwhelming.

*Values in Action Inventory of Strengths (VIA-IS).* Character strengths were identified as part of PSI using the Values in Action Inventory of Strengths (VIA-IS; Peterson & Seligman, 2005). The VIA-IS is a 240 item instrument which uses a 5-point Likert type scale (1 = “not like me at all”; 5 = “very much like me”) to measure the degree to which participants endorse each of the 24 character strengths. It takes approximately 30 to 40 minutes to complete, but can be taken with breaks or over several sessions. The VIA-IS is administered online (<http://www.viasurvey.org/>), and sample items are provided in Appendix E. Scores are created by averaging responses within character strengths, with higher scores indicating greater levels of strength. Respondents are provided with their top five character strengths, or signature strengths.

The VIA-IS was developed through a multi-step process (Peterson & Seligman, 2004). Items were generated by the instrument authors and piloted with 250 adults. Items that correlated poorly with the scale were replaced and the instrument was piloted again. This process continued until all internal consistencies were greater than .70. There are 10

items per character strength with three items reverse scored. The VIA-IS has been administered in 175 different nations by over 150,000 adults. Alphas for all scales are greater than .70 and test-retest reliability over four months was greater than .70 for all scales. Permission to use the instrument was provided by the authors.

**Duration of PSI.** PSI is eight weeks long with each session lasting for approximately one hour. The length of PSI was determined based on several factors including session topics, previous research, and minimizing threats to internal validity. PSI includes six session topics provided in Table 5. PSI is expected to include approximately eight hours of intervention implementation, which is consistent with large effect sizes in self-determination literature and longer than interventions in positive psychology which have maintained effects over time (Algozzine et al. 2001; Seligman et al. 2005). Algozzine and colleagues (2001) in their review of self-determination research indicated that interventions with as few as five hours have lead to statistically significant outcomes. Large effect sizes were found in studies as short as six weeks and those with seven to eight hours of intervention implementation. Seligman and colleagues (2005) implemented interventions over a one-week period and found that improvements to happiness and depression levels were maintained for six months using the *Using Signature Strengths in a New Way* intervention which focuses on using a person's signature strengths (i.e., top five character strengths). In addition, threats to internal validity were also considered when the duration of PSI was determined. An eight-week intervention can be completed during the course of one semester while still allowing for baseline data to be collected. This will minimize potential impacts that a semester break may cause to the intervention, thus helping to preserve internal validity.

**Administration of PSI.** The intervention is administered individually to each student on a weekly basis. Students have the opportunity to decide if they wanted to meet once or twice during the week. This is because results from previous studies utilizing methods similar to the components of PSI (i.e., Parker & Boutelle, 2009; Swartz et al., 2005), found that some students with learning disabilities and/or ADHD indicated meeting more than once a week was beneficial to them gaining the skills on which the intervention focuses. Since PSI seeks to increase self-determination and is student-directed, it is important that the students are able to choose the level of support they feel is necessary for them to be successful while still encouraging independence.

For this study, most participants met once a week with the researcher for approximately one hour. One participant, Greg, met with the researcher twice a week. Participants were able to select the location they felt comfortable meeting. Most participants met with the researcher in the College of Education. The two participants who were student-athletes met with the researcher in the Athletics Building. All meetings, regardless of location, were held in quiet rooms/offices on an individual basis.

**Fidelity checks.** In order to ensure PSI is implemented as intended, fidelity checks are conducted throughout the intervention using the Fidelity Checklist located in Appendix F. Fidelity checks are completed using session notes rather than observing the intervention directly in order to create a minimal disruption in the intervention process. Because PSI is administered individually and many students with learning disabilities and/or ADHD demonstrate lower self-concepts (Elbaum & Vaughn, 2003), another person in the room during the intervention may cause students to be uncomfortable and this is counter to the intent of the intervention. Because the session notes are structured

according to the six intervention components (i.e., *session topic, meaningful contexts, goal setting, planning to achieve, monitoring of progress, and reflection on progress*) reviewers have appropriate structure to determine the extent to which sessions addressed each intervention component.

For the purposes of this study, the Fidelity Checklists were completed using a random selection of 25% ( $n = 14$ ) of the session notes by three graduate students who were trained by the researcher. Training consisted of an overview of PSI (including its purpose, core components, and session topics) and of the Fidelity Checklists.

Additionally, the reviewers completed a Fidelity Checklist on a selected session note independently and reviewed responses with each other and the researcher. Discrepancies were discussed, and reviewers had an opportunity to ask clarifying questions. Each selected session was reviewed independently by two raters. Inter-rater agreement for the fidelity checks was 93%. Results of the fidelity checks indicate PSI was implemented with fidelity.

## **Part II - Research Design**

The second part of this chapter describes the research design used to investigate the impact of PSI on the self-determination and social-emotional levels of postsecondary students with learning disabilities and/or ADHD. This study utilized a multiple baseline design to evaluate the implementation of PSI. Multiple baseline designs are part of single-case research (Kazdin, 1982). Single-case research is an experimental research design that is conducted with one case (e.g., single participant or a group treated as one). Single-case designs include several unique features that distinguish it from group designs. In single-case research the focus of a study is on data at an individual case level (e.g., the

participant) rather than at the group level. It also typically includes baseline and treatment phases. During the baseline phase data are collected prior to the implementation of the intervention to determine how the individual case, or in this study each participant, has been functioning on an outcome variable. During the treatment phase an intervention is implemented which is expected to impact the outcome variable. Another unique feature of single-case designs is the repeated measurement of outcome variables over time. Throughout the baseline and treatment phases data are collected at multiple points in time. Multiple baseline designs include all these features, but include multiple cases with different baseline phase lengths so the intervention is implemented at different times for the cases. This is often seen as preferable to more traditional single-case designs because the staggered implementation of the treatment phases adds to the internal validity by providing evidence that any treatment effects are due to the implementation of the intervention and not by other variables such as maturation (Barlow, Nock, & Hersen, 2009).

The unique features of single-case designs, including multiple baselines, create several strengths that make them particularly useful in the development of educational interventions. For example, single-case designs allow for the investigation of intervention effects at the individual level (Kazdin, 1982). This is accomplished when researchers compare an individual's typical performance (i.e., baseline) to his/her performance after the implementation of an intervention (i.e., treatment). Therefore, the individual effects are not lost within the mean scores of group designs. This is particularly useful for special education research because individual differences are often a concern (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005). Another feature of single-case designs, repeated

data collection, allows researchers investigate the intervention effects over time rather than at a single time point, which strengthens the external validity of the study (Barlow et al., 2009). The ability to examine intervention effects over time is particularly useful when developing an intervention because it strengthens the argument that an intervention is operating in a particular manner for various individuals (Horner et al., 2005). This is particularly important in special education research where individuals within a study may represent a variety of needs. Knowing how the intervention operates over time with various individuals allows a researcher to state the effect of an intervention more conclusively or make changes to the intervention to make it effective for more students. Finally, single-case designs can help to bridge the research to practice gap. This is because the design provides opportunity for interventions to be implemented in similar manners as they would in the classroom thereby increasing their relevance for use in schools (Horner et al., 2005).

A multiple baseline research design was selected for this study because of these strengths. This study included fixed baseline and intervention phase lengths. This decision was made because the purpose of this study is to develop and implement an intervention that has a fixed length. Further, defining the baseline phase length prior to the beginning of the study ensures that the study will be completed within one semester. This increases the internal validity of the study by minimizing external factors (e.g., semester breaks) that may impact the dependent variables (e.g., social-emotional levels).

In this study, the beginning of the treatment phases were staggered in keeping with a multiple baseline design. Study participants were randomly assigned to begin receiving the intervention during one of two weeks during the study which corresponded



with one of two baseline phase lengths. This resulted in a shorter baseline phase for one group (i.e., 7 or 8 time points) and a longer baseline phase for the second group (i.e., 19 time points). The differences in baseline phase lengths for the shorter baseline group were due to when each participant met with the researcher during the first week of the study. For example, participants who met with the researcher earlier in the week had baseline phase lengths of 7 while participants who met with the researcher later in the week had baseline phase lengths of 8. Traditionally in multiple baseline studies each participant is assigned to a different baseline phase length; however, it is not uncommon for single-case studies with larger sample sizes (e.g.,  $N > 6$ ) to assign two or more participants to the same baseline phase length (Barlow et al., 2009). Random assignment of participants to baseline phase lengths strengthens a study's internal validity (Edgington, 1980) because, like random assignment to control and treatment groups, it helps to ensure that intervention effects are due to the intervention itself rather than extraneous factors. Time series data were collected throughout the study as is customary with multiple baseline studies; however, data were also collected pre-, mid-, and post-intervention. The two baseline phase lengths allowed the mid-intervention assessments to be administered with one group of participants having completed three intervention sessions and one group still in baseline. Therefore, for this study the time series lengths ranged from 31 to 43 for the shorter baseline group (i.e., 7 or 8 time points) and 45 to 46 for the longer baseline group (i.e., 19 time points) Table 8 provides information on the specific baseline and treatment phase lengths for each participant.

Table 8

*Baseline and Treatment Phase Lengths by Individual Participant*

Participant	Baseline Phase Length	Missing Baseline Time Points	Treatment Phase Length	Missing Treatment Time Points	Total Time Series Length Attempted	Total Times Series Length Collected
Hannah	7	1	24	10	31	20
Greg	8	0	23	1	31	30
Gabriella	7	0	36	0	43	43
Max	7	1	27	6	34	27
Toby	8	1	29	8	37	28
Sarah	19	0	27	0	46	46
Kim	19	0	26	3	45	42

**Sampling**

Participants were college students with learning disabilities and/or ADHD recruited from the Students with Disabilities Services (SDS) office at the University of South Florida and through emails to university instructors with who were likely to have students with disabilities in their classes. Instructors for common undergraduate courses (e.g., College Algebra, English I), instructors for common courses within the College of Education (e.g., Measurement for Teachers), and the academic advisors within the Athletics Department were targeted for recruitment emails. In January 2010 SDS served approximately 610 students with 217 (35.6%) students being identified with a learning disability. In order to receive services from SDS for a learning disability, students must provide results from more than one assessment instrument - typically assessments on aptitude (IQ), achievement, and information processing - conducted during the last three years (see Appendix G). The written report provided to SDS must include the actual test scores, clear evidence of a learning disability, a diagnostic interview, how the disability

impacts major life activity and functioning in an academic setting, and a history of accommodations. The documentation guidelines for students to receive services for ADHD from SDS are similar to those for students with learning disabilities with the exception that students must provide evidence of meeting diagnostic criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV) or *The International Classification of Diseases* (ICD) diagnosis and include all checklists, interviews, and observations used to identify the ADHD (see Appendix H).

Recruitment of participants took place during the fall of 2010. Potential participants were recruited for the study during in-take interviews at SDS and through emails about the study distributed by the director of SDS and instructors of the targeted courses and programs. Students who were interested in participating in the study contacted the researcher, who provided additional study details.

The recruitment plan extended an invitation to participate in the study to the first 10 college students with learning disabilities and/or ADHD who were eligible for participation in the study. To be eligible for participation participants must have met the following requirements: (1) demonstrated evidence of a learning disability and/or ADHD based on information contained within the documentation provided to SDS, (2) were willing to meet with the researcher once a week during the spring semester, and (3) had a cell phone and was willing to receive and send text messages with the researcher or check their email account on a daily basis in order to correspond with the researcher (see **Instruments** section for more information). One participant withdrew from the study shortly after consenting to participate and completing the pre-assessments. This was during the recruitment phase of the study; therefore, an additional eleventh participant

was recruited to maintain the study enrollment at 10 participants. Participants were randomly assigned to one of the two baseline lengths as they enrolled in the study with the criteria of no more than five participants per baseline.

### **Participants**

Overall 11 postsecondary students with learning disabilities and/or ADHD initially consented to participate in the study and completed the pre-assessments. One participant withdrew from the study prior to the collection of baseline data due to a family emergency. Another participant withdrew from the University and, subsequently, from the study during the baseline phase. Two participants withdrew during the intervention phase – one after two intervention sessions and one after four intervention sessions because they no longer wanted to participate in the study. This resulted in seven participants who completed the study. Five of these participants were randomly assigned to the shorter baseline phase length, and two were assigned to the longer baseline phase length.

The participants of this study represented a broad range of college students with learning disabilities and/or ADHD. Five of the participants were undergraduates and two were graduate students. Two of the five undergraduate students were traditional college age and three were non-traditional age students. The non-traditional age students all had careers prior to working on their degrees and had attended more than one college or university. The traditional age undergraduate students were both student-athletes who played high profile sports. One of the graduate students was working towards a master's degree while the other was a doctoral candidate. Students' major areas of study included: education, anthropology, business, psychology, and criminology. Descriptions of

individual participants' disabilities and academic performance follow. The descriptions were approved by participants to ensure accuracy and verify that information provided does not compromise confidentiality.

**Hannah.** Hannah was diagnosed with ADHD, Predominately the Inattentive Type, in the summer of 2010. She remembers experiencing difficulties with attention and focus as young as five or six years old. She reported having particular difficulties listening to and following conversations. Hannah described her experiences as feeling like she was “not really there” most of the time. She stated that about five years ago the manifestation of her disability became an issue in her relationship. Her partner became frustrated with her inability to remember or follow conversations. In addition, she began to struggle more in school. She reported spending her time in class focusing on the size of the projector screen, seating arrangements, and the people in class rather than the instructor.

According to the documentation provided to SDS, Hannah's disability substantially impacts her ability to concentrate and think. It moderately impacts her ability to communicate, learn, read, and work. She has substantial issues with memory and organization and moderate issues with cognitive processing, processing speed, meeting deadlines, reasoning, and stress. She specifically experiences difficulty remembering auditory and written instructions. Hannah currently receives accommodations for testing in a quiet area and additional time on tests; however, it was suggested by her psychologist that she also receive instruction in effective study techniques and organizational skills. A review of her transcripts indicates her academic performance varies by semester. During some semesters (usually when taking one or two

classes), she earns average to above average grades. When she takes three or more classes, she tends to earn below average or incomplete grades.

**Greg.** Greg was diagnosed with ADHD, Combined Type in elementary school. He remembers having difficulty with focusing and feeling “jittery”. He would often daydream in class. He experiences difficulty with organization, follow-through, and short-term memory, as well as reading comprehension and spelling. Greg reports that when he is interested in a task he is able to focus for extended periods of time. He reported receiving special education services in a resource room while in elementary school. Once in middle school, his parents terminated his special education services because Greg did not like the social stigma associated with being in the resource room and wanted to take “regular” classes with his friends.

According to the documentation provided to SDS, Greg’s disability substantially impacts his ability to concentrate, learn, read, and manage time wisely. It moderately impacts his ability to communicate, work, and with manual tasks. He has substantial issues with time management, organization, and stress. He has moderate issues with cognitive processing, processing speed, meeting deadlines, attending class, reasoning, and sleep. Greg currently receives accommodations for testing in a quiet area, additional time on tests, and a note taker, which he states are helpful. A review of his transcripts indicates his academic performance varies by semester. During some semesters he receives above average grades and during others he receives below average grades, incomplete grades, and may withdraw from a course.

**Gabriella.** Gabriella is diagnosed with a learning disability and ADHD, Combined Type. She reports receiving the diagnosis in elementary school. She reports

always experiencing difficulty in school. She stated she felt like she always worked very hard in school but would receive Ds on her assignments; therefore, she learned to cheat as a coping mechanism for her poor grades. She reports difficulties with short-term memory and focusing on tasks.

According to the documentation provided to SDS, Gabriella has an average intellectual ability. She performs on level in her academic skills with the exception of reading and mathematics fluency. She experiences difficulty with expressive vocabulary, attention, and memory tasks. She has particular difficulty with auditory selective attention and delayed recall. This indicates that she is distracted by irrelevant stimuli and struggles to complete longer tasks. In addition, she has difficulty recalling information over time, particularly narrative information. These difficulties worsen when she is feeling stressed or under time constraints. Gabriella currently receives accommodations for additional time on tests, a note taker, and recordings of lectures. She believes all the accommodations to be helpful except additional time on tests. A review of her transcripts indicates her academic performance varies by semester. During some semesters Gabriella receives above average grades and during others she receives below average grades, incomplete grades, and may withdraw from a course.

**Max.** Max has been diagnosed with a learning disability and ADHD, Combined Type since elementary school. He reported receiving very little services for his disability while in school. Max reports being able to focus for five to ten minutes at a time. He fidgets constantly. He also reports having difficulty with auditory processing.

According to paperwork submitted to SDS, Max has an average intellectual ability with strengths in nonverbal tasks. He experiences difficulty with reading and

writing tasks, as well as cognitive processing and short-term memory. He currently receives accommodations for additional time on tests, testing in a quiet area, and a note taker, which he reports are helpful. He typically receives average grades in his classes.

**Toby.** According to the paperwork submitted to SDS, Toby has been diagnosed with a learning disability using a discrepancy model. His disability has impacted his performance in reading, writing, and mathematics. He performs the highest in the area of written expression and experiences the most difficulties in mathematics. In addition, he struggles with long-term memory skills and information processing skills. Toby currently receives more time to complete tests and a note taker, which he stated were helpful.

Toby said he remembered there was some discussion of him having a learning disability in fourth or fifth grade; however, he was not sure if he ever received special education services at that time. He does remember receiving services in high school within a resource room and with consultation services. He stated that he was often “pushed through” school. He stated that he has difficulty with staying focused on uninteresting tasks. He often gets frustrated with school and will stop trying. He has difficulty with memory, information, processing, and auditory processing. He experiences difficulty with note taking and reports needing visual cues when taking notes. He typically does not read his textbooks because he does not understand them. He has difficulty moving from his ideas to completed written products. He experiences the most difficulty with mathematics. He feels he needs to improve his memory skills. A review of his transcripts indicates that he typically earns average grades in his courses; however, the semester prior to participating in this study he received below average grades in all courses.



**Sarah.** Sarah was diagnosed with ADHD, Predominately Inattentive Type as an adult. She reports having difficulty with concentration at times. For example, sometimes she has difficulties getting passed the introductory paragraph of a reading. In addition, she has difficulty focusing on the instructor and course lessons while in class. She reports that her attention often drifts to other activities and thoughts when attending classes. She reports difficulties with organization, especially when she perceives a lack of structure in classes and/or assignments. Her lack of organization makes it difficult for her to complete assignments and projects when she is “on her own” such as when she is enrolled in independent study courses. She typically finds herself completing assignments the day before or the day an assignment is due and has previously missed deadlines. When she is able to focus, she reports that she is unable to stop concentrating for hours. She currently receives accommodations for preferred seating in class, which she does not find helpful. She typically receives above average grades in her classes.

**Kim.** Kim reports being diagnosed with dyslexia and ADHD, Predominately Inattentive Type. She was officially diagnosed approximately 10 years ago after graduating high school; however, she remembers experiencing difficulties in school her entire life. She was allowed to use books on tape and given extra time on tests during her K-12 experiences. Her teachers did not require her to read aloud in class due to the length of time it took her to read. Kim typically relied on classmates to help her get through the class readings. She avoided participating in class discussions on readings unless she could provide “generic” responses. She reports having difficulty with reading and writing. Typically she does not take notes in classes because she gets distracted by what to write down and misses parts of the lecture. She gets frustrated with coursework

because she feels it takes her longer to complete tasks and runs out of time prior to completing her assignments. Kim also reports having difficulties with perfectionism, which contribute to her experiencing challenges with getting assignments completed by the assigned due dates. She uses several coping strategies to help her with her coursework including: Dragon NaturallySpeaking® software, different color pens and paper, underlines in textbooks, and organizes study groups.

According to the disability documentation information submitted to SDS, she has an above average intellectual ability. She has above average abilities in verbal comprehension and perceptual reasoning and average abilities in working memory and processing speed. The discrepancy between her verbal comprehension and perceptual reasoning and working memory and processing speed contribute to the difficulties her reports with remembering information and attention. Her achievement scores all fall within the average range. She experiences particular difficulty with phonological processing. She currently gets time and a half to complete in-class exams and assignments, a quiet testing environment, extra time to complete papers outside of class, and audio recording of classes as accommodations. She typically receives above average grades in her classes; however, has dropped classes and received incomplete grades in previous semesters.

### **Instruments**

Various instruments were used to collect data. Table 9 indicates the data that were used to answer each research question.

Table 9

*Research Questions and Data Collection Instruments*

Research Question	Data Collection Instruments
1. To what extent does The Personal Strengths Intervention (PSI) incorporate elements of the literature bases from self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD based on expert review?	Content and Face Validity Questionnaire
2. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the self-determination levels of postsecondary students with learning disabilities and/or ADHD?	<i>Self-Determination Student Scale</i> Session notes Text messages Participant interviews
3. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the social-emotional outcomes for postsecondary students with learning disabilities and/or ADHD? a. What is the impact of The Personal Strengths Intervention (PSI) on the life satisfaction level of students with learning disabilities and/or ADHD? b. What is the impact of The Personal Strengths Intervention (PSI) on the positive and negative affect of students with learning disabilities and/or ADHD?	<i>Steen Happiness Index</i> <i>Positive and Negative Affect Schedule</i> Text messages Participant interviews
4. How do postsecondary students with learning disabilities and/or ADHD perceive The Personal Strengths Intervention (PSI)? a. What components of The Personal Strengths Intervention (PSI) do students with learning disabilities and/or ADHD find to be the most beneficial? b. What components of The Personal Strengths Intervention (PSI) do students with learning disabilities and/or ADHD find to be the least beneficial? c. What, if anything, do students with learning disabilities and/or ADHD feel needs to be added to the Personal Strengths Intervention (PSI)?	Participant interviews

**Participant information.** Participant information was collected prior to the beginning of the study. This information included demographic information, unofficial transcripts, and documentation of a disability.

**Demographic information.** Demographic information was collected during the first meeting via the questionnaire provided in Appendix I. The demographic questionnaire was administered with the pre-intervention instruments. The document included information about participants' current standing with the university (e.g., academic class, major) and their history with having a learning disability and/or ADHD (e.g., when they were diagnosed, services provided, history of accommodations).

**Transcripts.** Transcripts of study participants were collected from each participant at the beginning of the study. Transcripts were used to determine students' previous academic performance and college experience.

**Documentation of a disability.** Documentation of a disability was collected from each participant at the beginning of the study. Through the report they have provided to SDS in order to receive services for their disability. This documentation was used to verify they meet eligibility for the study by containing evidence of the presence of a learning disability and/or ADHD. Demographic information such as gender and age was also gathered from this report, as well as the type of disability they are diagnosed with and relevant cognitive processing information.

**Pre-, mid-, and post-intervention assessments.** The *Self-Determination Student Scale* (SDSS; Hoffman, Field, & Sawilowsky, 1995/2004), *Steen Happiness Index* (SHI; Seligman, Steen, & Park, 2005), and *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988) were administered three times during the intervention.

Pre-assessments were administered prior to the beginning of the study. Mid-assessments were administered after the shorter baseline phase group had completed three intervention sessions and the longer baseline phase group was still in the baseline phase. Post-assessments were administered as participants completed PSI.

**Self-Determination Student Scale (SDSS).** The *Self-Determination Student Scale* (SDSS; Hoffman et al., 1995/2004) is a 92-item self-report measure of the affective and cognitive aspects of self-determination (see Appendix J). Respondents respond to stimulus by indicating “That’s me” or “That’s not me.” Scores are calculated by summing the correct responses based on a scoring key for the total instrument or for subscales with higher scores indicating higher levels of self-determination (Hoffman et al., 2004). Subscales include: general positive, general negative, specific positive, and specific negative. The general subscales indicate global levels of self-determination, and the specific subscales indicate self-determination levels in specific environments such as home and educational settings. These subscales are crossed with the Field and Hoffman (1994) model of self-determination (i.e., know yourself, value yourself, plan, act, and experience outcomes and learn). The SDSS was tested with 416 students age 14 to 22 (Hoffman et al., 2004), but has been used with adults (as an adapted version) up to age 95 (Aranha, 1998). There were 225 students with disabilities (31% had learning disabilities) and 171 students without disabilities in the field test. Twenty students did not provide information on disability status. The Cronbach alpha was .91 for the total instrument, and subsequent studies have reported Cronbach alphas of .86 and greater (Aranha, 1998; Saver, 2000). Cronbach alphas for this study were .90, .87, .28 for the pre-, mid-, and post-assessments respectively. The scores of the pre- and mid-assessments yielded

acceptable internal consistency levels. The scores of the post-assessment yielded a reliability level that was lower than typically acceptable. Further examination of the scores indicated that the post-assessment had the lowest amount of variability ( $SD = 3.45$ ) compared to the pre- ( $SD = 10.87$ ) and mid-assessments ( $SD = 8.36$ ). These low variability levels, combined with the small sample size contributed to the low internal consistency level for the post-assessment.

The validity of the SDSS was examined through intra-scale correlations and factor analysis (Hoffman et al., 2004). Intra-scale correlations range from  $-.09$  (general positive and general negative) to  $.64$  (general negative and general specific). The factor analysis indicated a four-factor structure (i.e., general positive, general negative, specific positive, and specific negative) with eigenvalues greater than 0.3 and factor loadings greater than  $|.4|$ . Two of the factors (general positive and general negative) accounted for 81.2% of the variance. Permission for use in this study was granted by the authors.

**Steen Happiness Index (SHI).** The *Steen Happiness Index* (SHI; Seligman et al., 2005) measures self-reported levels of happiness (see Appendix K). It contains 20 items and requires respondents to read a series of statements and pick the one that best describes them during the past week. The items on the SHI reflect the theory that positive emotion, engagement, and meaning in life each contribute to overall happiness. Response choices range from a negative (“I dislike my daily routine”) to an extreme positive (“I enjoy my daily routine so much that I almost never take breaks from it”). Responses are assigned a value ranging from 1 to 5, with 5 indicating the happiest response. Total scores range from 20 to 100 with higher scores indicating higher happiness levels and are calculated by summing the items. The SHI correlates with more established measures of

happiness and well-being but is more responsive to changes in happiness levels because scores from the SHI tend to be less negatively skewed than other happiness and well-being indices which allows for more growth in happiness levels. Internal consistency ( $\alpha = .95$ ) and test-retest reliability over one week ( $r = .97$ ) have been reported. In this study the Cronbach's alpha levels were .94, .76, .81 for the pre-, mid-, and post-assessments respectively. Permission to use the SHI in this study was granted by the author.

**Positive and Negative Affect Schedule (PANAS).** The *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988) is a 20-item instrument that measures positive and negative affect levels. Respondents rate how often they have felt 20 different moods over a period of time specified by the researcher. Ratings range from 1 (very slightly or not at all) to 5 (extremely). Scores are calculated by adding positive and negative affect items separately. Scores range from 10 to 50 with higher scores indicating higher levels of positive and negative affect.

The PANAS was developed by examining a factor analysis of affective words conducted by Zevon and Tellegan in 1982 (Watson et al., 1988). The researchers first identified 60 words, three from each of the 20 content categories (e.g., the content category guilty included guilty, ashamed and blameworthy), and retained words with factor loadings of .40 or greater. They then excluded words which had a secondary loading higher than .25 for the other factor (i.e., either positive or negative affect). Based on reliability analyses, 10 positive and 10 negative affect words were retained. The PANAS was then field-tested with six groups of adults. Each group responded to the PANAS based on a different time period: (1) at this moment ( $n = 660$ ), (2) today ( $n = 657$ ), (3) in the past few days ( $n = 1,002$ ), (4) in the past few weeks ( $n = 586$ ), (5) in the

past year ( $n = 649$ ), and (6) in general ( $n = 663$ ). For example, the “at this moment” group responded to “Indicate to what extent at this moment you are feeling the following feelings and emotions.” The group participants were not mutually exclusive in order to conduct test-retest reliability analyses across all time points. Reliabilities ranged from .86 (in the past year) to .90 (today) for positive affect and .84 (in the past year) to .87 (today, in the past few weeks, and in general) for negative affect. The correlation between the positive and negative affect scales ranged from -.12 (today) to -.23 (in the past year). Test-retest reliability analyses were conducted with the same 101 participants in each group after eight weeks. Test-retest reliabilities ranged from .47 (today, in the past week) to .68 (in general) for positive affect and .39 (today) to .71 (in general) for negative affect. As expected, test-retest reliabilities were the strongest for longer time periods. Each of the six groups yielded a two-factor structure with primary loadings of .50 or higher explaining from 87.4% (at this moment) to 96.1% (in general) of the common variance. The PANAS has also demonstrated appropriate correlations with both measures of positive affect and psychopathology such as depression and anxiety.

In this study, participants responded to the prompt “Indicate to what extent you have felt the following feelings and emotions during the past week.” This captured the feelings and emotions of participants during the final week of the intervention which was when they were more likely to have experienced change. Cronbach alphas for the current study were .87, .77, and .80 for the pre-, mid-, and post-assessment of the positive affect items respectively. They were .90, .76, and .24 for the pre-, mid-, and post-assessment of the negative affect items respectively. The Cronbach alphas for all assessments were acceptable with the exception of the post-assessment of the negative affect items. Further



examination of the scores indicate that the post-assessment had the lowest amount of variability in scores ( $SD = 3.80$ ) compared to the pre- ( $SD = 9.32$ ) and mid-assessment ( $SD = 6.41$ ). Moreover, item 20 (afraid) has a strong negative correlation with the total scale ( $r = -.86$ ). An examination of individual responses indicates one participant reported that she had been afraid “quite a bit” while the remaining participants report levels “very slightly or not at all” or “a little”. While it is typical that one participant experienced a particular emotion more than others, this was in contrast to the level in which she experienced the other negative emotions and moods. Permission for use in this study has been provided by the authors (see Appendix L).

**Text messages for time series data.** Time series data were collected during baseline and intervention phases. The text messaging was used to collect data on self-determination and social-emotional levels. While text messaging is a new way to collect time series data, similar methods of data collection have been used in emotion research (Larsen & Fredrickson, 2003). Emotion research has used moment-by-moment methods of self-reporting to determine the emotions people are feeling during specific task. The experience sampling method (ESM) has participants fill out a questionnaire when they receive pages from a pager (Duckworth, Steen, Seligman, 2005). Other research has used a cued review process where participants record specific instances of heightened emotions. Further, a review of methods used to measure emotions indicates that measures that record emotions closer to their actual occurrence (e.g., at the time of the emotion or during the next 24 hours rather than retrospective data collection) are more reliable (Mauss & Robinson, 2009). In this study, the text messaging allowed participants to record self-determination and social-emotional levels throughout the week.

*Pilot testing of text messaging for time series data.* The use of text messaging to collect time series data was piloted in order to determine if this method yielded data suitable for time series data and to determine how pilot participants experienced its use. Participants' perceptions were sought to determine if the use of text messaging was an effective, yet non-intrusive method of data collection (Appendix M). This was important to determine because if it was viewed as non-intrusive then study participants would be more likely to respond to texts and, therefore, more complete data could be collected.

Participants for the pilot test of the use of text messaging for collecting time series data were purposefully selected to participate in the pilot testing based on: (1) being a college student, (2) their willingness to participate, and (3) their knowledge of either measurement issues or students with learning disabilities and/or ADHD. Five graduate students participated in the pilot – three with knowledge of measurement issues and two with knowledge about students with learning disabilities and/or ADHD. All the students were provided with the six time series questions on a business card-size paper (see Appendix N). The questions and procedures for how to respond to the questions were reviewed with them. Students were sent a text message prompting them to answer the questions six times over a two-week period. The text messages were sent at randomly selected times throughout the week including evening hours and on the weekend. Once participants had received six text messages, a mutually agreeable time was scheduled to gather feedback about this form of data collection (see Appendix M).

The results from the pilot testing indicate that the text message questions were clearly stated. Four of the five participants reported that the answer choices were appropriate. The fifth participant stated he preferred a five-point scale for the questions.

In addition, this form of data collection was viewed favorably when compared to other types of self-report methods (e.g., surveys, meeting with the researcher). Four of the five students stated the use of text messaging to collect data was convenient and took only a few minutes of their time. One participant reported that this method was time consuming, but clarified he typically did not text and his cell phone did not have a full keyboard which would have reduced the amount of time needed to respond. Participants did report having difficulty responding to text messages when they did not have their cards with the questions on it with them. Further, some participants also reacted negatively to text messages sent on the weekend or during evening hours which was consistent with response rates (100% for business hours and 40% during weekend and evening hours).

*Text messaging for time series data in this study.* Based on the results of the pilot testing of text messaging as a form of data collection for time series data changes were made to the process. Participants were provided a business card with the complete questions written out as in the pilot study (Appendix N), and they were provided key words to each question in the text message prompting them to respond to the questions. The exact text message sent to participants is located at the bottom of Appendix N. In addition, text messages were sent to participants at randomly selected times during business hours. Participants continued to respond using a 10-point scale as the majority of participants felt these were appropriate answer choices and a 10-point scale offers the potential for more variability than a 5-point scale.

Participants in this study began receiving text messages during December of 2010 in order to practice with this method of data collection. Participants were sent six text messages during the winter break. During the practice text messages it took

approximately 24 hours to get responses from all participants. Therefore, it was decided to send text messages on Mondays, Wednesdays, and Fridays rather than on randomly selected days, which could have been consecutive days. This allowed 24 hours to get responses from participants prior to the next text message being sent. This ensured the most data could be collected as there would have been more missing data if text messages were sent on consecutive days and some participants had not responded yet. It also held the days constant across phases, which ensures data were collected at evenly spaced time points throughout the study. In addition, consistent with previous research (e.g., Suldo et al., 2009) the life satisfaction (i.e., question 4) and positive affect (i.e., question 5) responses will be summed and the negative affect (i.e., question 6) response will be subtracted to calculate an overall social-emotional level.

**Session notes.** Session notes were completed during each intervention session and served as a data source for the activities that were completed during intervention sessions with each participant (see Appendix O). Session notes were developed based on the components of PSI and used during the pilot testing of PSI. Based on observations of the researcher during the pilot testing process, changes were made to the session notes. They document each participant's goals, plans for obtaining and monitoring progress on goals, and results from the previous week's goal. Additionally, since guided cognitive instruction was utilized during each session, session notes include the initial goals, plans for obtaining goals, and monitoring progress on goals the student stated and the final goals, plans for obtaining goals, and monitoring progress on goals. This is important because the final information may potentially be different from the initial information. The differences in information are reflective of choices the participants made based on

the questions asked by the researcher during guided cognitive instruction and not reflective of the researcher's choices for them. The session notes include space to document why an initial goal, plan to achieve, or monitoring plan was changed, as well as how students engaged in savoring activities. There is also a location for the documentation of a long-term goal (to be accomplished over the course of the intervention), a short-term goal (to be accomplished between intervention sessions), and why participants feel these goals are important to them.

**Final interviews.** For the purposes of this study, information about social validity was collected from the participants directly through personal interviews following the completion of PSI. Social validity involves using social criteria to evaluate the effectiveness of an intervention (Kazdin, 1982). This is important because it offers another way to measure the effectiveness of the intervention and helps with its further development. In addition, Algozzine and colleagues (2001) called for increased social validity information within interventions that are intended to impact self-determination. Social validity is especially important with the self-determination intervention literature as self-determination interventions seek to empower individuals to become the “causal agents” in their lives. If a self-determination intervention is not viewed as effective by the people that it is intended to assist, then it is not addressing the core components of the construct. PSI's social validity was evaluated using the subjective evaluation method (Kazdin, 1982). This method is based on determining the effectiveness of an intervention through the evaluations of people who are involved with the intervention or the participants.

Interviews with participants were conducted after the intervention was completed to examine the social validity of PSI. The interviews were completed with participants individually in order to gather information on how they perceived the intervention. Interview questions are provided in Appendix P. The interviews took between approximately 10 to 30 minutes to complete and were audio recorded and transcribed by a professional transcriptionist. The transcriptions were edited for clarity (e.g., removals of “umms”). The interviews took place after the participants completed the post-assessment in order to avoid impacting the way they responded to the instruments based on the information discussed during the interview. The interview questions following the completion of PSI were piloted with the two participants who participated in the pilot test of the intervention (see Appendix Q). Both participants reported that the interview questions were clearly worded and appropriate. No changes to the interview questions were made.

## **Analysis**

**Time series.** Multiple baseline data were analyzed using both descriptive and inference statistics. The analysis included more traditional analyses such as visual analysis and mean scores per phase, as well as effect sizes to determine the practical significance of the intervention and multilevel modeling to examine both group and individual level treatment effects.

**Visual analysis.** Traditionally, single-case research has been analyzed using descriptive methods with visual analysis conducted most often (Barlow et al., 2009; Kazdin, 1982). A visual analysis is conducted by inspecting graphed times series data to determine if the data indicate a “systematic intervention effect” (Kazdin, p. 232). While

this method has been praised for being able to identify large intervention effects (Barlow et al.; & Kazdin), questions have risen regarding the reliability of visual analyses when the effects are not large (Matyas & Greenwood, 1990).

Times series data were visually analyzed using procedures recommended for single-case designs by the *What Works Clearance House* (Kratochwil et al., 2010). This includes examining: (1) baseline patterns, (2) within-phase patterns, (3) between-phase patterns, and (4) the integration of data from the first three steps to determine if there are at least three indications of an intervention effect at three different points in time. Within-phase patterns included changes in level (i.e., changes in the mean from the baseline to the treatment phase), trend (i.e., changes in the slopes of the scores from baseline to treatment phases), and variability (Kazdin, 1982). Between-phase patterns included the immediacy of treatment effect (i.e., when a treatment effect occurred), overlap of data between phases, and consistency of data within phases across participants. It was expected that there would be an intervention effect demonstrated after the third intervention session with the most noticeable effect at the completion of the intervention.

The data were analyzed by time series dependent variable by the researcher and a graduate student with expertise in single-case research. The time series dependent variables included each of the time series questions (i.e., level of control outside school, level of control inside school, relationship between behaviors and actions and what happens in life, life satisfaction, frequency of positive emotions, and frequency of negative emotions). Additionally, a well-being dependent variable was created by adding life satisfaction and the frequency of positive emotions and subtracting the frequency of negative emotions. This is consistent with previous research on subjective well-being

(Suldo et al., 2009). Inter-rater agreement between researchers was 90%. Disagreements were discussed until consensus was reached.

*Effect sizes.* Another descriptive method for examining single-case data is to calculate effect sizes (Kromrey & Foster-Johnson, 1996). Effect sizes are measures that represent the magnitude of the relationship between variables. Kromrey and Foster-Johnson stated effect sizes offer advantages over other analysis methods because they: “(a) can be calculated when trends or serial correlations are present in the data, (b) provide consistent results across data analysts, and (c) maintain a focus on the strength of the relationship between treatment and outcome variables” (p. 77). Further, the American Psychological Association (2010) states that effect sizes should be reported whenever possible. Several effect sizes for single-case data have been identified (Owens, Farmer, Ferron, & Allsopp, 2010). While conceptually similar effect sizes were found to correlate with each other, effect sizes that are conceptually different such as the non-regression based and regression-based approaches tended to be uncorrelated. It is important to select an effect size based on the data and the expected effects.

Two effect sizes were calculated during this analysis – percentage of nonoverlapping data (PND; Scruggs & Mastropieri, 1998) and percentage of data points exceeding the median (PEM; Ma, 2006). Each effect size was calculated by participant and aggregated across participants.

PND is the percentage of data in the treatment phase that does not overlap with the data in the baseline phase (Scruggs & Mastopieri, 1998). To calculate PND a line is drawn through the highest baseline value and extended through the treatment phase. The



proportion of values in the treatment phase that exceed the line multiplied by 100 is the PND. It is shown through the following equation:

$$PND = \frac{n_{B \text{ no overlap } A}}{n_B} \times 100 \quad (1)$$

where  $n_{B \text{ no overlap } A}$  is the number of data points in the treatment phase that are above the highest data point in the baseline phase and  $n_B$  is the total number of data points in the treatment phase. PND was selected as an effect size because it is the most commonly used effect size, especially among the special education literature (Farmer, Owens, Ferron, & Allsopp, 2010) and self-determination research (Algozzine et al., 2001). The use of PND will allow for the comparison between this study and other in the literature.

PEM is the percentage of data in the treatment phase that exceeds the median of the baseline phase (Ma, 2006). It ranges from 0 to 1. To calculate PEM a horizontal line is drawn with half the baseline points above and below the line. In cases where there are multiple points at the same value (thus not allowing a line to be drawn with half the baseline points above and below the line) a line is drawn through the median of the baseline phase and extended into the treatment phase. The proportion of the values in the treatment phase that exceed the line is the PEM. It is shown through the following equation:

$$PEM = \frac{n_{B \text{ exceeding median } A}}{n_B} \quad (2)$$

where  $n_{B \text{ exceeding median } A}$  is the number of data points in the treatment phase that are higher than the median of the baseline phase and  $n_B$  is the total number of data points in the treatment phase. PEM has shown to be less susceptible to ceiling effects than PND (Ma, 2006) and was selected as an appropriate effect size for these data after initial inspection

of the baseline time series data revealed some participants had reported the maximum value for data points.

***Multilevel modeling.*** Much debate has surrounded the use of inferential statistics to analyze single-case data (Barlow et al., 2009; Kazdin, 1982). Advocates argue that inferential statistics offer a more reliable way to determine the effectiveness of interventions than descriptive methods alone. Further, inferential statistics are able to identify more subtle intervention effects that descriptive methods cannot. Opponents of using inferential statistics state that due to the autocorrelation often found within single-case data, these data violate the independence assumption, a fundamental assumption of inferential statistics. Studies have found mixed results regarding this (Huitema, 1985; Suen & Ary, 1987), and suggest that the nature of the single-case design may impact autocorrelation. More recently, methodological research regarding the analysis of multiple baseline data has focused on the use of multilevel modeling (Ferron, Bell, Hess, Rendina-Gobioff, & Hibbard, 2009; Ferron, Farmer, & Owens, 2010; Van den Noortgate & Onghena, 2003a; 2003b). Multilevel modeling, also called hierarchical linear or mixed modeling, allows for the examination of both group and individual treatment effects through the use of empirical Bayes estimates (Ferron et al., 2010), as well as confidence intervals which is a recommended reporting practice (APA, 2010). Empirical Bayes estimates provide a better estimate of individual effects by including information not only from the individual, but other participants as well (Raudenbush & Bryk, 2002). Further, multilevel models can be expanded to include shifts in level, trends, and autocorrelation. Simulations examining conditions with as few as 4 participants and 10 time points have

found that interval widths are accurate when the Kenward-Roger method for estimating degrees of freedom is used (Ferron et al., 2009; Ferron et al., in press).

This study utilized multilevel modeling with empirical Bayes estimates and the Kenward-Roger method for estimating the degrees of freedom. The two-level model has individual time points nested within individual participants. At level-1 the model includes individual participant data, and at level-2 model allows for variation in the level-1 coefficients across participants. The model is represented by the following equation at level-1:

$$Y_{ij} = \pi_{0j} + \pi_{1j}phase + e_{ij} \quad (3)$$

where  $Y_{ij}$  is the observed score at time point  $i$  for participant  $j$ ,  $\pi_{0j}$  is the baseline mean for participant  $j$ ,  $\pi_{1j}$  is the average treatment effect for participant  $j$  associated with  $phase$  which is a dummy coded variable indicating baseline (0) or treatment (1),  $e_{ij}$  is the error associated with time point  $i$  for participant  $j$ . The errors are assumed to follow an autoregressive variance structure that varies by individual, where  $\rho_j$  indicates the autocorrelation for the  $j$ th participant and  $\sigma_j^2$  indicates the within phase variance for the  $j$ th participant.

At level-2 the model is represented by the following equations:

$$\pi_{0j} = \beta_{00} + r_{0j} \quad (4)$$

$$\pi_{1j} = \beta_{10} + r_{1j} \quad (5)$$

where  $\beta_{00}$  is the mean baseline level across participants,  $r_{0j}$  is the error term which indicates how far the mean baseline level for participant  $j$  deviates from  $\beta_{00}$  with a variance of  $\tau_{00}$ ,  $\beta_{10}$  is the mean treatment effect across participants, and  $r_{1j}$  is the error

term associated with how far the treatment effect for participant  $j$  deviates from  $\beta_{10}$  with a variance of  $\tau_{11}$ . Confidence intervals were calculated for the fixed effects.

*Participants' interpretations of time series data.* Participants were asked to interpret their time series data during the final interview. Participants were provided copies of their time series data by question (i.e., level of control outside school, level of control inside school, relationship of behaviors and actions to what happens, life satisfaction, frequency of positive emotions, and frequency of negative emotions). The researcher asked, "Here are graphs of the responses you provided during the text messages. How would you describe your responses?" The researcher provided explanations of the graphs as needed (e.g., where on the graph the baseline and intervention phases were located). Depending on the participants' responses follow-up questions included such questions as, "Why did you describe your graphs that way?" and "How do these graphs compare to a typical semester?"

A detailed description of the coding process used in this analysis follows. In order to maintain transparency of the analysis and add to the credibility of the findings Figure 4, modeled after Anfara and colleagues (2002), provides a visual representation of the coding process. Responses were read and coded holistically using each time series question as a unit during the first iteration to determine how participants interpreted their graphs (see Figure 4). Holistic coding occurs when basic sentiments of the data are coded as a whole (Saldaña, 2009). In this study the holistic units were the participants' interpretations of each time series graph. Responses were coded by holistic unit using structural codes during the second iteration. Structural codes are codes that serve to organization units of information based on research questions. In this instance the

researcher sought to understand how the participants interpreted their time series data and why they interpreted them in that way. After the first iteration of coding, it was determined that most participants had three parts to the interpretation of each graph – the *overall interpretation*, the *explanation for the data pattern*, and how the graph *compared to typical semesters*. In the third iteration of coding, open codes were applied to the content within each of the structural codes. Information from the first three rounds of coding was placed in a table with the structural codes as column headers, participants and times series questions as rows, and holistic and open codes in each cell. This was done to assist in the fourth round of coding where pattern codes were developed to explain the participants' interpretations of their data and how they came to the particular interpretation.

Responses were independently coded by the researcher and a graduate student with experience in qualitative analysis. The graduate student was trained in coding procedures by the researcher. Training consisted of the review of the codebook and table for data entry and the practice coding of one interview. The remaining interviews were coded independently. Inter-rater agreement was 90%. Discrepancies were discussed until consensus was reached.

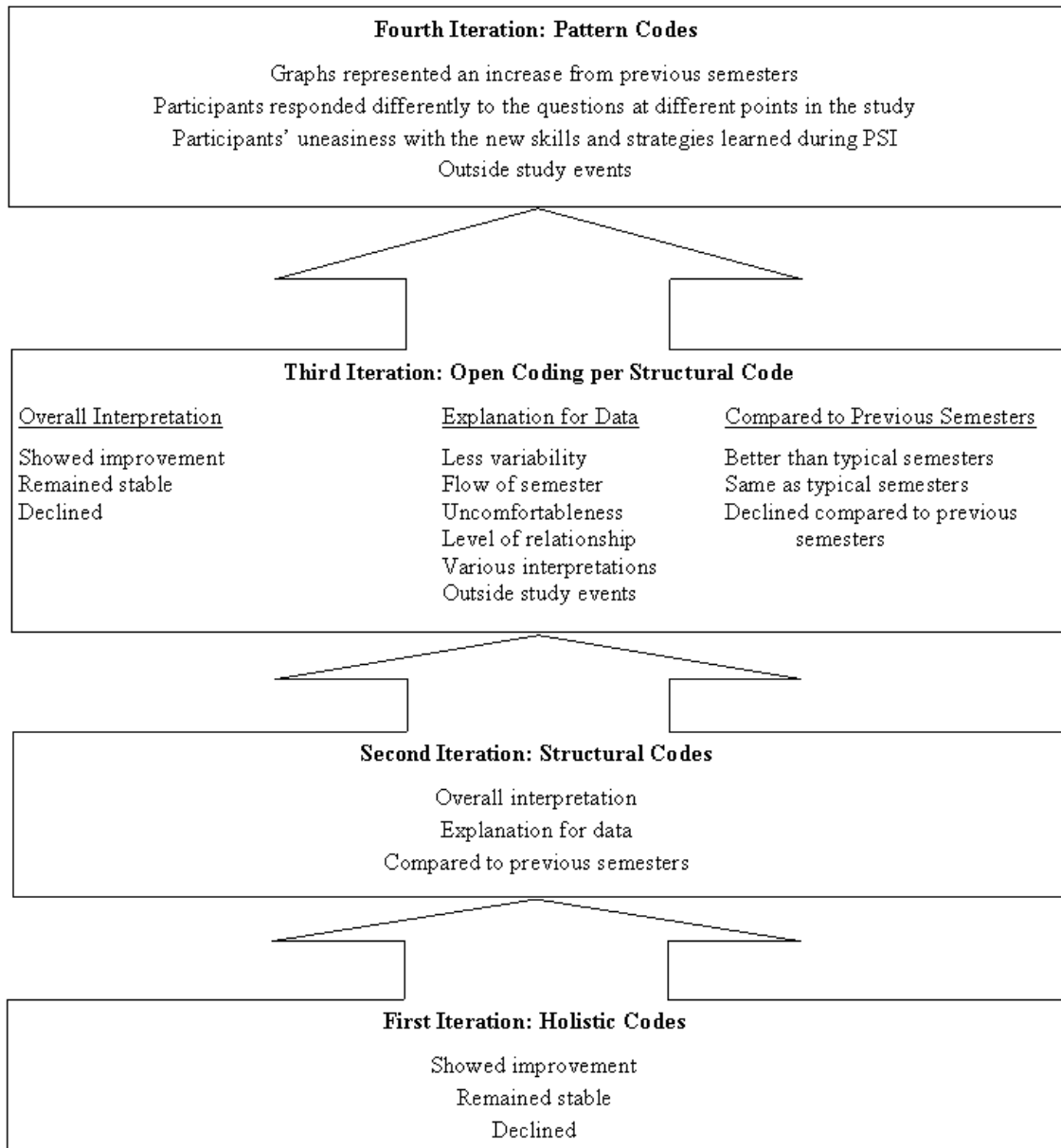


Figure 4. The coding process for participants' interpretations of their time series data.

### **Pre-, Mid-, and Post-Assessments**

Pre-, mid-, and post-intervention assessments (i.e., SDSS, SHI, and PANAS) were analyzed using both descriptive and inferential statistics. Descriptive statistics included means, minimum and maximum scores, and standard deviations. Inferential statistics included the Wilcoxon Rank-Sum Exact Test and the Wilcoxon Signed-Rank Exact Test. These nonparametric statistical tests were chosen due to the small sample size of the study ( $n = 7$ ), unequal group size for the two baseline phase lengths ( $n = 5$  and  $n = 2$  for the shorter and longer phase length groups respectively), and lack of normality in the data. While analysis of the shorter baseline phase length group's descriptive statistics indicated an approximately normal distribution of the data, normality of the longer baseline phase length group's data could not be examined due to a small  $n$ . Nonparametric tests are sometimes referred to as “distribution-free” (Sheskin, 2011) as they do not assume a normal distribution in the population. They do assume independence of the data and that the data are continuous.

The Wilcoxon Rank-Sum Exact Test compares scores from two groups and was used to examine the differences in scores from pre- to mid-assessments between the two baseline phase length groups. Scores for all participants are rank ordered from 1 to  $n$  with the lowest score receiving the rank of 1 and the highest score receiving the rank of  $n$ . The Wilcoxon Rank-Sum Exact Test is given by the following equation:

$$S = 2R - t_2(n + 1) \quad (6)$$

where  $R$  is the sum of ranks for the smaller group,  $t_2$  is the number of scores for the smaller group, and  $n$  is the total number of scores. The obtained  $S$ -value is compared to the  $S_{\text{critical}}$ -value to determine statistical significance.

The Wilcoxon Signed-Rank Exact Test compares dependent scores from one group and was used to investigate if there was a statistical difference between pre- and post-assessments for all participants. To compute the Wilcoxon Signed-Rank Exact Test statistic ( $W_+$ ,  $W_-$ ), difference scores are calculated by subtracting pre-assessment scores from post-assessment scores. The absolute value of the difference scores are then ordered from lowest to highest. Each absolute value of a difference scores is assigned a rank from 1 to  $n$  with the lowest scores receiving a rank of 1 and the highest score receiving a rank of  $n$ . The rank scores are then assigned either a positive or negative sign to match the sign of the difference score. For example, if the difference score was a negative number, indicating the participant performed better on the pre-test, the rank score would be given a negative sign. To calculate  $W_+$  all positive ranks are summed. To calculate  $W_-$  all the negative ranks are summed. The obtained  $W_+$  and  $W_-$  are then compared to  $W_{+crit}$  and  $W_{-crit}$  to determine statistical significance.

**Longitudinal qualitative trend analysis of self-determination levels.** A longitudinal qualitative trend analysis was conducted using the session notes from each intervention session to determine if the participants' self-determination behaviors changed during the course of their participation in PSI. The session notes allow the researcher to make "comparative observations" of the participants' self-determination behaviors over the length of PSI (Saldaña, 2003, p. 16). Self-determination behaviors were defined as goal setting, planning to achieve goals, monitoring progress on goal achievement, goal achievement, and reasons for goal achievement or non-achievement. These areas were selected for investigation since they are core components of each PSI session and represent all 12 of the self-determination component elements (i.e., choice-



making, decision-making, problem-solving, goal setting and attainment, independence, self-evaluation, self-instruction, self-awareness, self-knowledge, self-advocacy, internal locus of control, and self-efficacy) (Wehmeyer, 2003b).

Trends in changes in self-determination behaviors were analyzed using framing, descriptive, and analytic and interpretive questions (Saldaña, 2003). Framing questions are questions that serve to manage areas of interest in the data. In this study the framing questions were used to identify the types of self-determination behaviors, and the degree to which they were present, demonstrated by participants during each intervention session. The framing questions included:

1. Are the participants able to develop weekly goals?
2. Are the participants able to create a plan to achieve their weekly goals?
3. Are the participants able to create a monitoring plan for their weekly goals?
4. Are the participants able to achieve their weekly goals?
5. Why are the participants achieving or not achieving their weekly goals?

The framing questions were used to develop codes for identifying the magnitude of self-determination behaviors for each area of self-determination (i.e., goal setting, planning to achieve, monitoring plans, goal achievement, and reasons for achieving/not achieving goals) investigated (see Figure 5). The codes were then entered into a matrix (see Appendix R) to provide a visual pattern of codes over time.

The visual pattern of codes was used to answer the descriptive and analytic and interpretive questions. Descriptive questions are those that describe what happened over

<b>Codes for Framing Questions</b>
<u>Are the participants able to develop weekly goals?</u>
No Goal
Not Achievable
Current Behaviors
Partially Developed
Fully Developed
<u>Are the participants able to create a plan to achieve their weekly goals?</u>
No Plan
Non-specific Plan
Partially Developed
Fully Developed
<u>Are the participants able to create a monitoring plan for their weekly goals?</u>
No Monitoring
Non-specific Monitoring
Partially Developed
Fully Developed
<u>Are the participants able to achieve their weekly goals?</u>
Not Achieved
Partially Achieved
Fully Achieved
<u>Why are the participants achieving or not achieving their weekly goals?</u>
Did not Implement Plan
Lack of Time
Life Event
Partially Followed Plan
More Time Needed
Followed Plan

*Figure 5.* The codes for the framing questions.

time (Saldaña, 2003). The descriptive questions in this study served to describe how the areas of self-determination changed from one intervention session to the next. They included:

1. Which areas of self-determination increase, stay consistent, or decrease with time?
2. How does one week of self-determination areas relate to the next week?
3. How do the areas of self-determination relate to each other through time?

The analytic and interpretative questions allow for the integration of data from the previous questions in order to determine how self-determination changed over the duration of PSI (Saldaña, 2003). The analytic and interpretive questions included:

1. What are the participants' trends in self-determination through time?
2. How is self-determination changed and/or developed through time? Which areas change first and then lead to other changes?

Descriptive and analytic and interpretive questions were not answered sequentially. The longitudinal trend analysis was an iterative process that required multiple examinations of all questions.

Session notes were independently coded by the researcher and a graduate student with experience in qualitative analysis. The graduate student was trained in coding procedures by the researcher. Training consisted of the review of the codebook and matrix for data entry and the practice coding of two session notes. The remaining interviews were coded independently. Inter-rater agreement was 91%. Discrepancies were discussed until consensus was reached.

**Social Validity of PSI.** Final participant interviews were utilized to provide evidence of the social validity of PSI. The interviews were analyzed using a combination of structural and provisional coding (Saldaña, 2009). Structural coding consists of codes that categorize the data. These codes were generated based on research questions and served to organize the data (see Figure 6). In addition, to a structural code, data were also coded with provisional codes based on anticipated answers from participants for specific interview questions. These initial codes were developed by the researcher and additional open codes were added during the coding process. Codes were refined during a second iteration of coding.

Responses were independently coded by the researcher and a graduate student with experience in qualitative analysis. The graduate student was trained in coding procedures by the researcher. Training consisted of the review of the codebook and the practice coding of one interview. The remaining interviews were coded independently. Inter-rater agreement was 97%. Discrepancies were discussed until consensus was reached. Frequency counts were generated per final code per structural code.

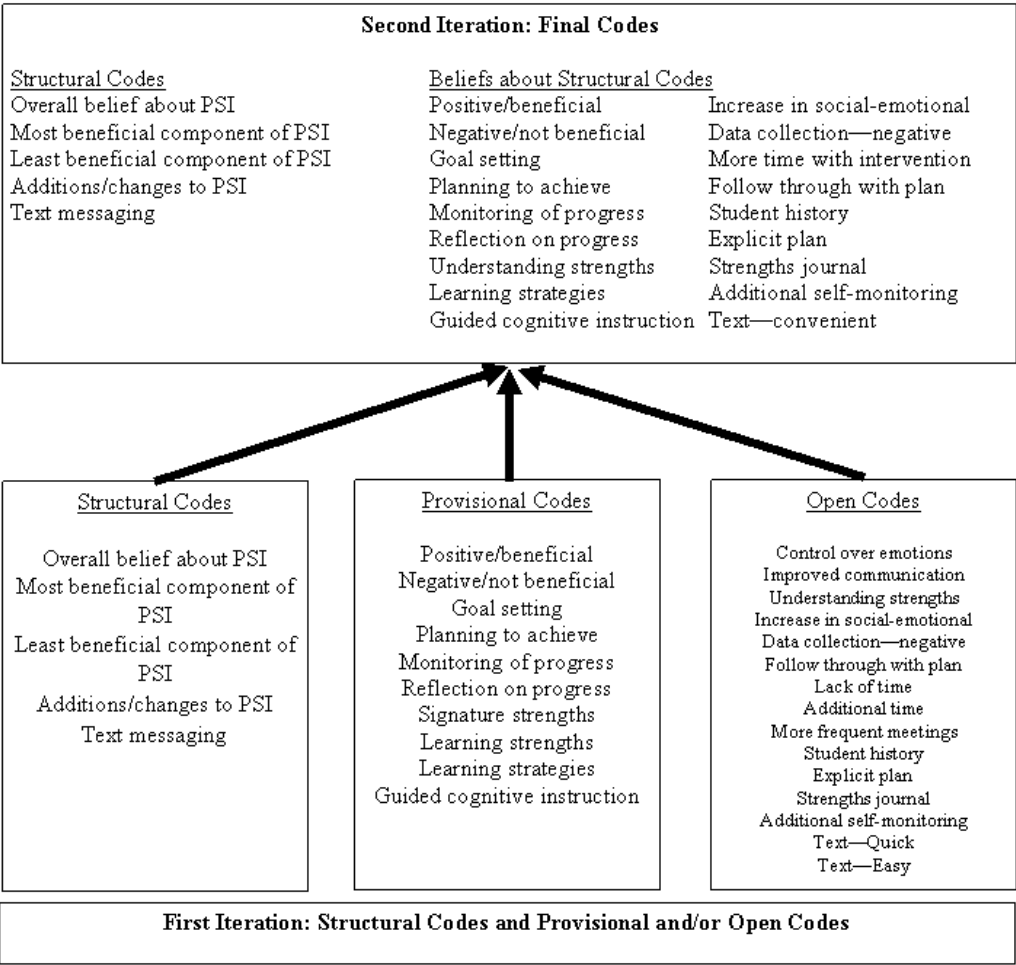


Figure 6. The codes for the final interviews.

## CHAPTER 4: RESULTS

The purpose of this study was to develop The Personal Strengths Intervention (PSI) and investigate its impact on levels of self-determination and the social-emotional functioning of postsecondary students with learning disabilities and/or ADHD.

Specifically, it investigated the following research questions:

1. To what extent does The Personal Strengths Intervention (PSI) incorporate identified elements of the literature bases on self-determination, positive psychology, and postsecondary students with learning disabilities and/or ADHD based on expert review?
2. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the self-determination levels of postsecondary students with learning disabilities and/or ADHD?
3. What, if any, is the impact of The Personal Strengths Intervention on the social-emotional outcomes for postsecondary students with learning disabilities and/or ADHD?
  - a. What is the impact of The Personal Strengths Intervention (PSI) on the life satisfaction level of students with learning disabilities and/or ADHD?
  - b. What is the impact of The Personal Strengths Intervention (PSI) on the positive and negative affect of students with learning disabilities and/or ADHD?

4. How do postsecondary students with learning disabilities and/or ADHD perceive The Personal Strengths Intervention (PSI)?
- a. What components of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the most beneficial?
  - b. What components of The Personal Strengths Intervention (PSI) do postsecondary students with learning disabilities and/or ADHD find to be the least beneficial?
  - c. What, if anything, do postsecondary students with learning disabilities and/or ADHD feel needs to be added to The Personal Strengths Intervention (PSI)?

This chapter provides results first by data type (i.e., time series; pre-, mid-, post-assessments; longitudinal qualitative data; and final interviews). The results are then summarized by research question.

### **Times Series**

Time series data were collected through text messaging three times a week. These data addressed participants' levels of self-determination and social-emotional well-being. Participants responded to the following questions using a 10-point scale with 1 meaning "none at all or never" and 10 meaning "complete or all the time":

1. In the past 24 hours, what level of control do you feel over your life outside school to do what you want?
2. In the past 24 hours, what level of control do you feel over your life inside school to do what you want?

3. In the past 24 hours, how often do you feel you thought about your behaviors and actions in relation to what happens in your life?
4. In the past 24 hours, how satisfied have you felt with your life?
5. In the past 24 hours, how often have you felt positively (e.g., joy, happiness, contentment, excitement)?
6. In the past 24 hours, how often have you felt negatively (e.g., frustration, depression, sadness, anxious)?

In addition, an overall well-being variable was created by adding questions four (i.e., level of life satisfaction) and five (i.e., frequency of positive emotions) and subtracting question six (i.e., frequency of negative emotions). Results were analyzed by dependent variable (i.e., level of control outside school, level of control inside school, relationship between behaviors and actions and what happens in life, life satisfaction, frequency of positive emotions, frequency of negative emotions, and well-being) using visual analyses, effect sizes, multilevel modeling, and the participants' interpretation of their data.

### **Visual Analysis**

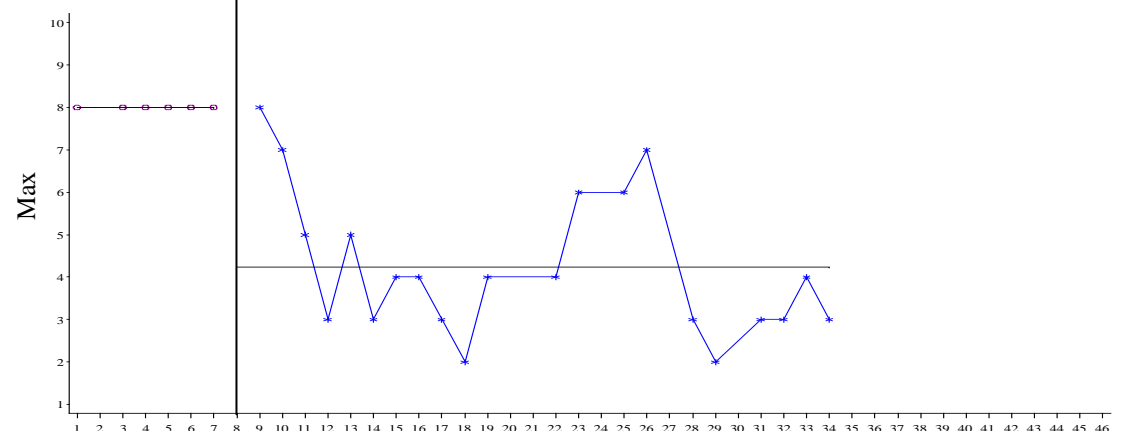
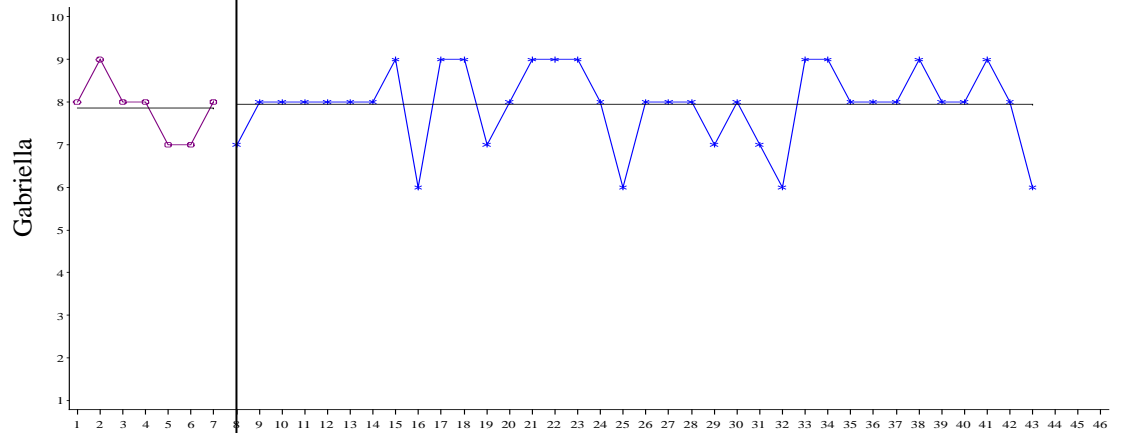
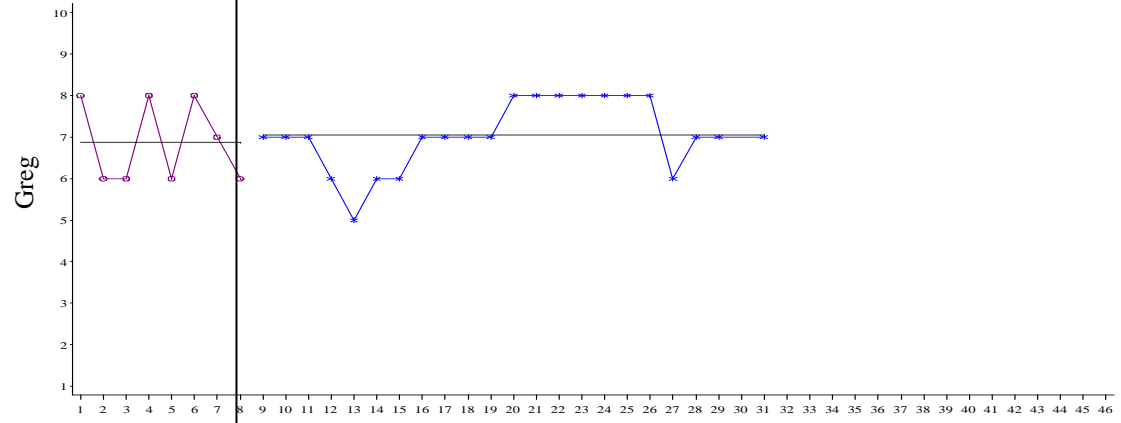
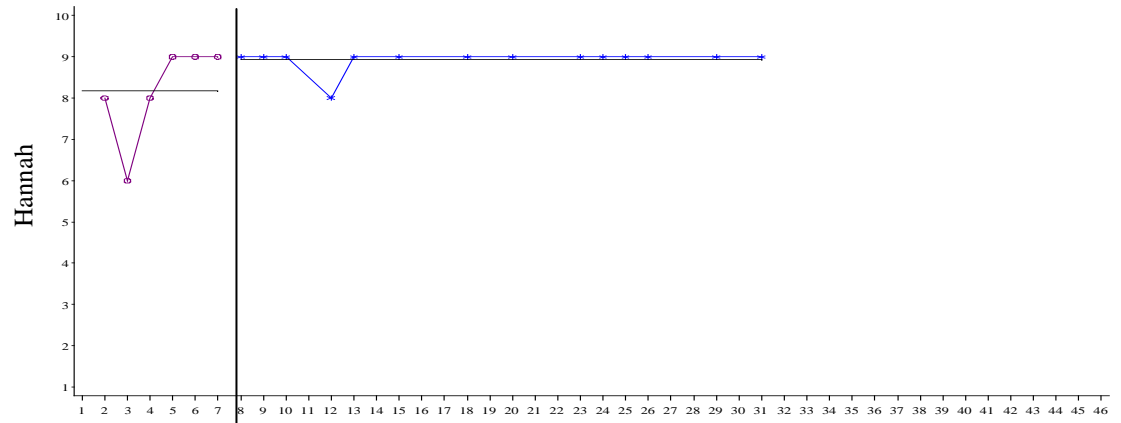
Times series data were visually analyzed using procedures recommended for single-case designs by the *What Works Clearance House* (Kratochwil et al., 2010). This includes examining: (1) baseline patterns, (2) within-phase patterns, (3) between-phase patterns, and (4) the integration of data from the first three steps to determine if there are at least three indications of an intervention effect at three different points in time.

Baseline patterns were examined to determine current self-determination (i.e., questions 1, 2, and 3) and social-emotional levels (i.e., questions 4, 5, and 6, plus the well-being variable). Since this research study utilized random assignment to fixed baseline lengths,



it was possible for a participant to begin the intervention phase prior to reaching baseline stability. Within-phase patterns included changes in level, trend, and variability. Between-phase patterns included the immediacy of treatment effect, overlap of data between phases, and consistency of data within phases across participants. It was expected that there would be an intervention effect demonstrated after the third intervention session with the most noticeable effect at the completion of the intervention. The data were analyzed by time series question by two independent researchers with expertise in single-case research. Inter-rater agreement between researchers was 90%. Disagreements were discussed until consensus was reached. Figures 7-13 present time series graphs for each participant by dependent variable.

**Level of control outside of school.** Time series graphs for the level of control outside of school are presented in Figure 7. Visual analysis of the time series data associated with the level of control participants felt over their life outside school indicated little to no intervention effect for the implementation of PSI. Initial screening of the data revealed no obvious trends in the data between phases. Therefore, trendlines were modeled with no slope. This resulted in trendlines that represent the mean for each phase. In addition, Toby and Kim appear to have one outlying data point. The majority of participants' data either showed no change or a decrease in level of control over their lives outside school. Baseline and intervention phase means are presented in Table 10. Means ranged from 4.53 to 8.17 for the baseline phase and 4.24 to 8.93 for the intervention phase. Change scores ranged from -3.76 to 2.28. Only Hannah and Sarah had an increase in level of control. However, while Hannah had an increase in level, the data



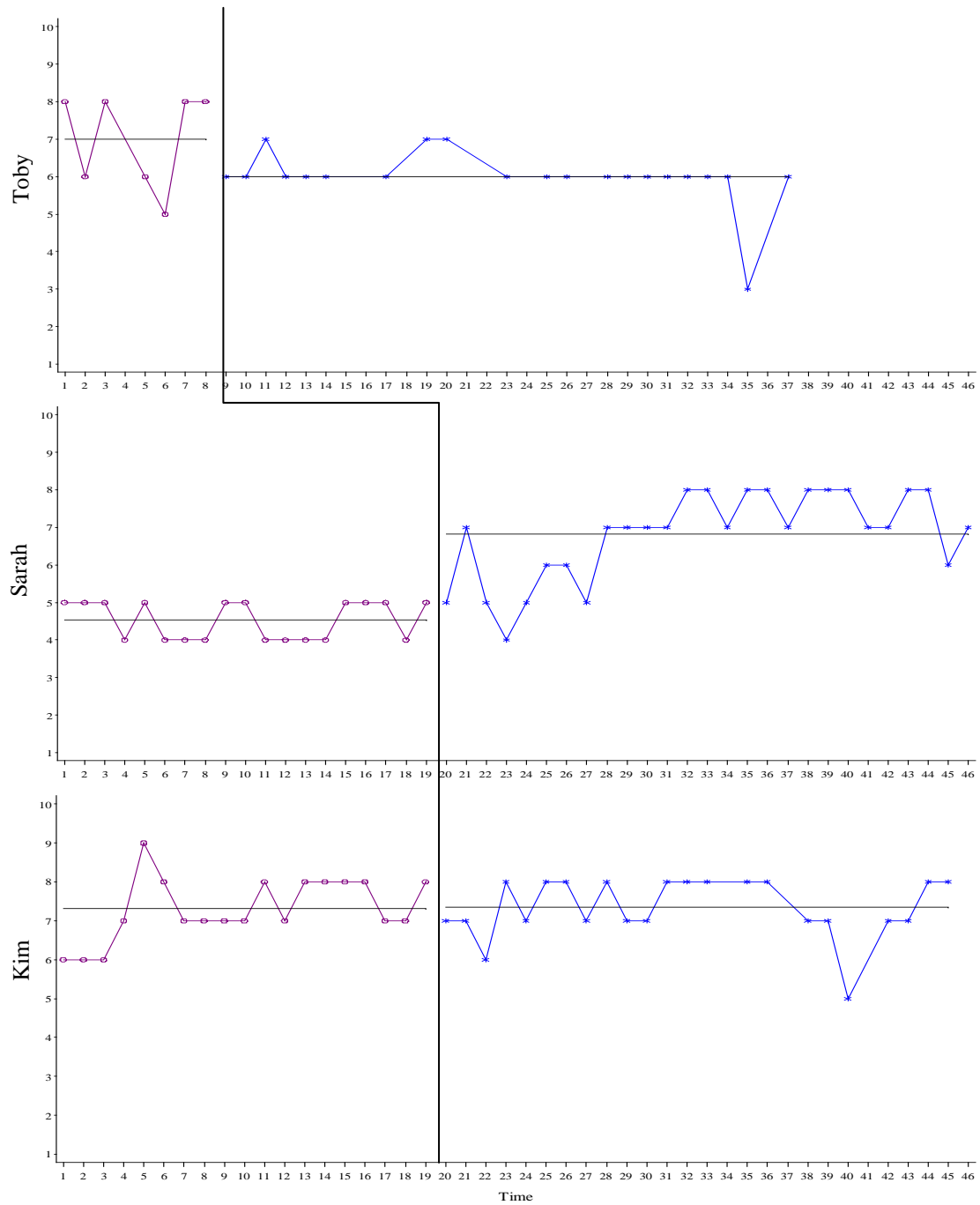


Figure 7. Interrupted time series data for the level of control outside of school.

Table 10

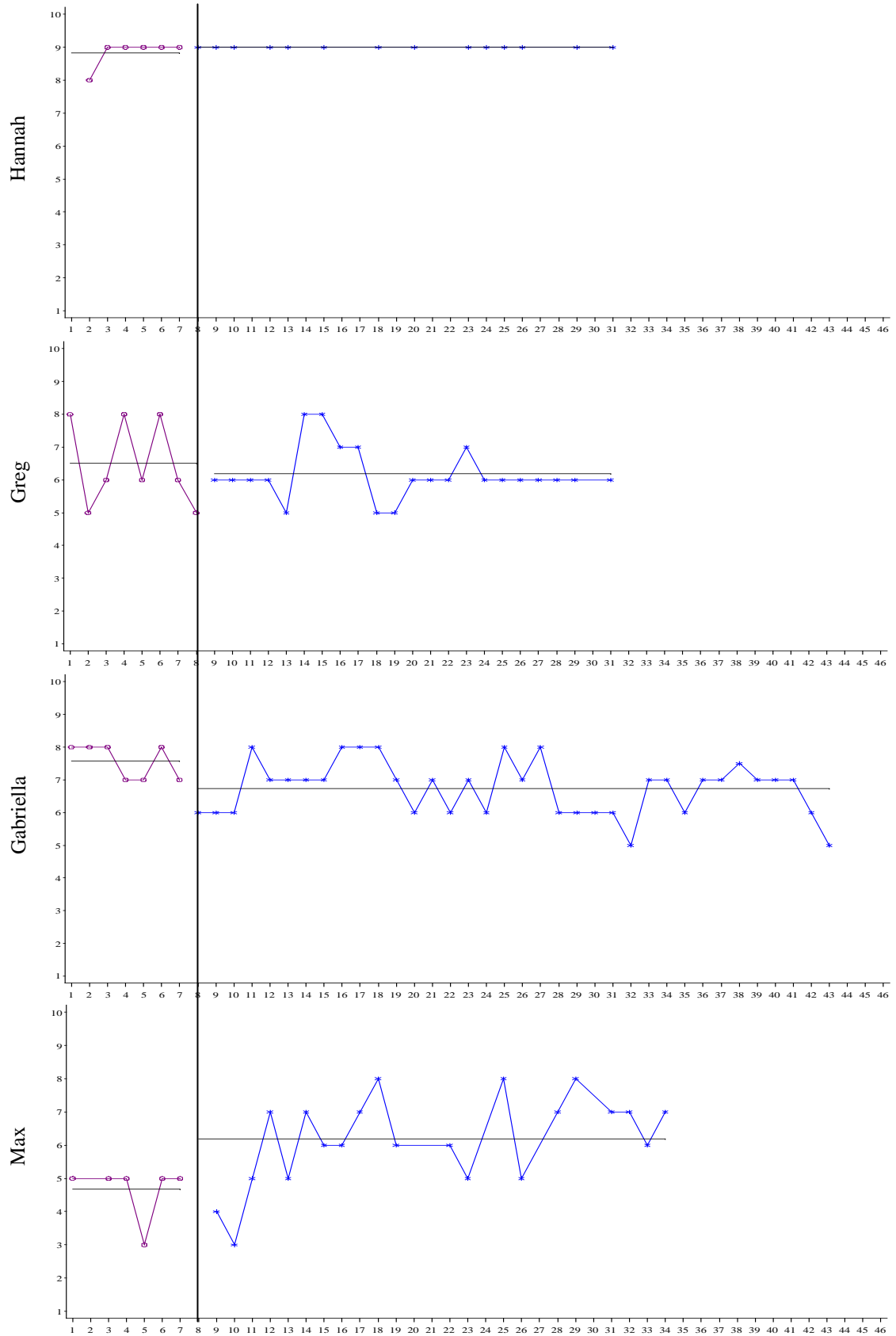
*Baseline and Treatment Phase Means and Change in Means for Self-Determination Interrupted Time Series Data*

	Level of Control Outside of School			Level of Control Inside of School			Relationship Between Behaviors and Actions and What Happens in Life		
	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$
Hannah	8.17	8.93	0.76	8.83	9.00	0.17	7.00	7.07	0.07
Greg	6.88	7.05	0.17	6.50	6.18	-0.32	6.50	6.09	-0.41
Gabriella	7.86	7.94	0.08	7.57	6.74	-0.83	8.00	7.86	-0.14
Max	8.00	4.24	-3.76	4.67	6.19	1.43	10	7.29	-2.71
Toby	7.00	6.00	-1.00	7.00	6.29	-0.79	6.29	6.14	-0.15
Sarah	4.53	6.81	2.28	6.84	8.00	1.16	8.16	7.37	-0.79
Kim	7.32	7.35	0.03	7.11	7.26	0.15	9.00	8.78	-0.22
$\bar{x}$	7.11	6.90	-0.21	6.93	7.14	0.21	7.85	7.23	-0.62

*Note.*  $\bar{x}_A$  = mean of baseline phase;  $\bar{x}_B$  = mean of treatment phase;  $\bar{x}_\Delta$  = change in mean between baseline and treatment phases

for the intervention phase is consistent with the last three points of the baseline phase making it difficult to determine the change in level was due to PSI. Further, two of the seven participants had a decrease in amount of variability indicating a more stable amount of perceived control while participating in PSI. None of the data illustrated a change in trends between baseline and intervention phases. There was considerable overlap in data between phases for the majority of participants. Only Max demonstrated an immediate intervention effect; however, it was in the opposite direction than expected.

**Level of control inside of school.** Time series graphs for the level of control inside of school are presented in Figure 8. Mean scores ranged from 4.67 to 8.83 for the baseline phase and 6.18 to 9.00 for the intervention phases. Changes in means between the baseline and intervention phase ranged from -0.83 to 1.43. An initial review of the data did not indicate any trends in the data. Therefore, trendlines were modeled with no slope, which resulted in trendlines representing the mean for each phase. Toby and Kim appear to have an outlying data point. The majority of participants' data either showed no change or a decrease in level of control over their lives inside school. Only Max and Sarah had an increase in level of control. Two of the seven participants had an increase in amount of variability they perceived in their level of control inside school, and one, Sarah, had a decrease in variability. There was considerable overlap in data between phases for the majority of participants. Max and Sarah demonstrated an immediate intervention effect. Overall, visual analysis of the time series data associated with the level of control participants felt over their life inside school indicated little to no intervention effect for the implementation of PSI.



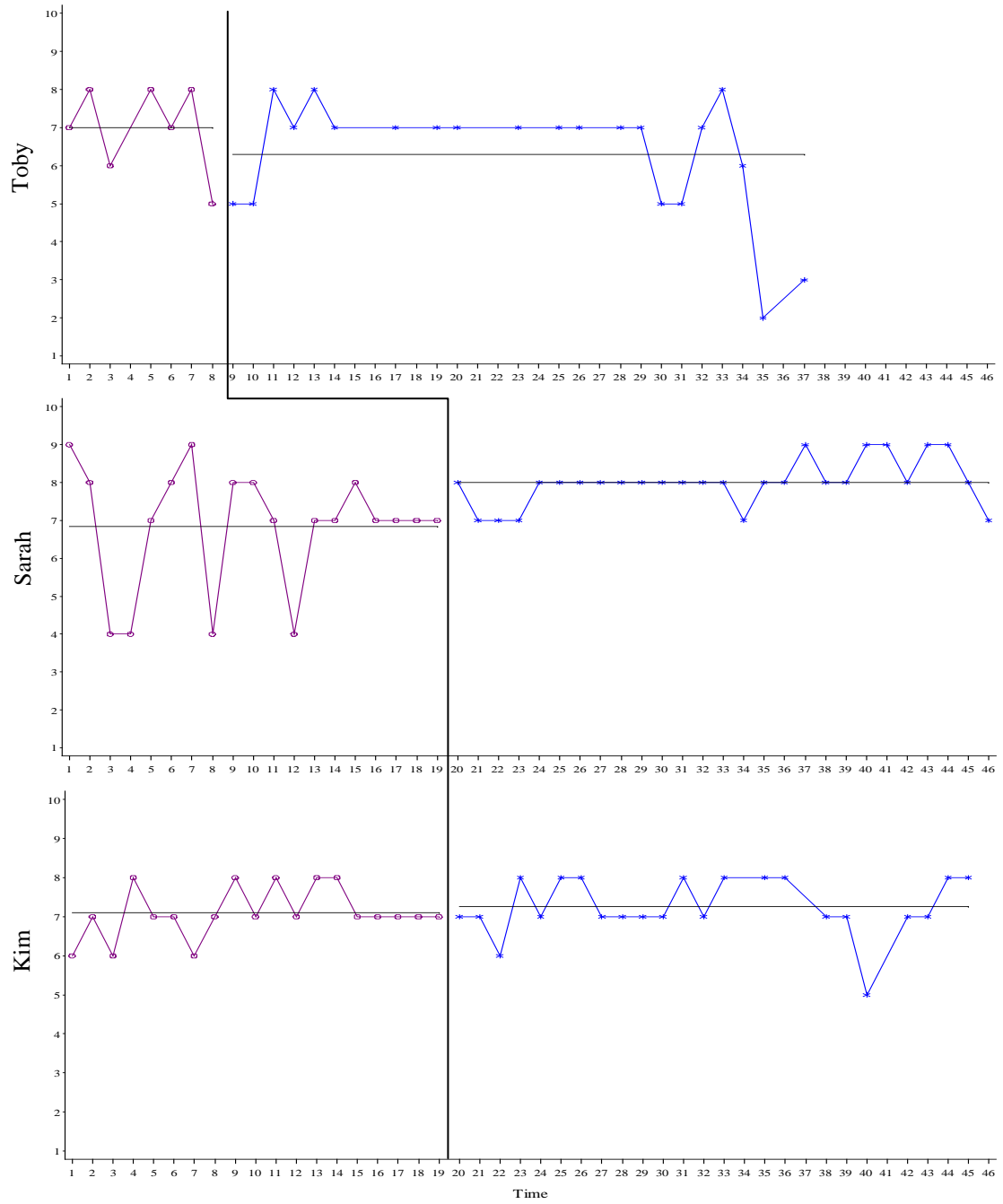
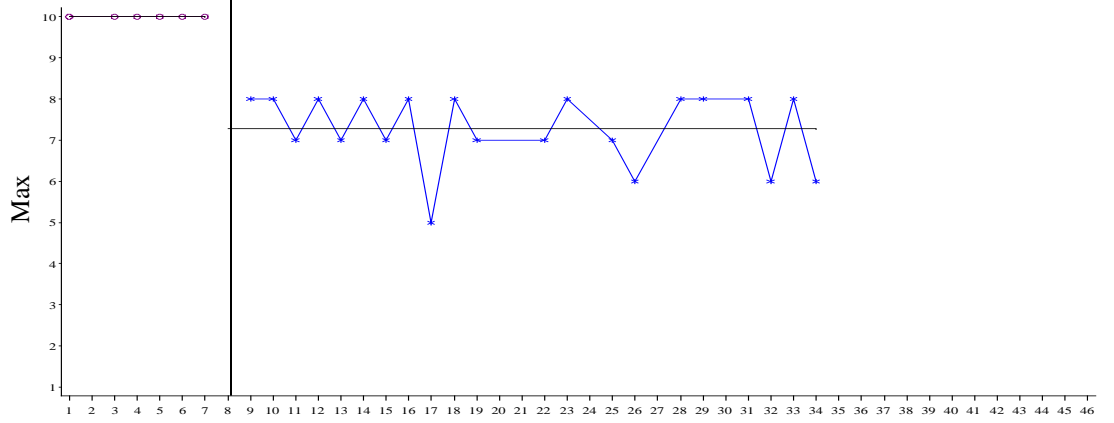
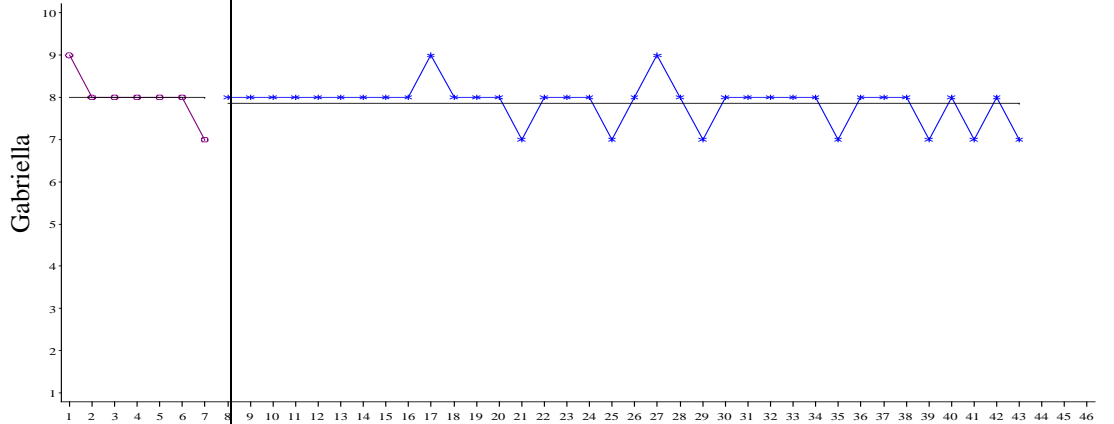
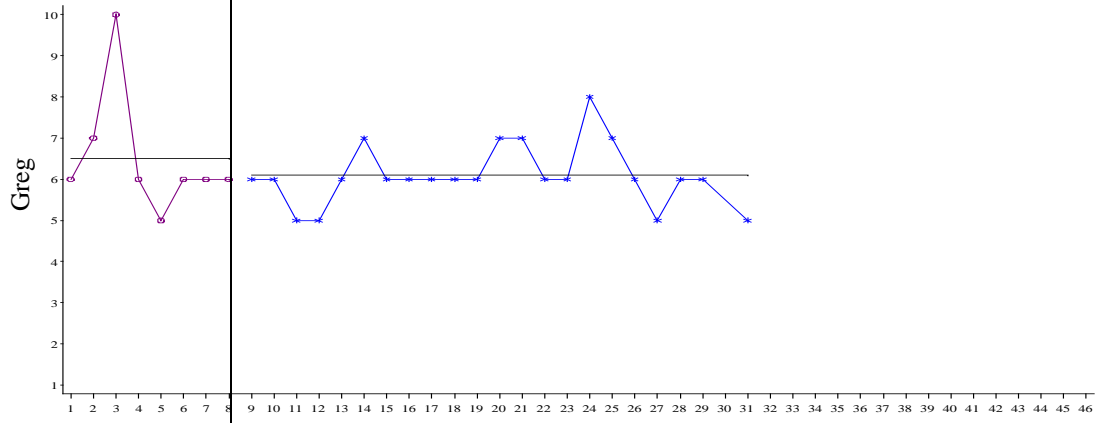
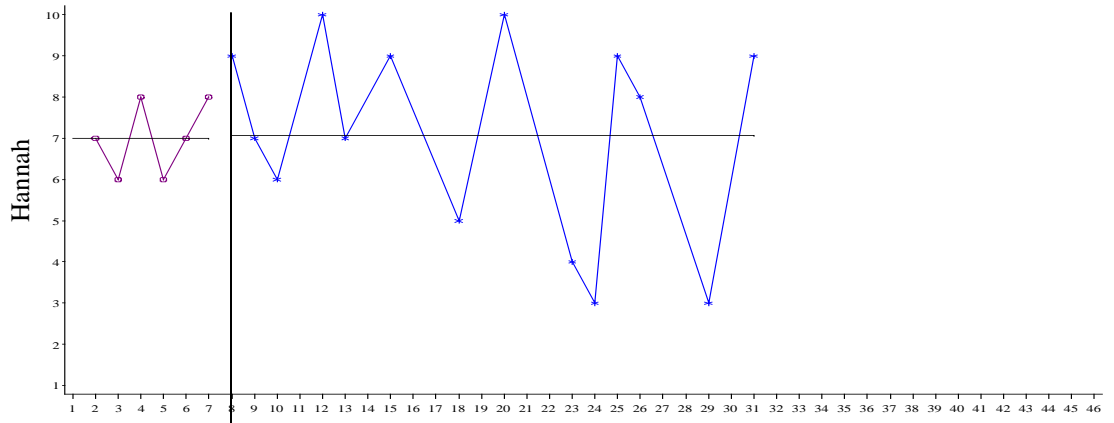


Figure 8. Interrupted time series data for the level of control inside of school.

**Relationship of behaviors and actions to what happens in life.** Figure 9 contains the time series graphs for how often participants thought about their behaviors and actions in relation to what happens in their lives. Mean scores range from 6.29 to 10 for the baseline phase and 6.14 to 8.78 for the intervention phase. Changes in means between the baseline and intervention phases ranged from -2.71 to 0.07. Results from the visual analysis indicate little to no intervention effect. All of the participants experienced either a decline or no change in the level of how often they related their behaviors to their life occurrences. Greg demonstrated variability in scores while all other participants demonstrated either an increase in variability or no change in it. There are three outliers apparent in the data of Toby for the last three time points. If these points were not present, the variability for this participant would have remained similar between phases. None of the graphs illustrate a change in trend from baseline to treatment phase. There is considerable overlap between the baseline and treatment phase for all participants with the exception of Max. The data for Max show an immediate treatment effect. This treatment effect indicates he thought about his behaviors and actions in relation to what happened in his life less while participating in PSI. This is opposite treatment effect expected.

**Life satisfaction.** The times series graphs for life satisfaction are presented in Figure 10. The means for baseline and treatment phases, as well as the change in means between phases are provided in Table 11. Means ranged from 6.13 to 10 for the baseline phase and 5.52 to 8.57 for the intervention phase. Changes in means between the baseline and intervention phases ranged from -2.93 to 0.23. None of the participants' level in life satisfaction increased according to the data. In fact, all participants experienced either a





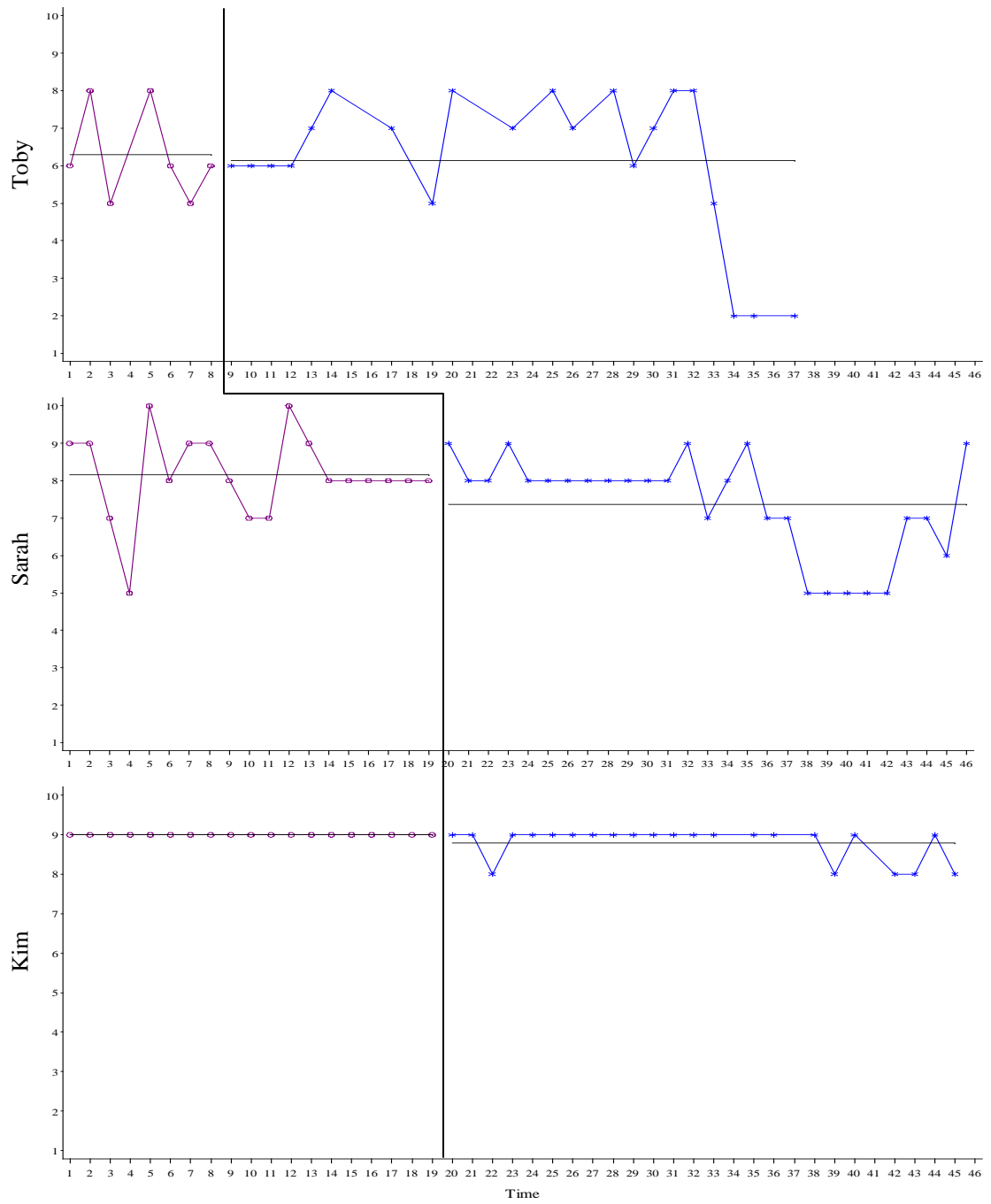
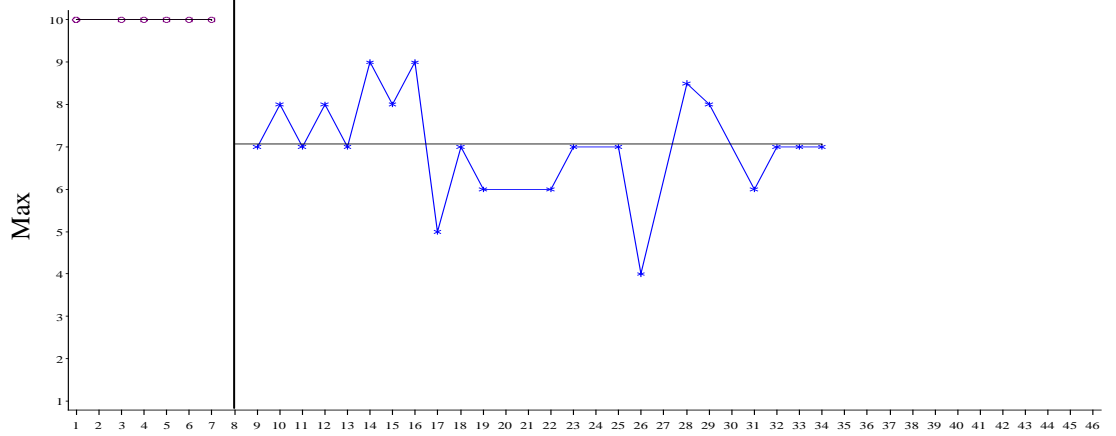
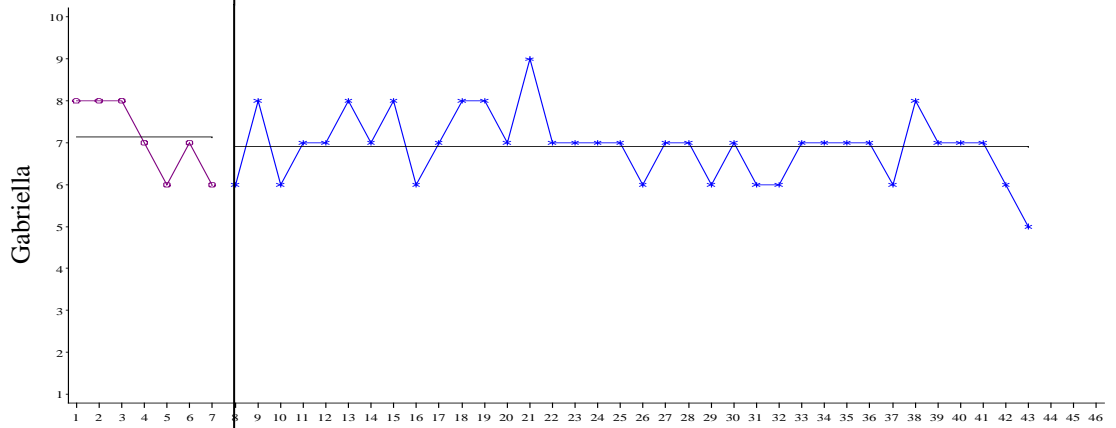
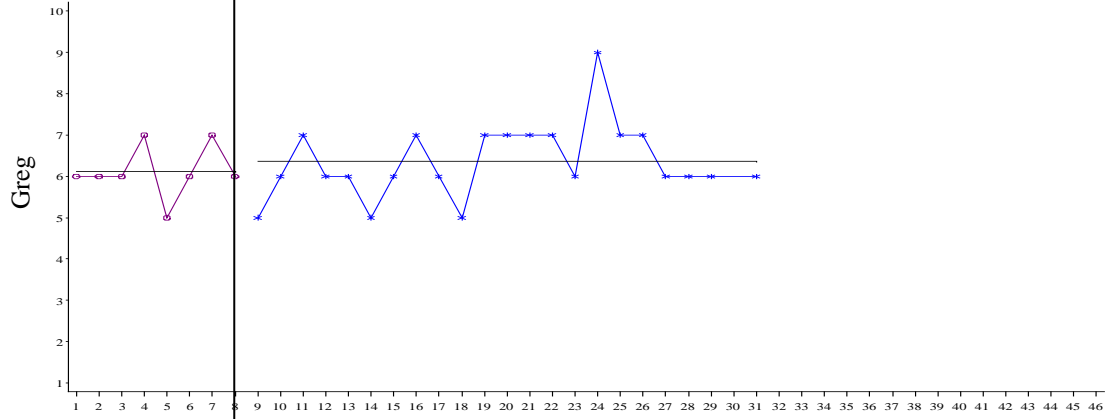
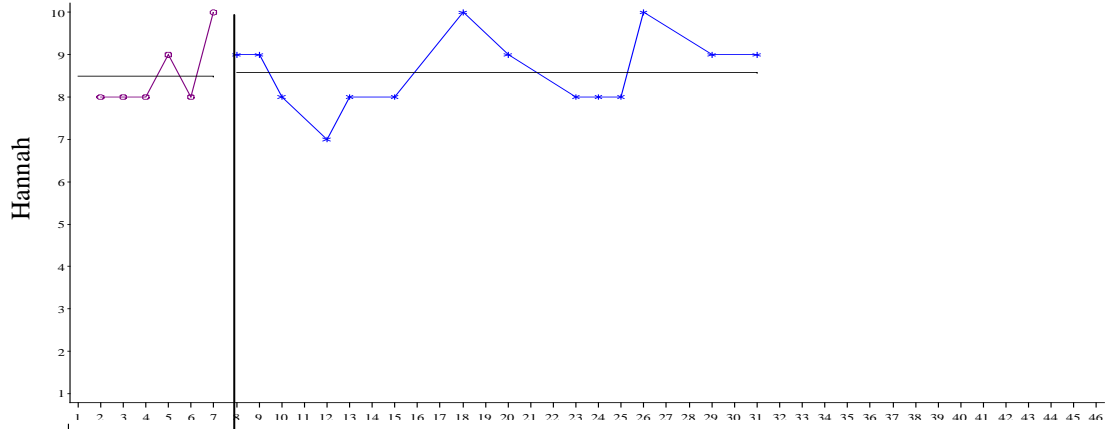


Figure 9. Interrupted times series data for the relationship between behaviors and actions and what happens in life.



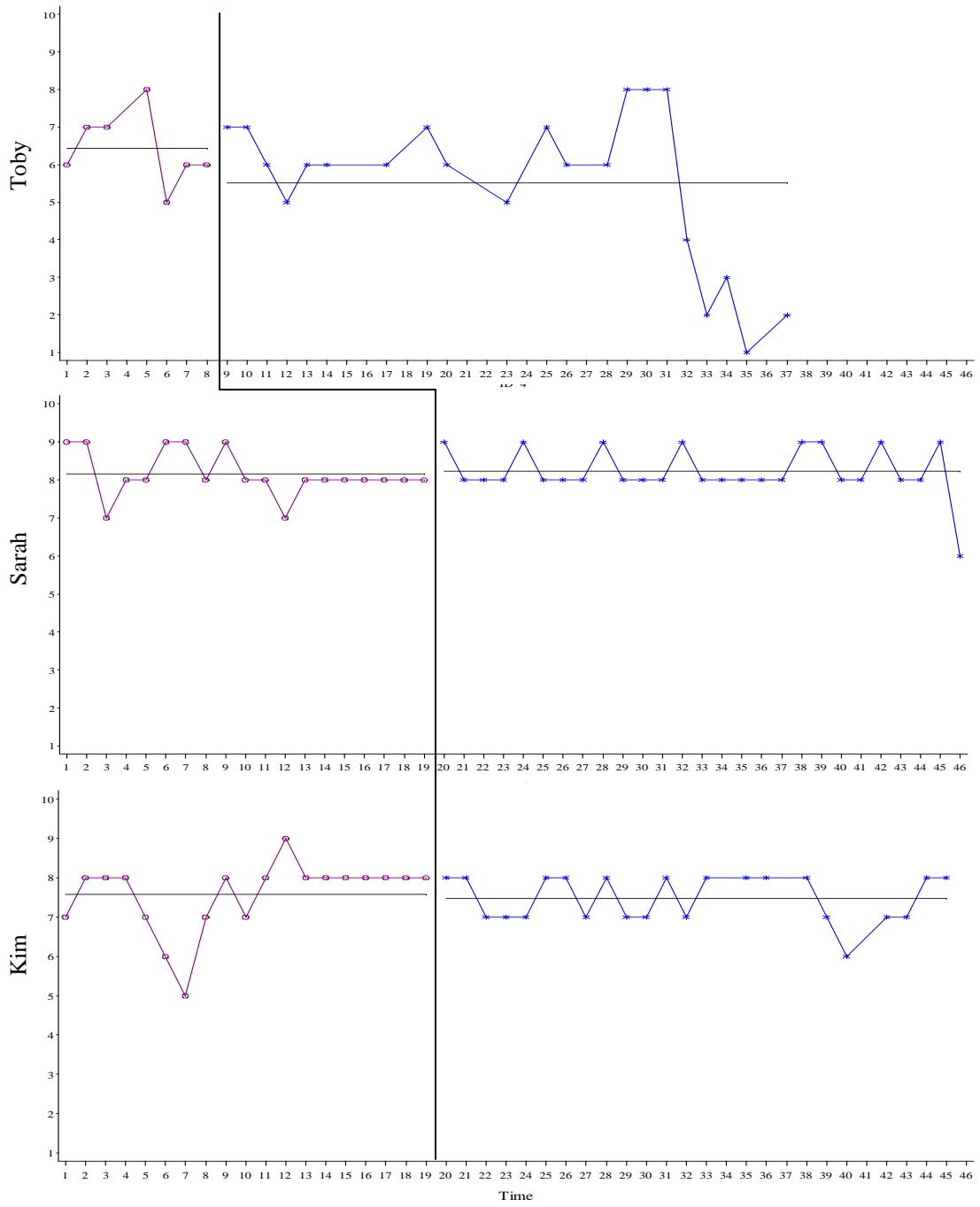


Figure 10. Interrupted time series data for life satisfaction.

Table 11

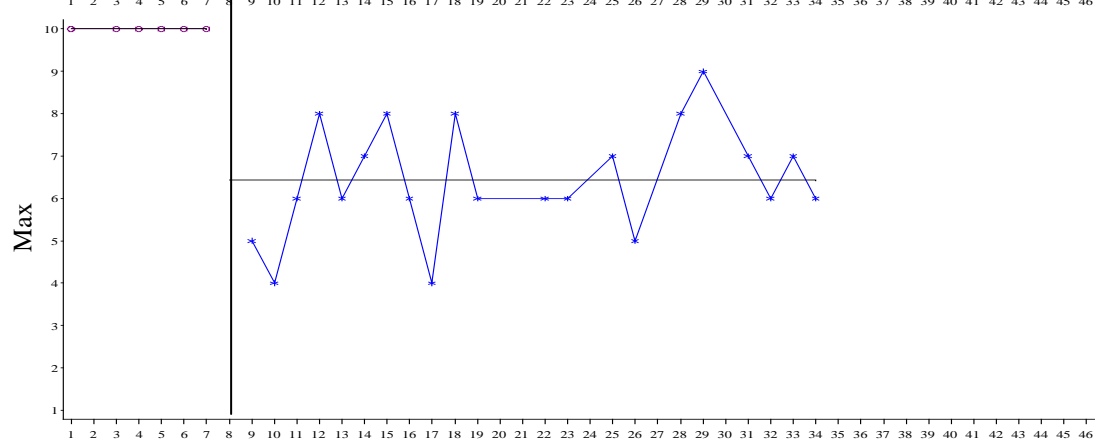
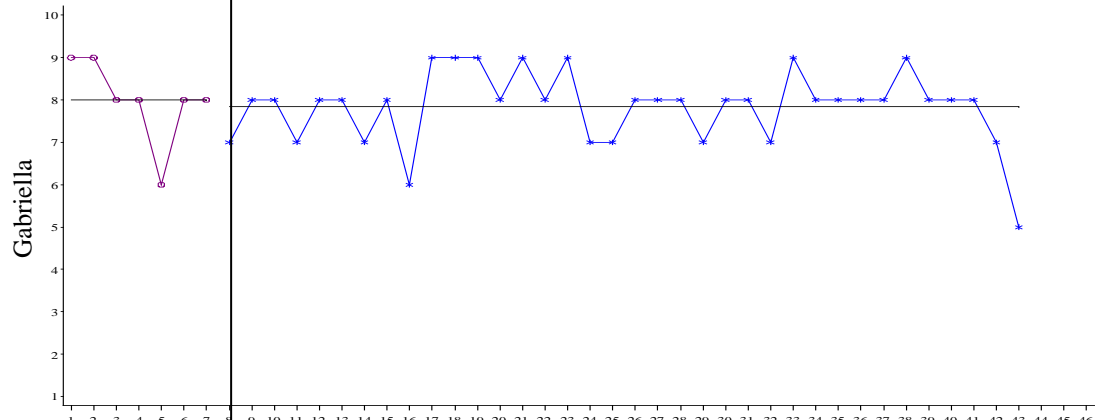
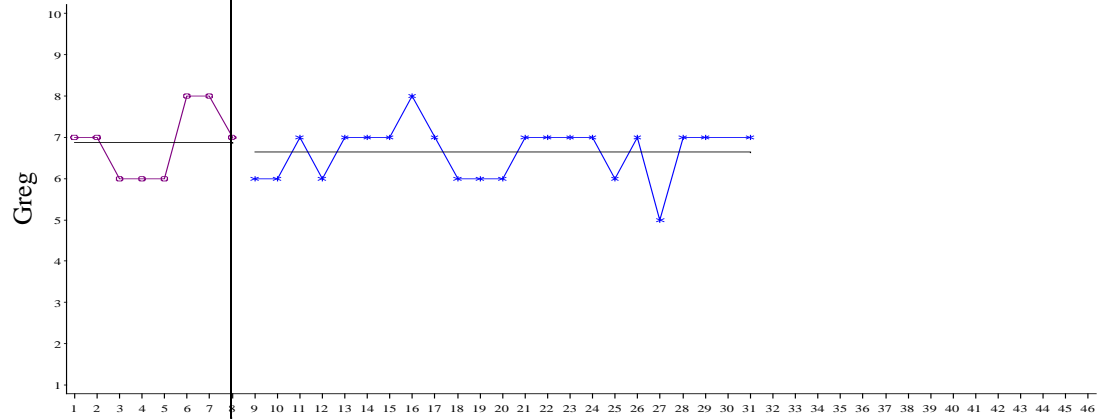
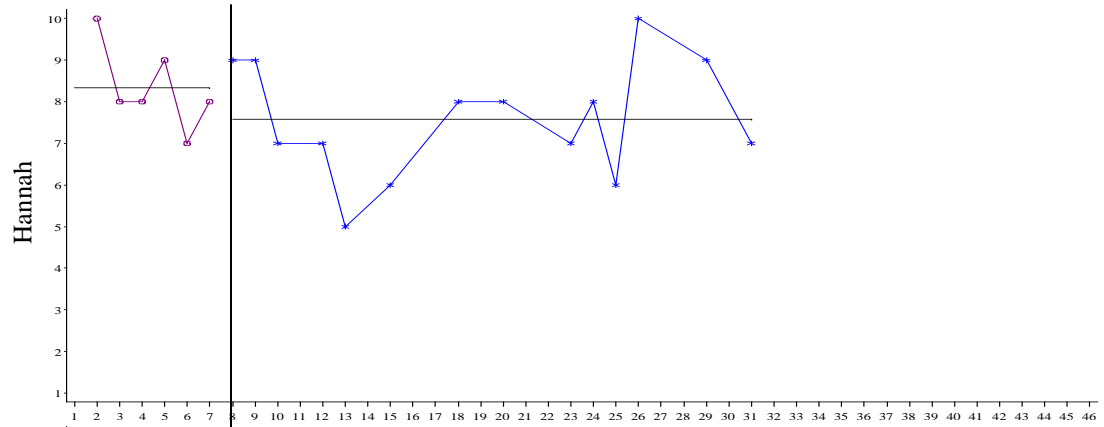
*Baseline and Treatment Phase Means and Change in Means for Social-Emotional Interrupted Times Series Data*

	Life Satisfaction			Frequency of Positive Emotions			Frequency of Negative Emotions			Well-Being		
	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$	$\bar{x}_A$	$\bar{x}_B$	$\bar{x}_\Delta$
Hannah	8.50	8.57	0.07	8.33	7.57	-0.76	3.17	2.64	-0.53	13.67	13.57	-0.10
Greg	6.13	6.36	0.23	6.88	6.64	-0.24	5.50	5.45	-0.05	7.50	7.54	0.04
Gabriella	7.14	6.92	-0.22	8.00	7.83	-0.17	3.29	3.19	-0.10	11.86	11.56	-0.30
Max	10.00	7.07	-2.93	10.00	6.43	-3.57	2.17	3.57	1.40	17.83	9.93	-7.90
Toby	6.43	5.52	-0.91	5.86	5.62	-0.24	5.43	4.71	-0.72	6.86	6.43	-0.43
Sarah	8.16	8.22	0.06	7.47	8.19	0.72	8.95	6.26	-2.69	6.68	10.15	3.47
Kim	7.58	7.48	-0.10	7.58	7.48	-0.10	2.73	2.56	-0.17	12.79	12.39	-0.40
$\bar{x}$	7.71	7.16	-0.54	7.73	7.11	-0.62	4.46	4.05	-0.41	11.03	10.22	-0.81

*Note.*  $\bar{x}_A$  = mean of baseline phase;  $\bar{x}_B$  = mean of treatment phase;  $\bar{x}_\Delta$  = change in mean between baseline and treatment phases

decrease or no change in their level of life satisfaction during their participation in PSI. Several participants had outlying values with the most extreme values present in Toby's data. Three participants demonstrated an increase in variability during the treatment phase while the rest of the participants had no change in variability. There were no observable trends in either the baseline or treatment phases for any of the participants. With the exception of Max there was overlap in data points between baseline and treatment phases. Max did not demonstrate an overlap in data points between phases; however, the treatment phase for this participant was lower than the baseline phase. These results indicate there was little to no intervention effect on participants' levels of life satisfaction.

**Frequency of positive emotions.** Time series graphs for the frequency of positive emotions participants felt are presented in Figure 11. Means ranged from 5.86 to 10 for the baseline phase and 5.62 to 8.19 for the intervention phase. Changes in means between the baseline and intervention phases ranged from -3.57 to 0.72. One participant, Sarah, demonstrated increased frequency of positive emotions experienced during PSI. All other participants either demonstrated no change or a decline in positive emotions during the treatment phase. There were no trends present in the data for the majority of participants. Max demonstrated a slight increase in trend during the treatment phase, while Toby's data indicated a slight downward trend. Outlying values were apparent for Gabriella and Sarah at the end of the treatment phase. Three participants' data indicated an increase in variability during the treatment phase, and variability remained stable for four participants. The data for both Max and Toby suggest an immediacy effect during the treatment phase. Max's data show a decrease in the frequency of positive emotions



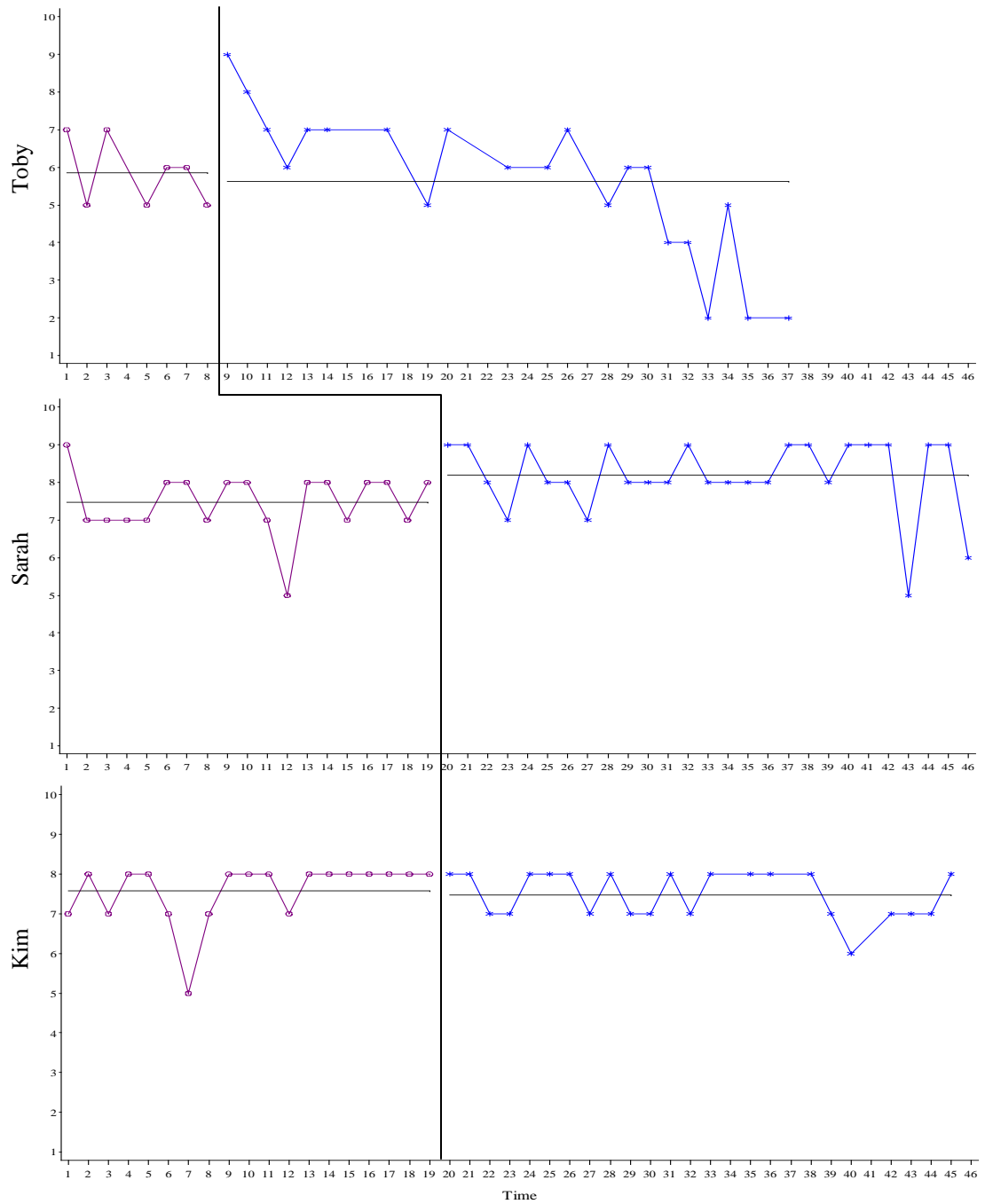
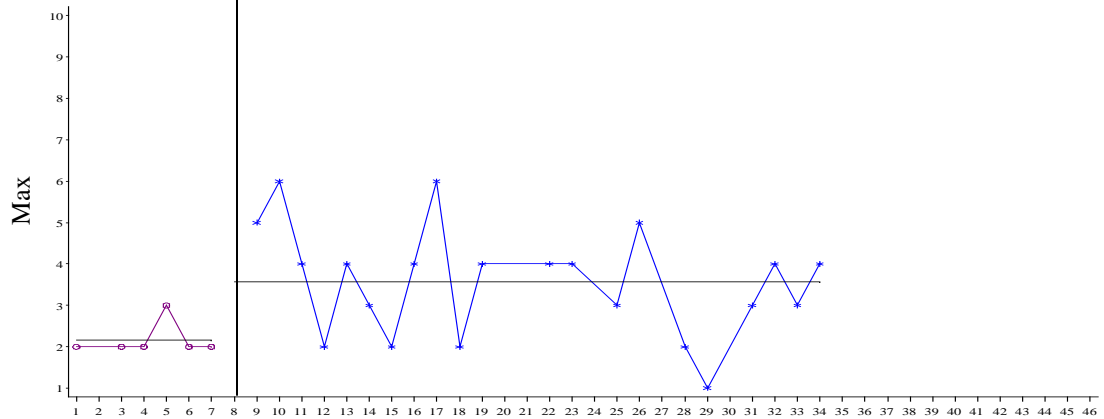
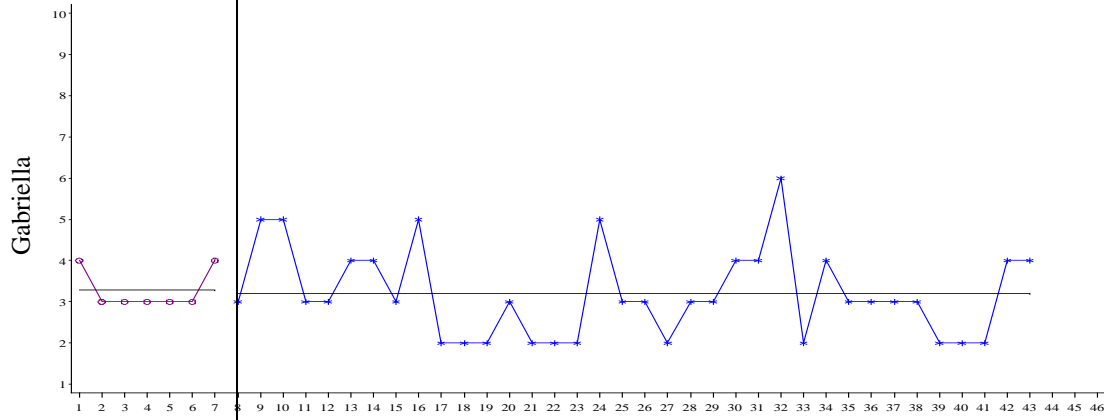
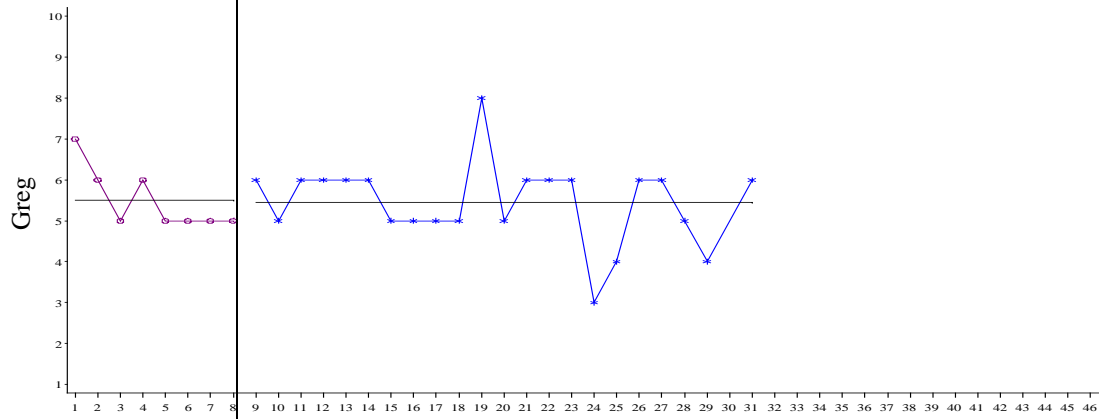
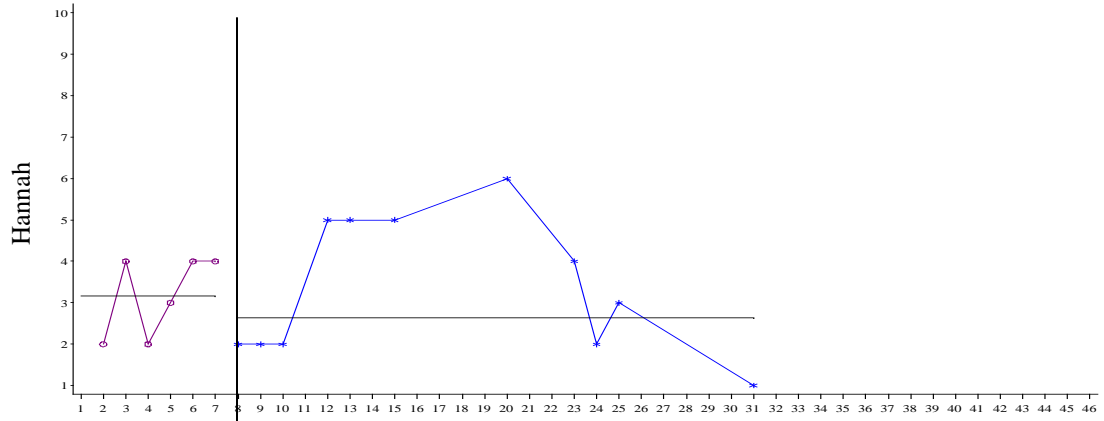


Figure 11. Interrupted time series data for the frequency of positive emotions.



during the beginning of the treatment phase. The data for Toby show an immediate increase in the frequency of positive emotions at the beginning of the treatment phase; however, as the treatment phase continued the frequency level declined. There was overlap between baseline and treatment phase data points for the majority of participants. This indicates there was little to no intervention effect related to participation in PSI on the frequency of positive emotions.

**Frequency of negative emotions.** Figure 12 provides the times series graphs for the frequency of negative emotions reported by participants. For this variable, unlike the other dependent time series variables, it was hypothesized that there would be a decrease in the frequency of negative emotions experienced during the treatment phase. Means ranged from 2.17 to 8.95 for the baseline phase and 2.56 to 6.26 for the intervention phase. Changes in means between the baseline and intervention phases ranged from -2.69 to 1.40. Three of the participants demonstrated a decrease in the frequency of negative emotions during participation in PSI. One participant, Max, demonstrated an increase in the frequency of negative emotions experienced during the treatment phase. One participant, Kim, demonstrated a decrease in the amount of variability in the frequency of negative emotions indicating the frequency with which she experienced negative emotions became more stable during treatment phase. The data for Sarah include two extreme higher values during the intervention phase. The removal of these points would have resulted in a downward trend during treatment phase, indicating a decrease in the frequency of negative emotions as participation in PSI continued. Toby's data revealed a slight downward trend in the frequency of negative emotions experienced during the treatment phase; however, the removal of an outlying value at the beginning of the



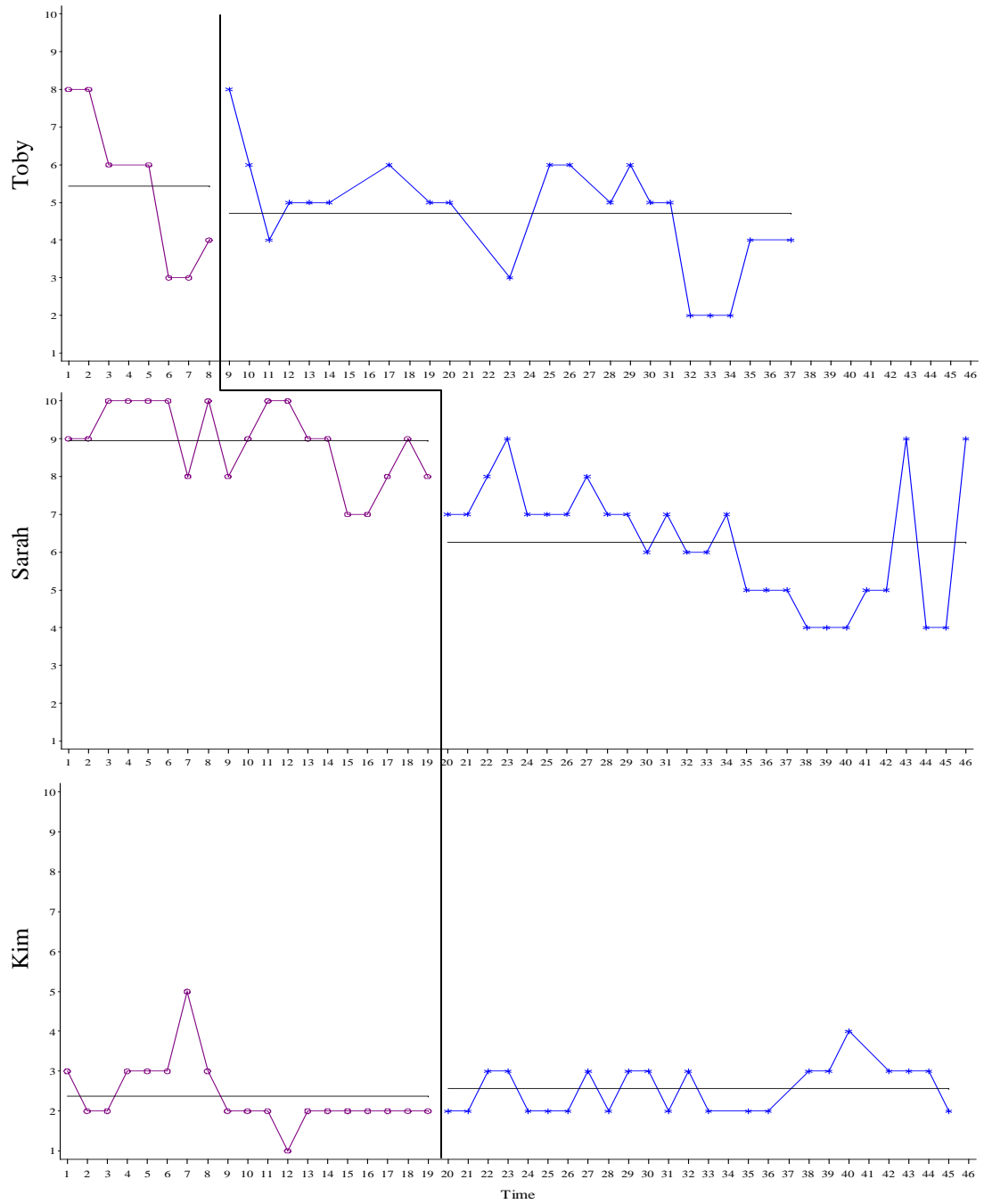
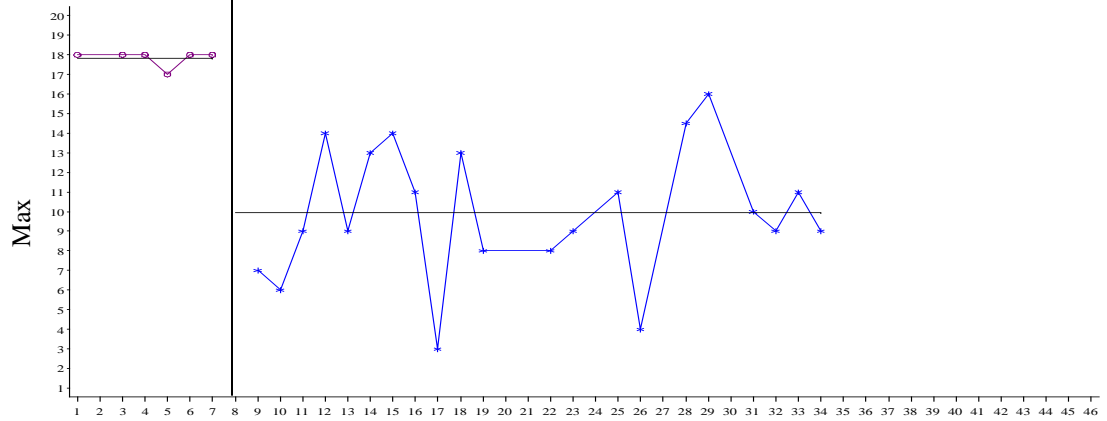
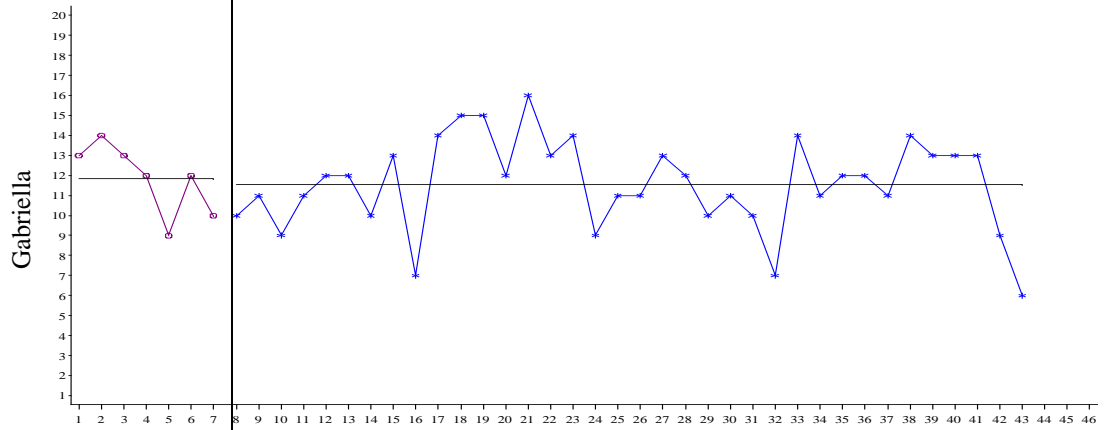
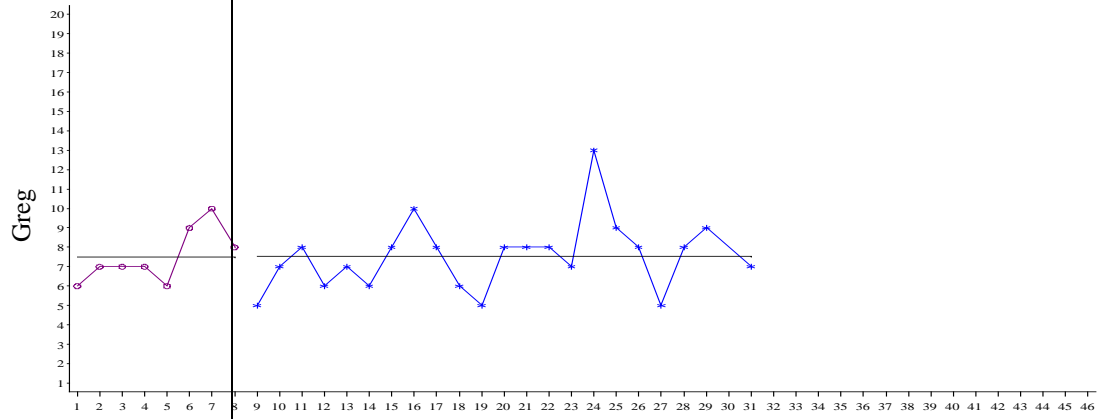
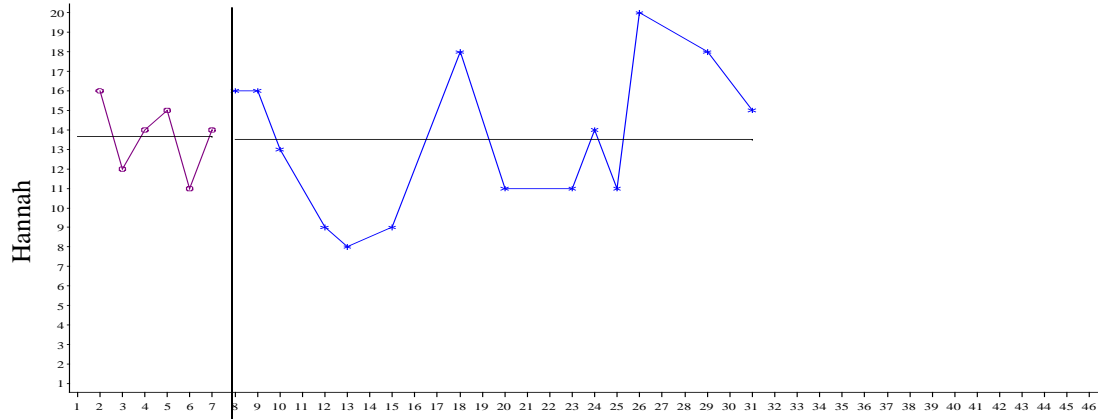


Figure 12. Interrupted time series data for the frequency of negative emotions.

treatment phase would result in a more consistent level of the frequency of negative emotions with no slope. There is considerable overlap in data between baseline and treatment phases for all participants with the exception of Max. Max's data revealed an immediate increase in the frequency of negative emotions experienced while participating in PSI, which is in the opposite direction hypothesized. These results indicate little to no intervention effect on the frequency of negative emotions related to the participation in PSI.

**Well-being.** An overall well-being variable was created by adding the level of life satisfaction and frequency of positive emotions reported and subtracting the frequency of negative emotions reported. This was done in order to investigate the impact of PSI on individual components of well-being as well as to examine the impact on social-emotional levels as a whole. Time series graphs for well-being levels are presented in Figure 13. Means ranged from 6.68 to 17.83 for the baseline phase and 6.43 to 13.57 for the intervention phase. Changes in means between the baseline and intervention phases ranged from -7.90 to 3.47. A review of the data indicated an increase in well-being for Sarah. All other participants experienced either no change or a decline in their level of well-being during the participation in PSI. Five of the seven participants experienced increased variability in their well-being level indicating it was less stable during the treatment phase. There were no obvious trends in either the baseline or treatment phase for any participants. The majority of participants, with the exception of Max, demonstrated overlap in the level of well-being they reported during the baseline and treatment phases. Max demonstrated an immediate drop in the level of well-being during



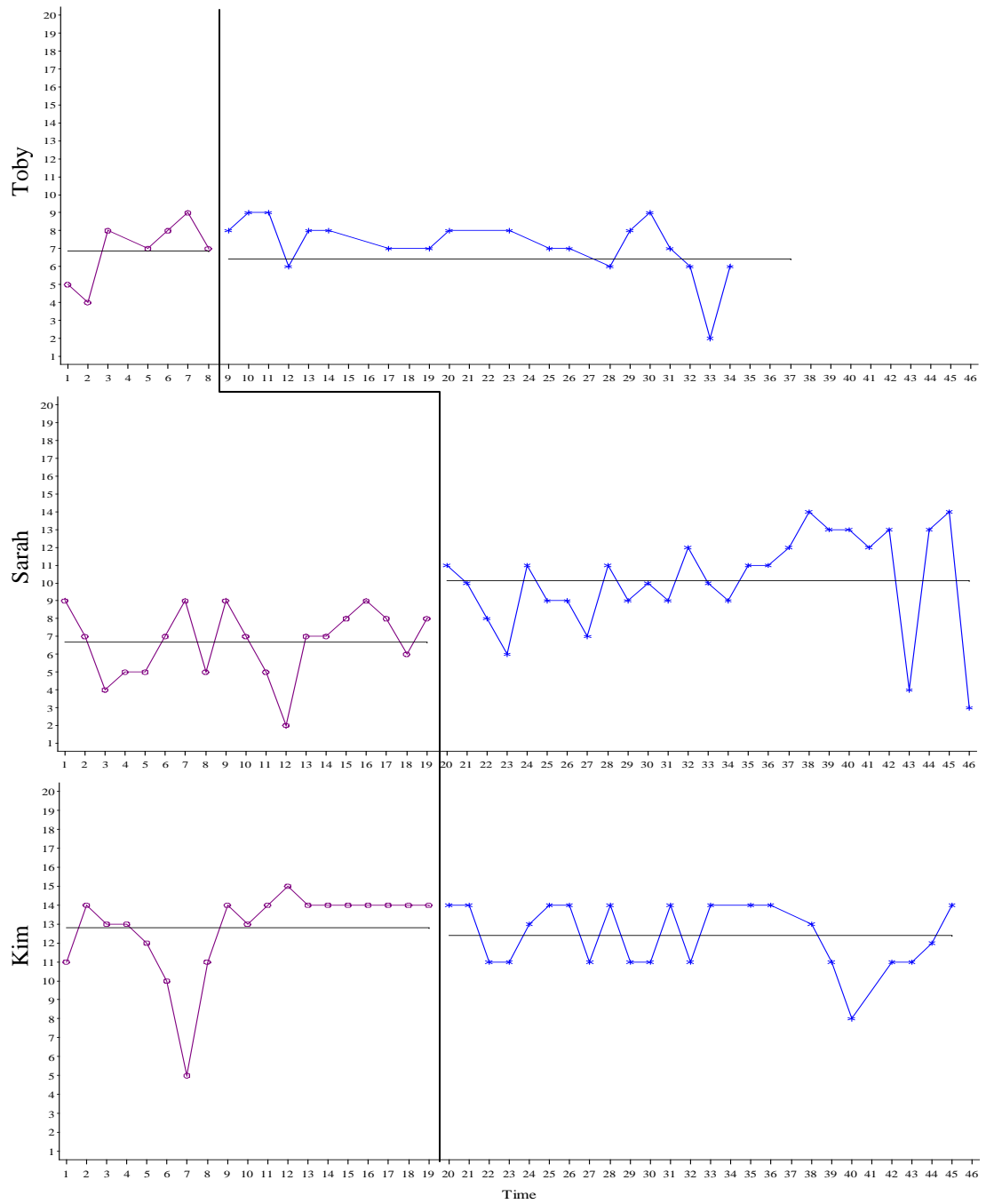


Figure 13. Interrupted time series data for the level of well-being.

treatment phase. These results indicate little to no intervention effect on level of well-being as a result of participating in PSI.

**Summary of visual analyses.** Overall, the results from the visual analyses indicate there is little to no intervention effect on either self-determination (i.e., time series questions 1, 2, and 3) or social-emotional (i.e., time series questions 4, 5, and 6, plus well-being variable) levels across participants. There were no obvious trends in either baseline or treatment phases for the majority of participants. Trendlines were modeled with no slopes resulting in trendlines representing the mean level per phase. An examination of the change in means between phases did not indicate a shift in the expected direction for the majority of participants. The amount of variation across phases tended to either remain the same or increase. There tended to be overlap in data points across phases. Few participants demonstrated an immediacy effect with the exception of Max. Most intervention effects that were apparent for him tended to be in the opposite direction from the one hypothesized. Sarah is an exception. The data for this participant tended to demonstrate changes between the baseline and treatment phases consistent with the expected intervention effects.

### **Effect Sizes**

Along with visual analysis, effect sizes were calculated for by dependent variable for each participant and aggregated across participants to examine the impact of PSI on self-determination and social-emotional levels. The percentage of nonoverlapping data (PND; Scruggs & Mastropieri, 1998) and percentage of data points exceeding the median (PEM; Ma, 2006) were calculated. Following Scruggs and Mastropieri and Ma, effect sizes were interpreted using the following criteria: .90 or higher indicated a highly

effective intervention, .70 to .90 indicated a moderate intervention effect, .50 to .70 indicated a small intervention effect, and below .50 indicated no intervention effect.

**PND.** The PND values for the self-determination dependent variables are provided in Table 12. Overall, examination of PND values indicated there was no intervention effect associated with participation in PSI. All PND values were 0.00% with the exception of Sarah for level of control outside of school (81.48%) and Max for level of control inside of school (66.67%). According to these values Sarah experienced a moderate treatment effect and Max experienced a small treatment effect on self-determination levels related to participation in PSI.

Table 12

*Percentage of Nonoverlapping Data for Self-Determination Interrupted Times Series Data*

	Level of Control Outside of School	Level of Control Inside of School	Relationship Between Behaviors and Actions and What Happens in Life
Hannah	0.00	0.00	0.00
Greg	0.00	0.00	0.00
Gabriella	0.00	0.00	0.00
Max	0.00	66.67	0.00
Toby	0.00	0.00	0.00
Sarah	81.48	0.00	0.00
Kim	0.00	0.00	0.00
$\bar{x}$	11.64	9.52	0.00

The PND values for the social-emotional dependent variables are provided in Table 13. The means of PND values for the social-emotional dependent variables range from 1.05% for life satisfaction and 16.93% for the frequency of negative emotions reported. Only two participants, Greg and Gabriella, had a PND above 0.00% for life satisfaction. Toby was the only participant with a PND above 0.00% for the frequency of positive emotions. All participants, with exception of Kim, had a PND above 0.00% for



the frequency of negative emotions reported with a range of 4.76% to 48.14%. These PND values are not large enough to indicate a treatment effect. Six participants had PND values indicating no treatment effect for well-being while Sarah's PND values indicated a small intervention effect regarding her well-being associated with participation in PSI. This analysis indicated there was no overall treatment effect related to participation in PSI across participants.

Table 13

*Percentage of Nonoverlapping Data for Social-Emotional Interrupted Times Series Data*

	Life Satisfaction	Frequency of Positive Emotions	Frequency of Negative Emotions	Well-Being
Hannah	0.00	0.00	7.14	21.43
Greg	4.54	0.00	13.64	4.54
Gabriella	2.78	0.00	30.56	8.33
Max	0.00	0.00	4.76	0.00
Toby	0.00	9.52	14.29	0.00
Sarah	0.00	0.00	48.14	62.96
Kim	0.00	0.00	0.00	0.00
$\bar{x}$	1.05	1.36	16.93	13.89

**PEM.** The PEM values for the self-determination dependent variables are presented in Table 14. The mean values across participants range from .21 (relationship between behaviors and actions and what happens in life) and .47 (level of control outside of school). These values are consistent with no intervention effect. The PEM values for level of control outside of school range from .00 to .93 with Hannah demonstrating a large intervention effect (.93), and Sarah and Greg demonstrating a moderate intervention effect (.81 and .77, respectively). For level of control inside of school, PEM values ranged from .00 to .81 with Sarah's PEM (.81) associated with a moderate intervention effect and Max's PEM (.67) associated with a small intervention effect. The PEM values

for the relationship between behaviors and actions and what happens in life range from .00 to .52 with Hannah and Toby demonstrating a small intervention effect (.50 and .52, respectively). According to individual PEM values there is an intervention effect on self-determination level for some participants associated with participation in PSI. This intervention effect ranged from small to large depending on participant and dependent variable. When PEM values were aggregated across participants there is little to no evidence of an intervention effect.

Table 14

*Points Exceeding the Median for Self-Determination Interrupted Times Series Data*

	Level of Control Outside of School	Level of Control Inside of School	Relationship Between Behaviors and Actions and What Happens in Life
Hannah	.93	.00	.50
Greg	.77	.23	.23
Gabriella	.28	.00	.06
Max	.00	.67	.00
Toby	.00	.14	.52
Sarah	.81	.81	.19
Kim	.48	.31	.00
$\bar{x}$	.47	.31	.21

The PEM values associated with the social-emotional dependent variables are presented in Table 15. The mean PEM values across participants range from .19 for frequency of positive emotions to .37 for well-being, indicating there was no intervention effect on social-emotional levels associated with participation in PSI. PEM values for life satisfaction ranged from .00 to .50 with Hannah (.50) demonstrating a small intervention effect. Values for the frequency of positive emotions ranged from .00 to .44. The frequency of negative emotions had PEM values which ranged from .00 to .89 with Sarah

(.89) and Toby (.71) demonstrating a moderate intervention effect. The PEM values associated with well-being ranged from .00 to .85 with Sarah (.85) demonstrating a moderate intervention effect and Greg (.55) demonstrating a small intervention effect. Overall, the PEM values associated with the social-emotional dependent variables indicate little to no treatment effect across participants; however, four of the participants experienced at a small intervention effect related to participation in PSI.

Table 15

*Points Exceeding the Median for Social-Emotional Interrupted Times Series Data*

	Life Satisfaction	Frequency of Positive Emotions	Frequency of Negative Emotions	Well-Being
Hannah	.50	.29	.43	.43
Greg	.41	.05	.14	.55
Gabriella	.19	.17	.31	.36
Max	.00	.00	.05	.00
Toby	.33	.38	.71	.43
Sarah	.30	.44	.89	.85
Kim	.00	.00	.00	.00
$\bar{x}$	.25	.19	.36	.37

**Summary of effect size results.** The effect sizes PND and PEM were calculated for each participant and aggregated across participants. Overall, there was no intervention effect associated with participation in PSI on self-determination or social-emotional levels. However, there were treatment effects for some participants. These ranged from small to large for self-determination variables (i.e., level of control outside of school, level of control inside of school, and relationship between behaviors and actions and what happens in life) and from small to moderate for social-emotional variable (i.e., life satisfaction, frequency of positive emotions, frequency of negative emotions, and well-being).

## **Multilevel Modeling**

Multilevel modeling was utilized to test for average treatment effects across and within participants. A two-level model where individual time points were nested within individual participants was examined for each dependent variable. The models assume the errors follow a first-order autoregressive variance structure that varies by individual. When the treatment variance was greater than 0, empirical Bayes estimates were examined for each participant in order to determine individual treatment effects. Given that Max revealed his baseline data were more reflective of socially desirable responses than his perceived levels of self-determination and social-emotional needs, he was excluded from the multilevel analyses. The data analysis was completed using SAS® software, Version 9.2 (SAS Institute, 2008) with PROC MIXED.

Multilevel modeling assumes an appropriately specified model, residuals are normally distributed, and residuals are independent with equal variances (Raudenbush & Bryk, 2002). These assumptions are made for each level of the model. Each model was examined to determine if it met the assumptions of multilevel modeling using the macro *MIXED\_DX* developed by Bell, Schoeneberger, Morgan, Ferron, and Kromrey (2010). Given the small number of level-2 units ( $n = 6$ ) it was difficult to assess normality and the variances of the residuals. Level-1 residuals were approximately normally distributed for all models. Results from Levene's Test of Homogeneity indicated there is some violation of the assumption of homogeneity at level-1. The heterogeneity of the residuals was inspected further using scatterplots of the prediction errors. It appears that residuals from scores at the higher end of the scale have smaller variances than those towards the middle and lower end of the scale. Conceptually this heterogeneity makes sense given the

size of the scale (i.e., 10 points) and that many participants reported values from the middle to upper levels of the scale. (The opposite is true for the dependent variable which measured the frequency of negative emotions. Most participants reported values from the middle to lower end of the scale.) The estimation of level-2 coefficients tends to be robust to violation of the assumption of homogeneity when the model is specified correctly (Raudenbush & Bryk, 2002). Therefore, it was decided to proceed with the analysis; however, results should be interpreted with some caution.

**Level of control outside of school.** Table 16 provides the fixed and random effects for the dependent variable level of control outside school. The average baseline level was 7.35. The average treatment effect was .008 which was not statistically significant,  $t(4.93) = 0.03$ ,  $p = .98$ , 95 % CI = [-0.80, 0.82]. This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was 0.40, which was not statistically significant. The average variability in the treatment effect is 0.32, which is not statistically significant. Individual participant's variances range from 0.43 to 3.47. The autocorrelation for each participant ranges from 0.03 to 0.88. Empirical Bayes estimates for each participant are provided in Table 17. Individual treatment effects range from -0.76 to 0.64. None of the individual treatment effects are statistically significant.

Table 16

*Fixed and Random Effect Estimates for Level of Control Outside of School*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	7.35	0.34	3.61	21.68	<.01	[6.37, 8.34]
Average treatment effect, $\beta_{10}$	0.008	0.31	4.93	0.03	.98	[-0.80, 0.82]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			0.40	0.41	0.97	.17
Average treatment effect variance, $\tau_{11}$			0.32	0.32	1.00	.16
Variance for Hannah, $\sigma^2_1$			0.43	0.15	2.87	<.01
Autocorrelation for Hannah, $\rho_1$			0.27	0.21	1.27	.20
Variance for Greg, $\sigma^2_2$			0.80	0.25	3.17	<.01
Autocorrelation for Greg, $\rho_2$			0.38	0.18	2.08	.04
Variance for Gabriella, $\sigma^2_3$			0.79	0.18	4.53	<.01
Autocorrelation for Gabriella, $\rho_3$			0.03	0.17	0.20	.84
Variance for Toby, $\sigma^2_4$			0.85	0.24	3.56	<.01
Autocorrelation for Toby, $\rho_4$			0.05	0.24	0.19	.85
Variance for Sarah, $\sigma^2_5$			3.47	2.68	1.29	.10
Autocorrelation for Sarah, $\rho_5$			0.88	0.09	9.91	<.01
Variance for Kim, $\sigma^2_6$			0.68	0.19	3.59	<.01
Autocorrelation for Kim, $\rho_6$			0.41	0.17	2.47	.01

Table 17

*Empirical Bayes Estimates for Each Participant for the Level of Control Outside of School*

	Estimate	SE	95% CI
Hannah	0.64	0.43	[-0.42, 1.70]
Greg	0.04	0.48	[-1.15, 1.24]
Gabriella	0.15	0.43	[-0.90, 1.20]
Toby	-0.76	0.45	[-1.85, 0.33]
Sarah	-0.002	0.58	[-1.67, 1.66]
Kim	-0.02	0.42	[-1.07, 1.04]

**Level of control inside of school.** Table 18 presents the fixed and random effects for the dependent variable level of control inside school. The average baseline level was 7.04. The average treatment effect was .30 which was not statistically significant,  $t(6.09) = -0.32, p = .76, 95\% \text{ CI} = [-0.84, 0.65]$ . This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was  $3.05^{e-19}$ , which was not statistically significant. The average variability in the treatment effect is 0.37, which is not statistically significant. Individual participant's variances range from 0.51 to 2.73. The autocorrelation for each participant ranges from 0.10 to 0.99. Empirical Bayes estimates for each participant are provided in Table 19. Individual treatment effects range from -0.74 to 0.79. None of the individual treatment effects are statistically significant.

**Relationship between behaviors and actions and what happens in life.** The fixed and random effects for the dependent variable the relationship between behaviors and actions and what happens in life are provided in Table 20. The average baseline level was 7.53. The average treatment effect was -0.21 which was statistically significant,  $t(19.6) = -2.24, p = .036, 95\% \text{ CI} = [-0.41, -0.01]$ . This indicates that on average participants reported thinking about the relationship between their behaviors and actions and what happens in their lives less when they were participating in PSI than prior to their participation. The variability in the baseline levels among participants was 1.06, which was not statistically significant. There was no average variability in the treatment effect; therefore, empirical Bayes estimates for individual effects are not given. Individual participant's variances range from 0.10 to 4.48. The autocorrelation for each participant ranges from -0.05 to 0.69.

Table 18

*Fixed and Random Effect Estimates for Level of Control Inside of School*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	7.04	0.15	24.2	47.32	<.01	[6.73, 7.35]
Average treatment effect, $\beta_{10}$	-0.10	0.30	6.09	-0.32	.76	[-0.84, 0.65]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			3.05 <sup>e-19</sup>	--	--	--
Average treatment effect variance, $\tau_{11}$			0.37	0.29	1.29	.10
Variance for Hannah, $\sigma^2_1$			2.73	3.30	0.83	.20
Autocorrelation for Hannah, $\rho_1$			0.99	0.01	78.84	<.01
Variance for Greg, $\sigma^2_2$			0.97	0.27	3.60	<.01
Autocorrelation for Greg, $\rho_2$			0.15	0.19	0.77	.44
Variance for Gabriella, $\sigma^2_3$			0.68	0.18	3.80	<.01
Autocorrelation for Gabriella, $\rho_3$			0.37	0.16	2.28	.02
Variance for Toby, $\sigma^2_4$			2.48	0.88	2.81	<.01
Autocorrelation for Toby, $\rho_4$			0.49	0.21	2.37	.02
Variance for Sarah, $\sigma^2_5$			1.35	0.30	4.51	<.01
Autocorrelation for Sarah, $\rho_5$			0.15	0.16	0.97	.33
Variance for Kim, $\sigma^2_6$			0.51	0.12	4.38	<.01
Autocorrelation for Kim, $\rho_6$			0.10	0.21	0.50	.62

Table 19

*Empirical Bayes Estimates for Each Participant for the Level of Control Inside of School*

	Estimate	SE	95% CI
Hannah	0.009	0.40	[-0.92, 0.94]
Greg	-0.74	0.34	[-1.53, 0.04]
Gabriella	-0.32	0.32	[-1.09, 0.44]
Toby	-0.52	0.47	[-1.61, 0.58]
Sarah	0.79	0.35	[-0.007, 1.59]
Kim	0.20	0.31	[-0.55, 0.94]



Table 20

*Fixed and Random Effect Estimates for Relationship Between Behaviors and Actions and What Happens in Life*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	7.53	0.46	5.25	16.56	<.01	[6.38, 8.69]
Average treatment effect, $\beta_{10}$	-0.21	0.10	19.6	-2.24	.04	[-0.41, -0.01]
Random Effects		Estimate	SE	z	p	
Average baseline level variance, $\tau_{00}$		1.06	0.74	1.43	.08	
Average treatment effect variance, $\tau_{11}$		0	--	--	--	
Variance for Hannah, $\sigma^2_1$		4.48	1.46	3.06	<.01	
Autocorrelation for Hannah, $\rho_1$		0.13	0.25	0.53	.60	
Variance for Greg, $\sigma^2_2$		0.99	0.28	3.51	<.01	
Autocorrelation for Greg, $\rho_2$		0.25	0.19	1.32	.19	
Variance for Gabriella, $\sigma^2_3$		0.25	0.05	4.57	<.01	
Autocorrelation for Gabriella, $\rho_3$		-0.05	0.17	-0.28	.78	
Variance for Toby, $\sigma^2_4$		4.17	1.99	2.10	.02	
Autocorrelation for Toby, $\rho_4$		0.69	0.16	4.39	<.01	
Variance for Sarah, $\sigma^2_5$		1.76	0.48	3.69	<.01	
Autocorrelation for Sarah, $\rho_5$		0.47	0.14	3.37	<.01	
Variance for Kim, $\sigma^2_6$		0.10	0.02	4.38	<.01	
Autocorrelation for Kim, $\rho_6$		0.11	0.18	0.59	.55	

**Life satisfaction.** Table 21 presents the fixed and random effects for the dependent variable level of life satisfaction. The average baseline level was 7.29. The average treatment effect was 0.03 which was not statistically significant,  $t(33.8) = 0.23$ ,  $p = .82$ , 95% CI = [-0.25, 0.32]. This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was 0.97, which was not statistically significant. The average variability in the treatment effect is  $1.05^{e-18}$ , which is not statistically significant. Empirical Bayes estimates for individual effects are not given because the average variability in the treatment effect is essentially 0.

Individual participant's variances range from 0.39 to 4.82. The autocorrelation for each participant ranges from -0.13 to 0.80.

Table 21

*Fixed and Random Effect Estimates for Life Satisfaction*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	7.29	0.45	4.3	16.10	<.01	[6.07, 8.51]
Average treatment effect, $\beta_{10}$	0.03	0.14	33.8	0.23	.82	[-0.25, 0.32]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			0.97	0.76	1.28	.10
Average treatment effect variance, $\tau_{11}$			1.05 <sup>e-18</sup>	--	--	--
Variance for Hannah, $\sigma^2_1$			0.72	0.26	2.75	<.01
Autocorrelation for Hannah, $\rho_1$			0.29	0.34	0.85	.39
Variance for Greg, $\sigma^2_2$			0.71	0.19	3.70	<.01
Autocorrelation for Greg, $\rho_2$			0.13	0.19	0.71	.48
Variance for Gabriella, $\sigma^2_3$			0.68	0.15	4.39	<.01
Autocorrelation for Gabriella, $\rho_3$			0.16	0.17	0.95	.34
Variance for Toby, $\sigma^2_4$			4.83	3.39	1.42	.08
Autocorrelation for Toby, $\rho_4$			0.80	0.15	5.33	<.01
Variance for Sarah, $\sigma^2_5$			0.39	0.08	4.66	<.01
Autocorrelation for Sarah, $\rho_5$			-0.13	0.18	-0.70	.49
Variance for Kim, $\sigma^2_6$			0.58	0.16	3.52	<.01
Autocorrelation for Kim, $\rho_6$			0.48	0.15	3.29	<.01

**Frequency of positive emotions.** Table 22 presents the fixed and random effects for the dependent variable frequency of positive emotions. The average baseline level was 7.47. The average treatment effect was 0.06 which was not statistically significant  $t(5.83) = 0.22, p = .84, 95\% \text{ CI} = [-0.57, 0.68]$ . This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was 0.14, which was not statistically significant. The average variability in the treatment effect is 0.15, which is not statistically significant. Individual participant's variances

range from 0.48 to 6.64. The autocorrelation for each participant ranges from -0.15 to 0.80. Empirical Bayes estimates for each participant are provided in Table 23. Individual treatment effects range from -0.29 to 0.56. None of the individual treatment effects are statistically significant.

Table 22

*Fixed and Random Effect Estimates for the Frequency of Positive Emotions*

Fixed Effects	Coefficient	SE	Df	t	p	95% CI
Average baseline level, $\beta_{00}$	7.47	0.24	3.21	31.55	<.01	[6.75, 8.20]
Average treatment effect, $\beta_{10}$	0.06	0.25	5.83	0.22	.84	[-0.57, 0.68]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			0.14	0.18	0.78	.22
Average treatment effect variance, $\tau_{11}$			0.15	0.16	0.96	.17
Variance for Hannah, $\sigma^2_1$			1.75	0.58	3.03	<.01
Autocorrelation for Hannah, $\rho_1$			-0.07	0.49	-0.13	.89
Variance for Greg, $\sigma^2_2$			0.51	0.15	3.46	<.01
Autocorrelation for Greg, $\rho_2$			0.21	0.20	1.09	.28
Variance for Gabriella, $\sigma^2_3$			0.82	0.19	4.33	<.01
Autocorrelation for Gabriella, $\rho_3$			0.15	0.19	0.83	.41
Variance for Toby, $\sigma^2_4$			6.64	4.59	1.45	.07
Autocorrelation for Toby, $\rho_4$			0.80	0.15	5.22	<.01
Variance for Sarah, $\sigma^2_5$			0.88	0.19	4.61	<.01
Autocorrelation for Sarah, $\rho_5$			-0.15	0.17	-0.90	.37
Variance for Kim, $\sigma^2_6$			0.48	0.12	3.99	<.01
Autocorrelation for Kim, $\rho_6$			0.30	.17	1.75	.08

Table 23

*Empirical Bayes Estimates for Each Participant for the Frequency of Positive Emotions*

	Estimate	SE	95% CI
Hannah	-0.05	0.41	[-1.18, 1.08]
Greg	-0.29	0.35	[-1.19, 0.61]
Gabriella	0.06	0.36	[-0.88, 1.00]
Toby	0.08	0.42	[-1.54, 1.70]
Sarah	0.56	0.31	[-0.24, 1.35]
Kim	-0.02	0.32	[-0.85, 0.81]

**Frequency of negative emotions.** The fixed and random effects for the dependent variable the frequency of negative emotions are presented in Table 24. The average baseline level was 4.41. The average treatment effect was -0.07 which was not statistically significant,  $t(31.7) = -0.29, p = .77, 95\% \text{ CI} = [-0.58, 0.43]$ . This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was 3.45, which was not statistically significant. The average variability in the treatment effect is 0; therefore empirical Bayes estimates for individual effects are not given. Individual participant's variances range from 0.54 to 3.98. The autocorrelation for each participant ranges from 0.11 to 0.70.

**Well-being.** The fixed and random effects for the dependent variable of well-being are presented in Table 25. The average baseline level was 9.56. The average treatment effect was .70 which was not statistically significant,  $t(5.28) = 0.90, p = .41, 95\% \text{ CI} = [-0.45, 2.21]$ . This indicates that the average treatment effect does not differ from 0. The variability in the baseline levels among participants was 8.80, which was not statistically significant. The average variability in the treatment effect is 1.61, which is not statistically significant. Individual participant's variances range from 3.03 to 13.18. The autocorrelation for each participant ranges from 0.12 to 0.49. Empirical Bayes

estimates for each participant are provided in Table 26. Individual treatment effects range from 0.08 to 2.49. None of the individual treatment effects are statistically significant.

Table 24

*Fixed and Random Effect Estimates for the Frequency of Negative Emotions*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	4.41	0.80	5.1	5.54	<.01	[2.37, 6.44]
Average treatment effect, $\beta_{10}$	-0.07	0.25	31.7	-0.29	.77	[-0.58, 0.43]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			3.45	2.37	1.46	.07
Average treatment effect variance, $\tau_{11}$			0	--	--	--
Variance for Hannah, $\sigma^2_1$			3.86	1.70	2.27	.01
Autocorrelation for Hannah, $\rho_1$			0.53	0.25	2.14	.03
Variance for Greg, $\sigma^2_2$			0.89	0.24	3.73	<.01
Autocorrelation for Greg, $\rho_2$			0.11	0.20	0.54	.59
Variance for Gabriella, $\sigma^2_3$			1.04	0.24	4.42	<.01
Autocorrelation for Gabriella, $\rho_3$			0.16	0.16	1.04	.30
Variance for Toby, $\sigma^2_4$			2.85	1.05	2.73	<.01
Autocorrelation for Toby, $\rho_4$			0.56	0.17	3.33	<.01
Variance for Sarah, $\sigma^2_5$			3.98	1.63	2.44	<.01
Autocorrelation for Sarah, $\rho_5$			0.70	0.12	5.72	<.01
Variance for Kim, $\sigma^2_6$			0.54	0.16	3.48	<.01
Autocorrelation for Kim, $\rho_6$			0.45	0.15	2.94	<.01

**Summary of multilevel modeling results.** Multilevel modeling was used to investigate the average treatment effects across and within participants associated with participation in PSI. A two-level model was used with individual time points nested within individual participants. There was a single predictor phase, which was a dichotomous variable indicating baseline (0) or treatment (1) phase. The treatment effects for level of control outside school and level of control inside school were not statistically significant. The treatment effect for the relationship between behaviors and actions and

Table 25

*Fixed and Random Effect Estimates for Well-Being*

Fixed Effects	Coefficient	SE	df	t	p	95% CI
Average baseline level, $\beta_{00}$	9.56	1.31	5	7.50	< .01	[6.20, 12.93]
Average treatment effect, $\beta_{10}$	0.70	0.77	5.28	0.90	.41	[-1.26, 2.65]
Random Effects			Estimate	SE	z	p
Average baseline level variance, $\tau_{00}$			8.80	6.32	1.39	.08
Average treatment effect variance, $\tau_{11}$			1.61	1.72	0.94	.17
Variance for Hannah, $\sigma^2_1$			13.18	5.71	2.31	.01
Autocorrelation for Hannah, $\rho_1$			0.49	0.27	1.79	.07
Variance for Greg, $\sigma^2_2$			3.03	0.86	3.51	<.01
Autocorrelation for Greg, $\rho_2$			0.22	0.19	1.15	.25
Variance for Gabriella, $\sigma^2_3$			5.10	1.23	4.16	<.01
Autocorrelation for Gabriella, $\rho_3$			0.23	0.17	1.36	.17
Variance for Toby, $\sigma^2_4$			9.03	4.62	1.95	.03
Autocorrelation for Toby, $\rho_4$			0.70	0.17	4.19	<.01
Variance for Sarah, $\sigma^2_5$			6.45	1.53	4.22	<.01
Autocorrelation for Sarah, $\rho_5$			0.12	0.20	0.62	.54
Variance for Kim, $\sigma^2_6$			4.37	1.33	3.29	<.01
Autocorrelation for Kim, $\rho_6$			0.49	0.15	<.01	<.01

Table 26

*Empirical Bayes Estimates for Each Participant for Well-Being*

	Estimate	SE	95% CI
Hannah	0.91	1.35	[-3.47, 5.30]
Greg	0.08	1.01	[-2.58, 2.73]
Gabriella	0.22	1.11	[-2.74, 3.17]
Toby	0.24	1.32	[-3.68, 4.17]
Sarah	2.49	1.03	[-0.09, 5.08]
Kim	0.23	1.07	[-2.60, 3.05]

what happens in life was statistically significant with an average treatment effect of -0.21.

This indicates that on average participants thought about their behaviors and actions and

what happens in their lives less while participating in PSI. None of the individual treatment effects for the self-determination variables were statistically significant. None of the average or individual treatment effects were statistically significant for the social-emotional variables.

### **Participant Interviews on the Time Series Graphs**

During the final interview participants were asked to interpret their time series graphs. Responses were read and coded holistically using each time series question as a unit during the first iteration to determine how participants interpreted their graphs. The responses were then coded by holistic unit using structural codes during the second iteration. The third iteration used open codes per structural code. Finally, pattern codes were used during the fourth iteration. Responses were independently coded by two researchers, and inter-rater agreement was 90%. Results are first presented as frequency counts indicating whether participants perceived their graphs as increasing, decreasing, or remaining stable per dependent variable construct (i.e., self-determination and social-emotional levels). The results are then summarized by pattern codes.

**Participants' interpretations of self-determination data.** The self-determination data consisted of the dependent variables of level of control outside school, level of control inside school, and relationship between behaviors and actions and what happens in life. All seven participants reported their time series graphs showed improvement in their levels of control both outside and inside school as a result of participating in PSI. Six of the participants reported their graphs showed improvement in how often they thought about the relationship between their behaviors and actions and what happens in their life. One participant reported there was no difference in how often

she thought about her behaviors and actions in relation to what happens in her life. These results indicate that overall participants interpreted their time series graphs as demonstrating an increase in their self-determination levels associated with participating in PSI.

**Participants' interpretation of social-emotional data.** The social-emotional data included the dependent variables of life satisfaction, frequency of positive emotions, and frequency of negative emotions. Five participants stated their life satisfaction time series graphs demonstrated an increase in life satisfaction associated with participation in PSI. One participant interpreted her graph as remaining stable regardless of participation in PSI. One participant interpreted his graph as indicating a decrease in life satisfaction. Four participants reported their frequency of positive emotions demonstrated an increase in positive emotions associated with participation in PSI. Two participants stated their graphs remained stable for the frequency of positive emotions throughout the study. One participant interpreted his graph as illustrating a decline in his frequency of positive emotions. Five participants reported that their time series graphs showing frequency of negative emotions indicated they had a decrease in negative emotions associated with participation in PSI. Two participants reported their graphs illustrated an increase in negative emotions. These results indicate that the majority of participants interpreted their time series graphs as illustrating an increase in social-emotional levels. One participant, Gabriella interpreted her graphs as remaining stable or experiencing a decrease in social-emotional levels. Max consistently interpreted his graphs as representing a decrease in social-emotional levels.



**Explanation of participants' interpretation of time series data.** Following the holistic coding, structural, open, and then pattern codes were applied to the data to explain how the participants came to their conclusions about their time series data. Participants' explanations for their interpretations of their data fell into one of four categories. These categories are: (1) the graphs represented an increase from previous semesters, (2) participants responded differently to the questions at different points in the study, (3) participants' uneasiness with new skills and strategies learned during PSI, and (4) outside study events. Figures 14 - 17 provide selected time series graphs with quotes from participants that explain their interpretations.

*The graphs represented an increase from previous semesters.* The most common explanation participants provide for their interpretation of their data was that they believed the data represented an increase in self-determination and/or social emotional levels when compared to previous semesters. A time series graph may look stable or even like it was declining, yet a participant would interpret it as better than previous semesters. Participants gave two reasons for believing their data were demonstrating an increase over previous semesters – (1) they demonstrated an overall higher level of self-determination and/or social emotional levels than previous semesters and (2) the data were more stable than a typical semester indicating a greater amount of consistency in self-determination and/or social-emotional levels.

Participants who believed their data during the intervention phase represented an overall increase in self-determination and/or social-emotional levels would discuss the influences of the normal ebb and flow of the semester. They typically were more positive and felt more in control at the beginning of the semester when they were getting settled in their

classes. Once the semester progressed and got around midterms, the increased stress of midterm exams and papers led to decreases in social-emotional levels. However, the decreases the participants experienced were reportedly not as low as a typical semester.

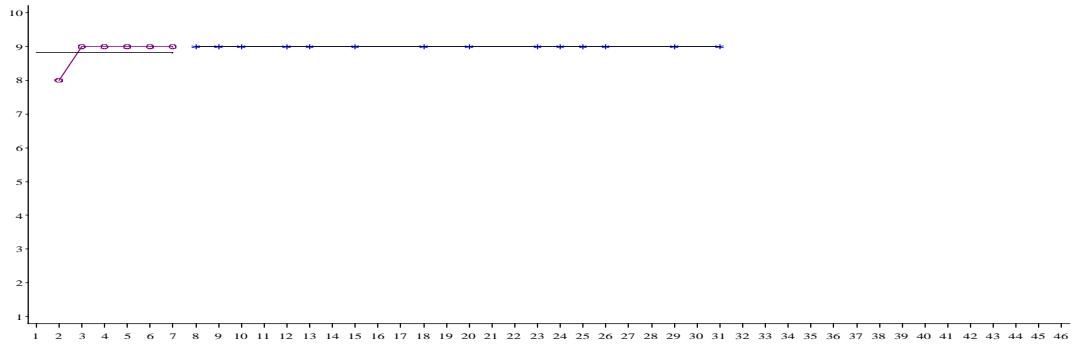
For example, Hannah stated,

I dropped two classes last semester because I did not know how to study. I just didn't put in the time. I was overwhelmed with the difficulty. I dropped the classes. That says it all. So I was like, if there's a below zero honestly that's where I was at (see Figure 14).

Gabriella said, "I would have been on the lower half for most of it. I was really, I had lost control," when referring to her graph on the level of control she felt inside of school (see Figure 14).

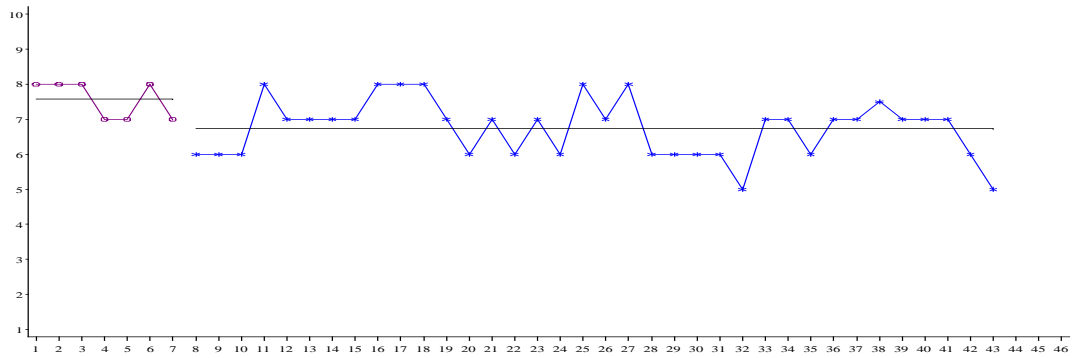
Other participants explained their perceived increases in self-determination and/or social-emotional levels by saying that they experienced increased stability in self-determination and/or social-emotional levels during the treatment phase compared to previous semesters. Participants discussed feelings of being overwhelmed and frustrated, leading them to give up during a typical semester. These feelings led to increased fluctuations in their self-determination and/or social-emotional levels. Greg said of all his graphs, "There would be more variances I think. . . Probably be more up and down – a lot more. Because if I got frustrated we couldn't think up a strategy to balance it out." He continued, stating this semester he felt like he had been more stable in all the areas data were collected compared to previous semesters.

### The Graphs Represented an Increase from Previous Semesters



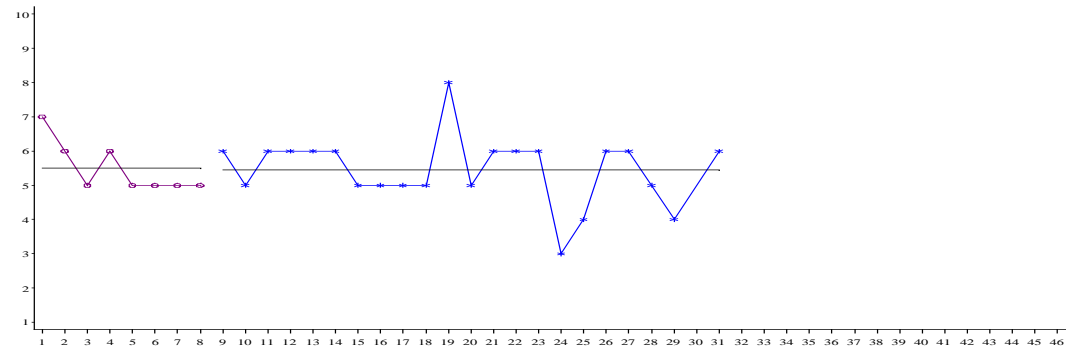
Hannah – Level of Control Inside of School

“I dropped two classes last semester because I did not know how to study. I just didn’t put in the time. I was overwhelmed with the difficulty. I dropped the classes. That says it all. So I was like, if there’s a below zero honestly that’s where I was at.”



Gabriella – Level of Control Inside of School

“I would have been on the lower half for most of it. I was really, I had lost control.”



Greg – Frequency of Negative Emotions

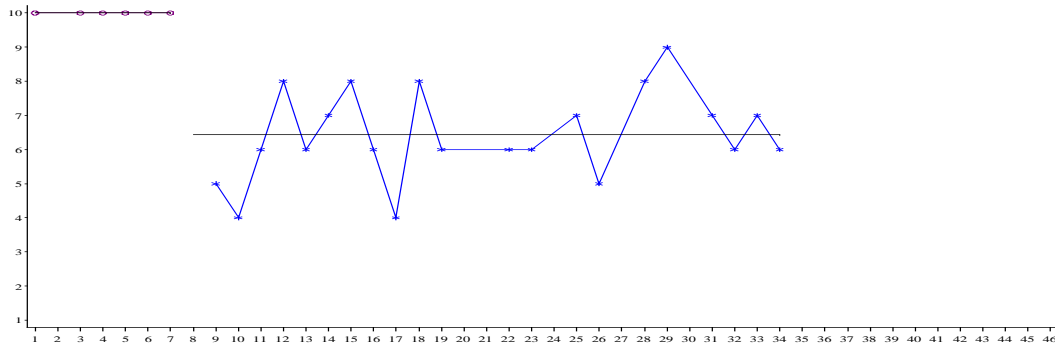
“There would be more variances I think. . . Probably be more up and down – a lot more. Because if I got frustrated we couldn’t think up a strategy to balance it out.”

Figure 14. Participants’ quotes and time series graphs when participants believed their graphs represented an increase in levels from previous semesters.

*Participants responded differently to the questions at different points in the study.* Participants indicated that at the beginning of the study they responded differently to the time series questions than they did later in the study. There were two reasons given for this behavior – social desirability and a change in understanding of the questions due to PSI. Participants indicated that they provided more socially desirable answers at the beginning of the study because they were not comfortable with the researcher. Therefore, they attempted to make themselves look like they were “better” than they were. Once the intervention sessions began they felt more comfortable with the researcher and began to respond to the time series questions in a way that more accurately reflected their beliefs. Some participants were particularly concerned about their data and the topics discussed during the intervention sessions remaining confidential. Therefore, as time progressed and they trusted the researcher more, they became more honest. For example, during the first intervention session Max explained to the researcher that he did not report the level of depression and anxiety he was feeling because he has been taught not to “show weakness” to people. As the study progressed, he believed he could trust the researcher and felt comfortable with her. Therefore, he able to be “honest” in responding to the text messages (see Figure 15).

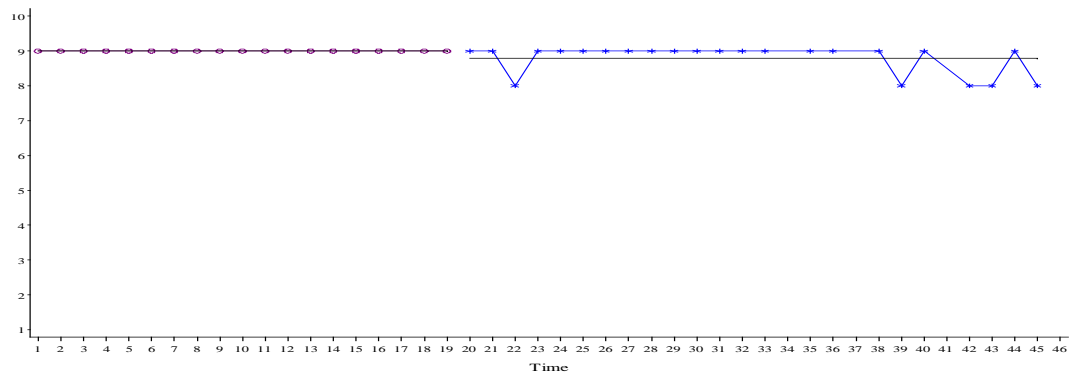
Other participants responded differently to the time series questions because their understanding of the questions changed as a result of participation in the study. Each time they answered the questions, they believed they were representing themselves accurately; however, at the end of the intervention they had different understandings of control and how their behavior and actions impacted their lives. They no longer merely acknowledged that their behaviors and actions impacted their lives, but they realized that

## Participants Responded Differently to the Questions at Different Points in the Study



### Max – Frequency of Positive Emotions

Max explained to the researcher that he did not report the level of depression and anxiety he was feeling because he has been taught not to “show weakness” to people. As the study progressed, he believed he could trust the researcher and felt comfortable with her; therefore, he able to be “honest” in responding to the text messages.



### Kim – Relationship Between Behaviors and Actions and What Happens In Life

“I know that my conception of my control changed over the answering of this question. . . I have an awareness that my behavior impacts my life . . . but it also impacts my ability to get goals accomplished . . . I came to see myself as more in control of that instead of just like, ‘Oh, this is the way it is.’”

*Figure 15.* Participants’ quotes and time series graphs when participants reported they responded differently to the questions at different points in time.

they could purposefully alter their behaviors and actions to change what happened in their life. This new understanding then led to new understandings about the amount of control in their lives. Participants began to realize that they could make decisions about their behaviors that would allow them to achieve their goals allowing them to feel more in control of their life in and out of school. For example, Kim stated,

I know that my conception of my control changed over the answering of this question. . . I have an awareness that my behavior impacts my life . . . but it also impacts my ability to get goals accomplished . . . I came to see myself as more in control of that instead of just like, ‘Oh, this is the way it is’ (see Figure 15).

***Participants’ uneasiness with new skills and strategies learned during PSI.***

Participants explained the variation in their graphs by attributing it to uneasiness with the new skills and strategies learned during PSI. For some participants they had difficulty transitioning from how they approached school prior to PSI to using the new skills and strategies taught as part of PSI. Many students reported not completing all their course assignments, especially readings, prior to their participation in PSI because they found them too difficult to complete. PSI helped participants by providing them with skills and strategies that allowed them to complete all their weekly assignments. This, however, took time. Greg summarized his experiences by stating,

I mean some of it was frustration from getting used to all the additional stuff that I had never done, trying to get used to it. So this [point 14] would be it was working out really good so you probably got a high score, and then I’m like, ‘This sucks because I have 20 chapters to read. This is

taking five and half hours,' so it probably went down a little (see Figure 16).

Other participants experienced uneasiness with the new skills and strategies learned during PSI because it was the first time they had completed all their assignments on time. Participants discussed that in a typical semester they always felt like there was work to do. They never felt like they could get ahead in their classes, but always played catch up when it came to their courses. The new skills and strategies taught within PAI allowed some participants to not only complete all their assignments, but to complete them prior to the due dates. This was an unsettling feeling for some, and thus reflected in their time series graphs. The following two quotations illustrate the feelings of Hannah and Toby:

I started feeling that overwhelming feeling like something's not done, something's not done right . . . I realized that I need to stop doing that because nothing is wrong. Everything I have to do is done. I think that explains a lot of the up and down (see Figure 16). – Hannah

I can say like before I met you, like, I felt alright about in school, but when I started to meet you my grades are improving and everything. I felt really good. Then, just recently I thought I started to feel overwhelmed cause, you know, it's toward the end of the semester. Just stuff started piling up. I thought it was piling up, but it wasn't really piling up. I was just not doing nothing for a period of time, like two week status or a week, and I'm thinking, 'I haven't done that for two weeks or a week.

Something's gotta be due,' and nothing's due because I already did the work. I'm not used to that (see Figure 16). – Toby

***Outside study events.*** A final explanation that participants provided for both when they interpreted their graphs as increasing or decreasing was that the data represented events that occurred outside of the context of the study. These events were typically related to family, health, and relationships with others. Toby explained the last few data points on all his graphs, “For the most part I was pretty good except the last couple days. That was horrible. That had to do with just family issues and stuff like that” (see Figure 17). Max revealed,

. . . like the last four questions was based upon my health. . . to be honest that was a depressing time to find out you're sick. And the times it went up is when I felt like I heard good news (see Figure 17).

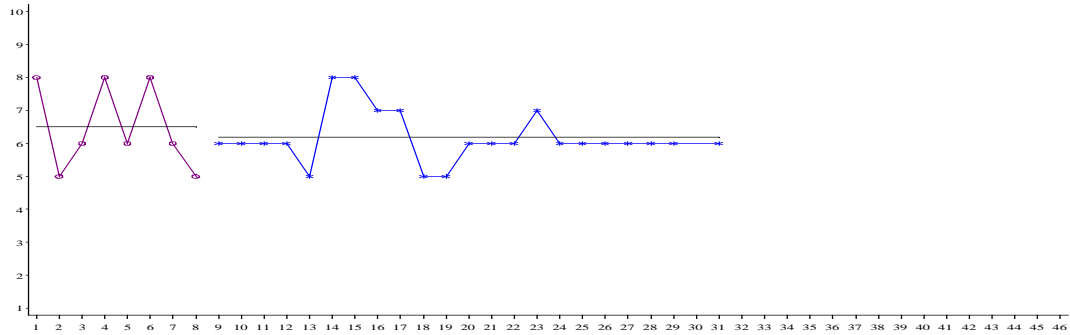
Many participants questioned particular patterns or data points when they looked at their graphs at the end of the intervention. They would try to remember exactly what had happened that made them respond a particular way. Participants viewed these data points as momentary and not always reflective of their overall feelings and beliefs about themselves.

#### **Summary of participants' interpretations of their time series data.**

Overall, participants reported an increase in self-determination and social-emotional levels despite the fact that their graphs did not indicate this. When participants concluded their graphs demonstrated an increase in either self-determination or social-emotional levels their explanations for these interpretations fell into one of four categories.

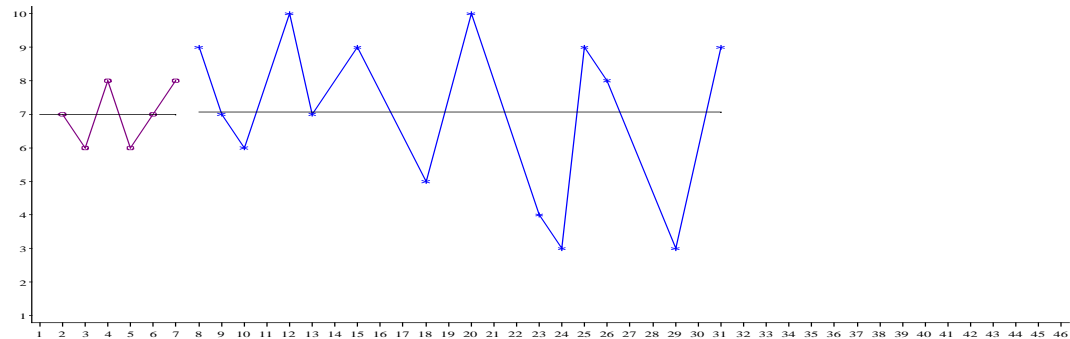


## Participants' Uneasiness with New Skills and Strategies Learned During PSI



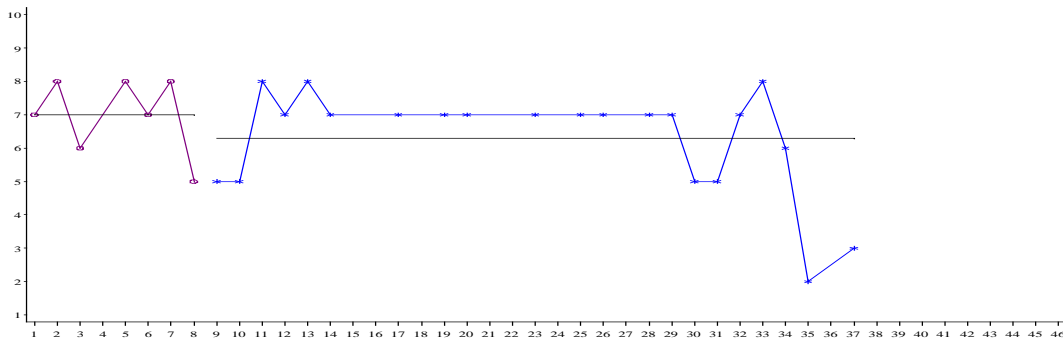
### Greg – Level of Control Inside of School

“I mean some of it was frustration from getting used to all the additional stuff that I had never done, trying to get used to it. So this [point14] would be it was working out really good so you probably got a high score, and then I’m like, ‘This sucks because I have 20 chapters to read. This is taking five and half hours,’ so it probably went down a little.”



### Hannah – Relationship Between Behaviors and Actions and What Happens in Life

“I started feeling that overwhelming feeling like something’s not done, something’s not done right . . . I realized that I need to stop doing that because nothing is wrong. Everything I have to do is done. I think that explains a lot of the up and down.”

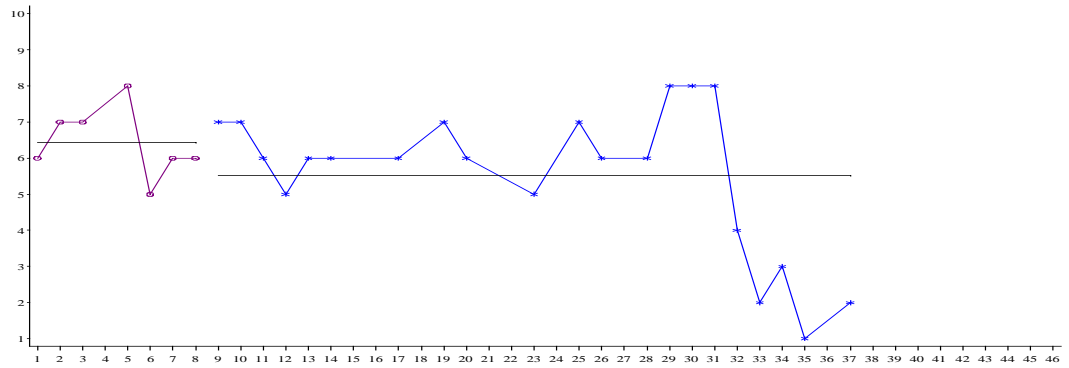


### Toby – Level of Control Inside of School

“I can say like before I met you, like, I felt alright about in school, but when I started to meet you my grades are improving and everything. I felt really good. Then, just recently I thought I started to feel overwhelmed cause, you know, it’s toward the end of the semester. Just stuff started piling up. I thought it was piling up, but it wasn’t really piling up. I was just not doing nothing for a period of time, like two week status or a week, and I’m thinking, ‘I haven’t done that for two weeks or a week. Something’s gotta be due,’ and nothing’s due because I already did the work. I’m not used to that.”

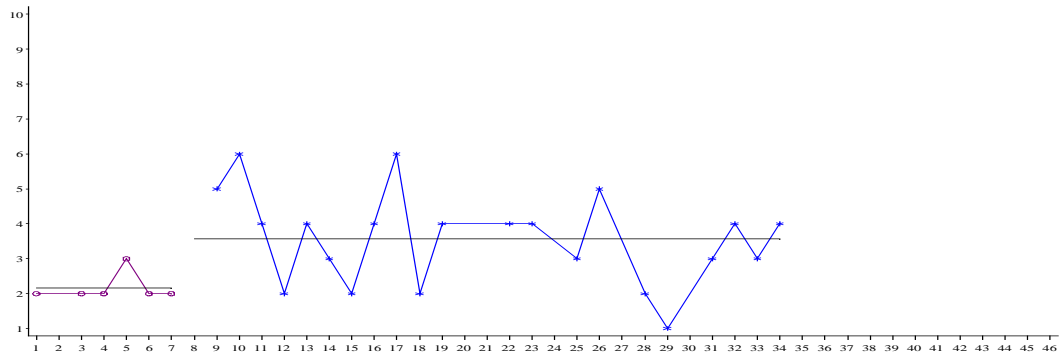
Figure 16. Participants’ quotes and time series graphs when participants reported feeling uneasy with the new skills and strategies learned during PSI.

### Outside Study Events



#### Toby – Life Satisfaction

“For the most part I was pretty good except the last couple days. That was horrible. That had to do with just family issues and stuff like that.”



#### Max – Frequency of Negative Emotions

“. . . like the last four questions was based upon my health. . . to be honest that was a depressing time to find out you’re sick. And the times it went up is when I felt like I heard good news.”

Figure 17. Participants’ quotes and time series graphs when participants reported outside study events influenced their data.

These categories are: (1) the graphs represented an increase from previous semesters, (2) participants responded differently to the questions at different points in the study, (3) participants' uneasiness with new skills and strategies learned during PSI, and (4) outside study events. Participants explained declines in their social-emotional levels as being solely related to events external to the study.

### **Summary of Results from Times Series Data**

The results from the times series data are mixed. The visual analyses, effect sizes, and multilevel modeling indicate there was little to no overall treatment effect associated with participation in PSI on the self-determination and social-emotional levels of the participants. However, the visual analyses and effect sizes did reveal some individual treatment effects for some participants. These effects ranged from small to large for self-determination variables and small to moderate for social-emotional variables. Further, the participants' interpretations of their time series data indicated there was a treatment effect associated with participation in PSI. The participants also offered explanations into their interpretations of their data. These explanations provide possible reasons for the inconsistent nature of the results from the visual analyses, effect sizes, and multilevel modeling and the results from the participants' interpretations of their data.

### **Pre-, Mid-, Post-Assessments**

Along with time series data, the participants also completed pre-, mid-, and post-assessments to investigate the impact of PSI on their self-determination and social-emotional levels. The *Self-Determination Student Scale* (SDSS; Hoffman et al., 1995/2004) was completed to assess the impact of PSI on self-determination levels. The *Steen Happiness Index* (SHI; Seligman et al., 2005) examined changes to social-

emotional levels in general, and the *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988) explored changes to positive and negative affect levels. The pre-assessments were administered prior to the beginning of this study. Mid-assessments were administered after the short baseline group completed three intervention sessions and the long baseline group was still in the baseline phase. Post-assessments were administered as each participant completed PSI.

The means, standard deviations, minimum, and maximum scores for each assessment are provided in Table 27. The means for the SDSS, SHI, and PANAS positive affect scores all increased from pre- to post-assessment, and their standard deviations decreased. The mean for the PANAS negative affect score remained approximately the same from pre- to post-assessment while the standard deviation decreases. Individual participant's scores for the assessments, as well as the difference scores from the pre- to mid-assessment and from pre- to post-assessment are provided in Tables 28-31.

Table 27

*Descriptive Statistics for Pre-, Mid-, and Post-Assessments*

	$\bar{x}$	<i>SD</i>	Minimum	Maximum
Pre-SDSS	72.71	10.87	50	83
Mid-SDSS	75.29	8.36	63	85
Post-SDSS	81.29	3.45	77	87
Pre-SHI	62.14	15.13	43	83
Mid-SHI	61.29	7.70	46	69
Post-SHI	67.86	8.13	52	77
Pre-Positive Affect	34.29	7.02	23	43
Mid-Positive Affect	36.86	4.38	33	46
Post-Positive Affect	38.14	5.21	32	43
Pre-Negative Affect	23.86	9.32	13	38
Mid-Negative Affect	25.86	6.41	17	32
Post-Negative Affect	23.14	3.80	17	28

Table 28

*Self-Determination Student Scale (SDSS) Pre-, Mid-, and Post-Assessment Scores*

	Baseline	Pre-	Mid-	Post-	$\Delta_{\text{pre-mid-}}$	Rank <sub>pre-mid-</sub>	$\Delta_{\text{pre-post-}}$	Rank <sub>pre-post-</sub>
Hannah	S	79	85	87	6	5	8	5
Greg	S	50	68	77	18	7	27	7
Gabriella	S	83	82	84	-1	3	1	1
Max	S	69	63	78	-6	1.5	9	6
Toby	S	77	77	81	0	4	4	2
Sarah	L	76	70	82	-6	1.5	6	4
Kim	L	75	82	80	7	6	5	3

*Note.* S = short baseline group; L = long baseline group

Table 29

*Steen Happiness Index (SHI) Pre-, Mid-, and Post-Assessment Scores*

	Baseline	Pre-	Mid-	Post-	$\Delta_{\text{pre-mid-}}$	Rank <sub>pre-mid-</sub>	$\Delta_{\text{pre-post-}}$	Rank <sub>pre-post-</sub>
Hannah	S	58	69	63	11	6	5	1
Greg	S	43	46	52	3	4.5	9	4
Gabriella	S	65	68	72	3	4.5	7	2
Max	S	83	59	71	-24	1	-12	-5
Toby	S	61	60	77	-1	3	16	6
Sarah	L	79	64	71	-15	2	-8	-3
Kim	L	46	63	69	17	7	23	7

*Note.* S = short baseline group; L = long baseline group

Table 30

*Positive and Negative Affect Schedule (PANAS) Pre-, Mid-, and Post-Assessment Positive Affect Scores*

	Baseline	Pre-	Mid-	Post-	$\Delta_{\text{pre-mid-}}$	Rank <sub>pre-mid-</sub>	$\Delta_{\text{pre-post-}}$	Rank <sub>pre-post-</sub>
Hannah	S	36	46	34	10	6	-2	-1.5
Greg	S	30	35	43	5	4	13	5
Gabriella	S	30	37	32	7	5	2	1.5
Max	S	37	34	42	-3	3	5	3
Toby	S	43	38	43	-5	2	0	--
Sarah	L	41	33	41	-8	1	0	--
Kim	L	23	35	32	12	7	9	4

*Note.* S = short baseline group; L = long baseline group

Table 31

*Positive and Negative Affect Schedule (PANAS) Pre-, Mid-, and Post-Assessment Negative Affect Scores*

	Baseline	Pre-	Mid-	Post-	$\Delta_{\text{pre-mid-}}$	Rank <sub>pre-mid-</sub>	$\Delta_{\text{pre-post-}}$	Rank <sub>pre-mid-</sub>
Hannah	S	15	24	17	9	5	2	1.5
Greg	S	38	27	23	-11	2	-15	-6
Gabriella	S	27	18	27	-9	3	0	--
Max	S	25	32	23	7	4	-2	-1.5
Toby	S	13	31	20	18	7	7	3
Sarah	L	17	32	28	15	6	11	5
Kim	L	32	17	24	-15	1	-8	-4

*Note.* S = short baseline group; L = long baseline group



Two of the five participants in the short baseline group had a positive difference score from the pre- and mid-assessments on the SDSS. Two participants had a negative difference score, and one participant had no change in his score from pre- to mid. One participant in the long baseline group had a positive difference score from pre- to mid-assessments on the SDSS, while the other had a negative difference score. All participants had a positive difference score from the pre- and post-assessments on the SDSS. A positive difference score indicates that their scores were higher on the mid- and post-assessments than on the pre-assessment.

Three of the five participants in the short baseline group had a positive difference score from the pre- to mid-assessments on the SHI, and the other two participants had negative difference scores. Similarly to SDSS, one of the participants from the long baseline group had a positive difference score from pre- to mid-assessments while the other had a negative difference score. Five participants had positive difference scores from the pre- and post-assessments. Positive difference scores indicate a higher score on the mid- and/or post-assessments compared to the pre-assessment.

For the positive affect scores from PANAS, three of five participants had positive difference scores from the pre- and mid-assessments, and the other two had negative difference scores. The same participants who had positive difference scores from the pre- to mid-assessments on the SHI had positive difference scores on the PANAS positive affect scores. The same participant from the long baseline group who had a positive difference score on SDSS and SHI had a positive difference score on the PANAS positive affect score. The other participant had a negative difference score on the PANAS positive affect score for the pre- to mid-assessments. For the pre- and post-assessments three

participants had positive difference scores, while two participants had no change in their scores and one participant had a negative difference score. Positive difference scores indicate a higher score on the mid- and/or post-assessment.

For the PANAS negative affect scores a negative difference score indicates a decrease in the amount of negative emotions experienced, which is the hypothesized direction for scores to move. Two of five participants for the short baseline group had negative difference scores from the pre- to mid- assessments. Two of the three participants who had a positive difference score, indicating an increase in negative emotions, also had a decrease in overall well-being (i.e., SHI score) and positive emotions (i.e., PANAS positive affect score). The participant from the long baseline group who demonstrated an increase in self-determination, overall well-being, and positive affect also demonstrated a decrease in negative emotions from pre- to mid-assessment. The participant from the long baseline group who demonstrated a decrease in self-determination, overall well-being, and positive affect demonstrated an increase in negative emotions from the pre- to mid-assessment. Approximately half the participants had negative difference scores from the pre-and post-assessments.

#### **Pre- to Mid- Assessments (Wilcoxon Rank-Sum Exact Test)**

The Wilcoxon Rank-Sum Test compares scores from two groups and was used to examine the differences in scores from pre- to mid-assessments between the two baseline phase length groups. Difference scores for each participant were calculated by subtracting the pre-assessment score from the mid-assessment score. These difference scores were assigned a rank from 1 to 7 with the lowest score receiving the rank of 1 and the highest score receiving the rank of 7. In the case of a tie, the midrank technique was utilized. The

midrank technique takes the average of the ranks that would be assigned to the difference scores and uses that mean as the rank. For example, on the SDSS both Max and Sarah had a difference score of -6. These difference scores would have had the ranks of 1 and 2 since they are the lowest scores; however, they were assigned the rank of 1.5 as this is the mean of 1 and 2. Wilcoxon Rank-Sum Exact Test is given by the following equation:

$$S = 2R - t_2(n + 1) \quad (6)$$

where  $R$  is the sum of ranks for the smaller group,  $t_2$  is the number of scores for the smaller group, and  $n$  is the total number of scores. The obtained  $S$ -value is compared to the  $S_{critical}$ -value to determine statistical significance. There were no statistically significant results for any of difference scores from pre- to mid-assessment for the SDSS, SHI, PANAS positive affect score, or PANAS negative affect score. The  $S_{obtained}$  for the difference scores for the SDSS, SHI, PANAS positive affect, and PANAS negative affect (-1, 2, 0, -2, respectively) were all smaller than the  $S_{critical}$  of 10 for an  $\alpha = .10$  indicating there were no differences in the scores between participants in the short baseline phase length group who had completed three intervention sessions and those in the long baseline phase length group who had not received any intervention sessions.

#### **Pre- to Post-Assessments (Wilcoxon Signed-Rank Exact Test)**

The Wilcoxon Signed Rank Exact Test was utilized to determine if there was a statistically significant difference in scores from pre-to post-assessment for all participants. Difference scores were calculated by subtracting the pre-assessment score from the post-assessment score. Ranks were then assigned based on the absolute value of the difference score. Ranks were then assigned either a positive or negative sign based on the sign associated with the difference scores. Ties were addressed using the midrank

technique explained above, and difference scores of 0 were not assigned ranks. The ranks were used to calculate  $W_{+obtained}$  and  $W_{-obtained}$  as described in Chapter 3.

Since the SDSS, SHI, and PANAS positive affect scores were hypothesized to have a positive difference score the  $W_{-obtained}$  needed to be smaller than the  $W_{-critical}$  to indicate statistical significance. There was a statistically significant difference in pre- and post-assessments for the SDSS ( $W_{-obtained} = 0 < W_{-critical} = 3, n = 7, \alpha = .05$ ). This means participants scored higher on the post-assessment than on the pre-assessment indicating an increase in self-determination levels after participating in PSI. There was no statistical difference between pre- and post-assessments on the SHI ( $W_{-obtained} = 8 > W_{-critical} = 3, n = 7, \alpha = .05$ ) indicating participants' overall social-emotional levels remained similar after participating in PSI. There was a statistically significant difference in pre- and post-assessment scores from the PANAS positive affect scores ( $W_{-obtained} = -1.5 < W_{-critical} = 2, n = 5, \alpha = .10$ ) indicating participants reported experiencing more positive emotions after participating in PSI.

It was hypothesized that after completing PSI participants would experience a decrease in the number of experiences with negative emotion. This would result in a negative difference score between pre- and post-assessments. Therefore, the  $W_{+obtained}$  needed to be smaller than the  $W_{+critical}$  to indicate statistical significance. There was no statistical difference found between pre- and post-assessments on the PANAS negative affect scores ( $W_{+obtained} = 9.5 > W_{+critical} = 2, n = 6, \alpha = .05$ ) indicating participants reported experiencing similar levels of negative emotions following the completion of PSI.

### **Summary of Pre-, Mid-, and Post-Assessments**

The differences in scores from the pre-, mid-, and post-assessments were analyzed using nonparametric statistical tests. The difference scores from the pre- and mid-assessments were analyzed using the Wilcoxon Rank-Sum Exact Test, and the difference scores from the pre- and post-assessments were analyzed using the Wilcoxon Signed-Rank Sum Exact Test. The results from the pre- and mid-assessments were not statistically significant, indicating that participants who completed three intervention sessions had similar difference scores to the participants who had not completed any intervention sessions on the SDSS, SHI, and PANAS. The results from the pre- and post-assessments were not statistically significant for the SHI and PANAS negative affect score, indicating participants did not experience an overall increase in social-emotional levels or a decrease in negative affect levels as a result of participating in PSI. The results for the SDSS and PANAS positive affect score were statistically significant. This indicates there was an increase in self-determination and positive affect levels associated with participation in PSI.

### **Longitudinal Qualitative Trend Analysis**

A longitudinal qualitative trend analysis was conducted using the session notes from each intervention session to determine if the participants' self-determination behaviors changed during the course of their participation in PSI. The changes in self-determination behaviors were analyzed using framing, descriptive, and analytic and interpretive questions (Saldaña, 2003). Each area of self-determination (i.e., goal setting, planning to achieve, monitoring plans, goal achievement, and reasons for achieving/not achieving goals) was coded using codes developed from the framing questions. The

codes were then entered into a matrix (see Appendix R) to provide a visual pattern of codes over time. The pattern of codes was used to answer the descriptive and analytic and interpretive questions. Session notes were independently coded by two researchers, and inter-rater agreement was 91%.

### **Trends in Goal Setting**

Each weekly goal was coded according to the following codes: *no goal*, *not achievable*, *current behaviors*, *partially developed*, and *fully developed*. Goals were coded as *no code* when the participant did not create a weekly goal. Example responses include, “I don’t know” and “You decide for me.” *Not achievable* goals are those that could not be achieved within a week such as, “To make an A in the class.” Goals coded as *current behaviors* were those that included only behaviors the participant was already doing. For example, if a participant always outlined his/her readings then a goal to outline readings for the week would be coded as *current behaviors*. *Partially developed* goals were goals that could be achieved during the week but only partially met the participant’s needs. For example, if a participant developed the goal, “Find a good statistics teaching assistant,” this goal could be accomplished within a week’s time. However, when the underlying issue was that the participant was not asking the TAs meaningful questions during study session this goal does not meet his needs. In a case like this the goal would need to be rewritten to better reflect the desired behaviors (i.e., asking specific questions about the material and utilizing time with TAs more effectively). Therefore, goals such as this would be only partially developed. Goals were coded as *fully developed* when the goal could be achieved within the week and met the participant’s needs. An example of a

goal coded as *met needs* is “Send email to statistics professor to remind him that I will be taking the next statistics exam in SDS.”

Most participants began PSI setting goals that were either coded *current behaviors* or *partially developed*. The participants tended to create goals that were within their comfort zones, but did not fully meet their needs. As they progressed through PSI they began to develop goals that were coded as *fully developed* more consistently. Max was the only participant who consistently did not attempt to set goals or set goals that did not meet his needs for the majority of the intervention. However, during the final week of the intervention he created a goal that was *fully developed*. Gabriella was able to develop a goal coded as *met needs* during the first week of the intervention. During the second week of the intervention she had difficulty thinking of a goal that was related to her signature strengths and asked the researcher to create a goal for her. During subsequent weeks she was able to set goals that were coded as *partially developed* or *fully developed*. This indicates that she may have been able to set appropriate weekly goals prior to the beginning of the intervention. Overall, these results indicate a growth in goal setting behaviors for the majority of participants.

### **Trends in Plans for Achieving Goals**

Plans for achieving goals were coded as: *no plan*, *non-specific plan*, *partially developed plan*, or *fully developed plan*. Plans for achieving goals were coded as *no plan* when participants did not create a plan to achieve their weekly goals. An example of a plan coded as *no plan* is, “I don’t know.” *Non-specific plans* were plans that included only non-specific behaviors such as “finish readings.” *Partially developed plans* were the plans to achieve goals that included some specific behaviors but additional behaviors

were needed to help the participant meet his/her needs. An example of a plan coded as *partially developed plan* is, “Study for statistics 40 minutes twice a day.” This plan needed additional details that included how the participant would study using her strengths. Plans for achieving goals coded as *fully developed plan* were those that included specific behaviors that utilized the participants’ strengths in achieving their goals. An example of a *fully developed plan* is, “Use fairness [a signature strength] with herself and contact professors on her committee and internship supervisor to restructure her thesis so it is manageable and meets her needs and interests.”

An analysis of patterns in the development of plans for achieving goals indicates an increase in self-determined behaviors as participants progressed through PSI. The majority of participants began creating plans for achieving goals that were coded *partially developed plans*. During the last few sessions participants began consistently developing plans for achieving that were *fully developed plans*. It appears to have taken participants longer to create *fully developed plan* than it did to create *fully developed goals*.

### **Trends in Monitoring Plans**

Monitoring plans were coded as: *no monitoring plan*, *non-specific monitoring plan*, *partially developed monitoring plans*, and *fully developed monitoring plans*.

Monitoring plans were coded as *no monitoring plan* when participants did not create a monitoring plan such as, “I don’t know.” They were coded as *non-specific monitoring plans* when they did not include specific documents or activities that would indicate if a weekly goal had been achieved, such as “Maintain current schedule.” *Partially developed monitoring plans* included those monitoring plans that included specific examples, but



needed additional elements to determine if a goal was achieved. An example of a *partially developed monitoring plan* is, “Check to see if I dedicated the appropriate time to studying” since this plan does not include how the participant will know if they dedicated the appropriate amount of time to studying such as by bringing in his/her study schedule. A *fully developed monitoring plan* was one that included a complete and specific plan for monitoring progress on goal achievement, such as “Bring planner with schedule of tasks in it.”

The majority of participants created monitoring plans that were *non-specific* or *partially developed monitoring plans* at the beginning of PSI. After a few weeks they were able to consistently create monitoring plans that were *fully developed*. Exceptions to this included Sarah and Kim who were able to create *fully developed monitoring plans* during the entire time they participated in PSI indicating they already developed this skill prior to the start of the intervention. In addition, Max did not seem to develop this ability consistently. Overall, the data indicate that the majority of participants who could not already develop monitoring plans increased their abilities to develop monitoring plans as they progressed through PSI.

### **Trends in Goal Achievement and Reasons for Achieving and Not Achieving Goals**

Goal achievement was coded as: *not achieved*, *partially achieved*, and *fully achieved*. Reasons for achieving or not achieving goals included: *did not implement plan*, *lack of time*, *life event*, *partially followed plan*, *more time needed*, and *followed plan*. Reasons for goal achievement were coded as *did not implement plan* when the participant did not use their plan to achieve during the week. The *lack of time* code was assigned when the participant responded that they did not spend adequate time implementing their

plan to achieve during the week (e.g., waiting to implement the plan an hour prior to the next intervention session). Reasons for goal achievement that were outside of the participants' control, such as family emergencies, that prevented them from fully implementing their plan and achieving their goal were coded as *life event*. *Partially followed plans* were assigned when participants implemented some aspects of their plan to achieve but not all of them. When a participant fully implemented their plan to achieve but still needed more time to achieve their goal fully the reason for not achieving the goal was coded as *more time needed*. *Followed plan* was assigned when a participant both followed their plan to achieve and achieved their goal for the week.

A variety of patterns with respect to goal achievement were evident in participants. Hannah and Greg achieved their goals later in PSI rather than in the beginning. Sarah, Kim, and Toby were fairly consistent in their goal achievement throughout PSI. Gabriella followed a pattern of *not achieving*, *partially achieving*, and *fully achieving* her goal, and then *not achieving* again during her participation in PSI. No evident pattern for goal achievement was discernable for Max. Similar patterns as the ones seen in goal achievement were present in reasons for goal achievement. Participants whose reasons for goal achievement included *partially followed plan*, *more time needed*, and *followed plan* were more likely to achieve their goals than those who did not follow plans.

### **Trends in Self-Determination Levels**

Overall, results from the longitudinal qualitative trend analysis indicate that participants experienced an increase in self-determination levels while participating in PSI. Participants first developed the ability to develop monitoring plans for determining

if their weekly goals had been achieved. The next area of self-determination to develop was the ability to set goals. Finally, participants developed the ability to independently create a plan to achieve their weekly goal. As participants fully implemented their plan to achieve, their goal achievement levels increased.

### **Social Validity**

Following the completion of PSI each participant was interviewed to determine the social validity of PSI. They were specifically asked about how they perceived PSI and any changes they thought should be made to the intervention. In addition, participants were asked about the use of text messaging to collect time series data. Participants were asked about text messaging two reasons. First, they were asked in order to determine how the participants perceived this method of data collection. This was important because text messaging deviates from traditional methods used to collect time series data. Secondly, participants were asked about the text messaging in an attempt to determine if receiving the text messages impacted their behaviors during the intervention. Responses from the interviews were coded first using structural codes to organize responses by overall perceptions, changes needed, and text messaging. The second iteration of coding utilized provisional and open codes to further categorize responses. A third iteration of coding was completed to refine the codes from the second iteration. Responses were independently coded by two researchers, and inter-rater agreement was 97%. Results are reported below.

### **Overall Beliefs About PSI**

All the participants reported that they perceived PSI positively. Specific participants reported that PSI improved their self-awareness and self-regulation

(components of self-determination) ( $n = 7$ ), knowledge of learning strategies ( $n = 6$ ), and improved their social-emotional functioning ( $n = 2$ ). Hannah stated, “Well, it’s turned my approach to academic performance around 360 degrees. . . I used to feel like a lost child and now I feel like a grown-up.” Gabriella stated, “It helped me to keep on top of myself and reflect on choices I was making in terms of school and keeping on track of things.” Toby stated, “Ain’t nothing negative come out of this whole thing.”

Participants indicated several components of PSI were particularly beneficial to them. The most frequently stated beneficial component was learning about their strengths ( $n = 5$ ). Gabriella stated, “It was interesting learning your core strengths . . . then you can kind of apply them, make sure you’re applying them.” Max said, “I guess finding out what my true strengths were so I could find out what I could, I mean how I can use my strengths to help me instead of making my weaknesses stronger.” The next most frequently mentioned components of PSI mentioned as beneficial were the goal setting and planning to achieve components of PSI ( $n = 4$ ). Hannah stated, “I knew what needed to get done on a regular basis, on a daily basis, to achieve that goal.” Three participants stated that the use of meaningful contexts for each participant was beneficial. Greg stated, “. . . working together on a few things and you being able to point out things I didn’t notice I was doing. For example, like I stated before not reading the subheadings.” Two participants believed the use of guided cognitive instruction was beneficial. Sarah stated, “. . . it was very good because you not only listened but you tried to still find part of the intervention to give feedback.” Two participants mentioned that they perceived increases in social-emotional levels were beneficial. Hannah said, “I have a lot less anxiety. My self-esteem has changed. I actually feel great about myself. I feel important

and excited about myself.” Finally, two participants indicated that having accountability to someone was a strength of PSI.

Participants were also asked what they perceived as the least beneficial component of PSI. Four participants stated they felt all the components of PSI were beneficial. Two participants mentioned the amount of data collection that occurred. While both participants acknowledged the need for data collection in PSI, they both stated that there was a lot of it. Greg specifically commented on the amount of times series data collected, and Gabriella referred to the length of the pre-, mid-, and post-assessments. Sarah stated that the length of the intervention was the least beneficial aspect. She believes the intervention should be longer. Hannah stated that the least beneficial aspect of PSI was when she did not follow through with her plan to achieve her goal for the week.

### **Changes to PSI**

Participants were also asked what changes they believe should be made to PSI as part of its future development. Three participants stated they thought PSI should be longer in duration. One participant simply stated that PSI should be longer in general without further elaboration. Another participant agreed that the intervention should be longer in general and suggested that each of the current sessions be spread out over two sessions. The first of the two sessions would be implemented in the same manner as it was in this study. The second session would consist of the participant implementing his/her plan to achieve in front of the interventionist while the interventionist observed and provided feedback on how the participant was using the skills and strategies. For example, if a participant had concept mapping as part of his/her plan to achieve a goal

regarding reading comprehension, the participant would work on creating the concept map in front of the interventionist. The interventionist would provide feedback to the participant during this process. The feedback might be encouragement for using the concept map correctly or making suggestions for how the concept map could be used more effectively, such as pointing out the textbook structure and how it related to the organization of the concept map. The third participant suggested adding follow-up sessions to the end of PSI. These sessions would take place at gradually increasing intervals in order to assist the participant in maintaining the use of the skills and strategies learned during the intervention. These follow up sessions would occur after the weekly sessions with the interventionist ended.

Two participants stated they believed adding an additional self-monitoring component to PSI would be beneficial. One participant said she thought changing the self-monitoring plan so it included a daily check of whether the participant was implementing their plan to achieve would be helpful. Another participant suggested creating a strengths journal where participants could record the strengths they used each week and how they used the strengths.

In addition to extending the length of PSI and adding additional self-monitoring components, participants had other suggestions for improving PSI. One participant suggested beginning the intervention prior to the beginning of the semester. This would allow participants to learn new skills and strategies that could assist them with learning. Learning these strategies before the semester began would allow them to be able to start out the semester using the new strategies. This participant also suggested extending the Disability Awareness session to spend more time discussing how the participant typically

approaches learning. He stated that this could be a good activity to complete prior to the beginning any the intervention sessions. This would allow the interventionist to better tailor which skills and strategies were taught to the participant. Another participant stated she believed each intervention session should have a more systematic plan that would force each session to be more consistent across participants. Since PSI allowed her to discuss her own issues and concerns as part of her meaningful context she was concerned that she had too much flexibility in what she did as part of the intervention, “I’m not sure if that allowed me too much freedom.” Two participants believed there should not be any changes made to the intervention.

### **Text Messaging Component**

During the final interview, participants were also asked about the use of text messaging to collect the time series data. Three participants reported they thought text messaging was a quick and convenient way to collect the data. Four participants reported some difficulties with the text messaging. Two participants reported having difficulty remembering the questions. These two participants stated that they would not always have with them their cards with the questions and could not always remember the complete questions from the key words provided in the texts. Another participant stated she felt the practice sessions were definitely needed to get the hang of responding to the questions. One participant stated he felt the questions were personal. He stated that if he had not felt comfortable with researcher then he would not have wanted to answer the questions. He also stated that he felt like he wanted to explain his numerical responses to the researcher, “You know like, when you put a two you want to explain, ‘Sorry I’m depressed today,’ or something.” Finally, two participants said the text messages were a

helpful part of PSI. Hannah stated that it was helpful to think about her levels during the week – “I looked for the questions because they really helped me see myself where I was at.” Kim reported that the text messages reminded her to work towards achieving her goals each week. She stated, “So it served to trigger, like, ‘Oh, I’m supposed to be working toward this.’”

### **Summary of Social Validity Results**

The results from the final interviews with participants provide evidence for the social validity of PSI. All the participants believed the PSI was beneficial. Participants stated they experienced increases in self-determination and social-emotional levels as a result of participating in PSI with different levels of intensity. Participants believed the most beneficial aspect of PSI was the learning of their strengths. This was followed closely by the goal setting and planning to achieve activities. The most frequently suggested change to PSI was to increase the duration of the intervention.

### **Summary of Results by Research Question**

A summary of the results from this study is provided by research question.

1. To what extent does The Personal Strengths Intervention (PSI) incorporate identified elements of the literature bases on self-determination, positive psychology, and postsecondary students with learning disabilities and/or ADHD based on expert review?

The content expert review (discussed in Chapter 3) provided evidence of the content and face validity of PSI. Content expert reviewers stated they believed PSI incorporated key components of self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD. In addition, they



believed it was reasonable to expect increases in self-determination and social-emotional levels as a result of participating in PSI.

2. What, if any, is the impact of The Personal Strengths Intervention (PSI) on the self-determination levels of postsecondary students with learning disabilities and/or ADHD?

The results of the impact of PSI on self-determination levels are mixed. Results from the visual analysis, effect sizes, and multilevel modeling of the time series data all indicate little to no intervention effect. The results from the participants' interpretations of their time series data, the pre- and post-assessments of SDSS, and qualitative longitudinal trend analysis of self-determination behaviors indicated there is an intervention effect on self-determination levels related to participating in PSI.

3. What, if any, is the impact of The Personal Strengths Intervention on the social-emotional outcomes for postsecondary students with learning disabilities and/or ADHD?

The results of the impact of PSI on social-emotional levels were also mixed. Similar to self-determination, results from the visual analyses, effect sizes, and multilevel modeling of time series data all indicated little to no intervention effect related to participation in PSI. The pre- post-assessment results for the SHI and PANAS negative affect score indicated no change in scores associated with PSI. The results from the participants' interpretations of their time series data and the pre- post-assessment of the PANAS positive affect score indicated there was an increase in social-emotional levels associated with PSI.

4. How do postsecondary students with learning disabilities and/or ADHD perceive The Personal Strengths Intervention (PSI)?

Results from the final interviews indicate the postsecondary students who participated in PSI believe it was a positive experience. They reported increases in their self-determination and social-emotional levels. The component of PSI most frequently identified as beneficial was the incorporation of their strengths. Participants stated they enjoyed identifying their strengths and how to use them in their daily life. The goal setting and planning to achieve components were identified next most frequently as beneficial. The majority of participants indicated there were no components of PSI that were not beneficial. When issues related to PSI were mentioned they included: the amount of data collection, the length of time of the intervention, and when participants did not follow through with their plan to achieve. The most frequently stated recommendation regarding what should be changed about PSI was to increase the duration of the intervention. Other suggestions included additional self-monitoring activities and the incorporation of a strengths journal.

## CHAPTER 5: DISCUSSION

The purpose of this study was to develop and investigate the impact of The Personal Strengths Intervention (PSI) on the self-determination and social-emotional levels of postsecondary students with learning disabilities and/or ADHD. The study included content expert review, pilot testing, and the implementation of PSI with seven participants. A multiple baseline research design was incorporated, as well as pre-, mid-, and post-assessments; longitudinal qualitative trend analysis of participants' self-determination behaviors; and final interviews with participants.

After a short summary of the study's results, this chapter provides explanations about the findings including conclusions about the validity and impact of PSI, implications, suggestions for future research, and a discussion of the study's limitations.

### **Summary of Results**

Four research questions were addressed in this study: (1) the extent to which PSI incorporated elements from the literature bases on self-determination, positive psychology, and postsecondary students with learning disabilities and/or ADHD; (2) the impact of PSI on self-determination, (3) the impact of PSI on social-emotional levels; and (4) the social validity of PSI.

Results from the content expert review indicated that PSI included elements from the literature bases on self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD. Reviewers stated it was

reasonable to expect PSI to improve students' self-determination and social-emotional levels.

The results of this study regarding change in the self-determination levels of participants were inconsistent. Analysis of the time series data (i.e., visual analysis, effect sizes, and multilevel modeling) indicated there may have been no increase in self-determination levels for some participants and no overall average increase in self-determination. However, the visual analysis and effect size results did indicate intervention effects for some participants. For this subset of participants effect sizes ranged from small to large effects. Results from the pre- and post-assessments of the *Self-Determination Student Scale* (SDSS; Hoffman et al., 1995/2004), longitudinal qualitative trend analysis, participants' interpretations of their times series data, and final interviews with the participants suggest that participants increased levels of self-determination. Overall, participants' scores on the SDSS increased from the pre-assessment to the post-assessment. Results from the trend analysis found self-determination developed first in participants' abilities to determine an appropriate monitoring plan for goal achievement and progressed to goal setting and planning to achieve activities. Participants believe their self-determination levels increases as evidenced by their interpretations of their time series graphs and final interviews.

Like self-determination, the results regarding change in social-emotional levels for participants are also inconsistent. The results from the visual analysis, effect sizes, and multilevel modeling of the time series data on social-emotional levels revealed no overall increase in levels associated with participation in PSI. Again, similar to the self-determination data there were intervention effects demonstrated for a subset of the

participants based on visual analysis and effect sizes. For this subset of participants effect sizes ranged from small to moderate. Results from the pre- and post-assessments of the *Steen Happiness Index* (SHI; Seligman et al., 2005) and the *Positive and Negative Affect Schedule* (PANAS; Watson et al., 1988) are also mixed. No change in levels of subjective well-being was evident as measured by SHI. Results from the PANAS indicate a change in positive affect (i.e., an increase) but no change in negative affect. As is true for self-determination, participants' interpretations of their time series data and final interviews reveal that they perceive that participation in PSI resulted in positive effects on social-emotional levels.

Statements from the participants during final interviews support the social validity of PSI. All the participants viewed their experiences with PSI as positive. They reported increases in their self-determination and social-emotional levels as a result of PSI. Specifically, they reported increases in their self-awareness by learning about their signature and learning strengths and how to use them within their daily lives. Participants also said that they improved their abilities to improved ability to set goals and regulate behaviors to help achieve their goals. This is important since such abilities/behaviors are indicative of increases in self-determination and in hope, a key construct from positive psychology. Participants stated they felt more equipped to be successful in school and in their lives after completing PSI. From a social-emotional standpoint, participants reported increases in self-esteem and self-efficacy and decreases in anxiety and depression. Several participants stated their emotional states were more consistent as a result of participating in PSI.

While the participants believe PSI to be a socially valid intervention for improving self-determination and social-emotional levels, they did provide suggestions for changes that could be made to the intervention in the future. The most frequent suggestion was to increase the length of the intervention. Participants suggested the intervention be longer than eight weeks in general, consist of multiple meetings a week, and provide a scaffolded ending to the intervention where participants would gradually increase the amount of time between intervention sessions. Other suggestions included more sessions on disability awareness and a strengths journal. During the sessions on disability awareness the participant would be able to explain more about how their disability has impacted them, as well as include sessions where the interventionist could observe the participant studying and completing coursework in order to select possible strategies that may assist the participant prior to working with him/her. One participant suggested that a strengths journal would allow participants to record the strengths they used each week and how they were used.

### **Interpretations and Conclusions**

The findings from this study indicate that PSI includes components from the literature bases of self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities. Further, PSI appears to have social validity for improving self-determination and social-emotional levels. Results from the implementation of PSI indicate it has some effect on the self-determination and social-emotional levels of postsecondary students with learning disabilities and/or ADHD. The time series data demonstrate no overall treatment effect for either self-determination or social-emotional levels; however, the visual analysis and effect sizes indicated small to

large intervention effects for self-determination levels in some participants and small to moderate effects for social-emotional levels in some participants. There was an intervention effect demonstrated with respect to self-determination and positive affect from pre-assessment to post-assessment, the pre- post-assessment scores related to subjective well-being and negative affect were inconsistent across participants. These data suggest that some participants increased their levels of self-determination and/or social emotional levels more consistently while other participants did not. These inconsistencies make it difficult to accurately determine the magnitude of the effect for participating in PSI on self-determination and social-emotional levels.

A comprehensive analysis of the data from this study reveals some possible explanations for the inconsistent nature of the results and ways in which the PSI can be enhanced to increase potential effects when implemented with postsecondary students with learning disabilities and/or ADHD. Factors contributing to the inconsistent results include the length of the intervention, issues with the time series data, and issues surrounding the intersection of time series and self-report data.

### **Length of PSI**

Feedback from the participants in the final interviews point to a need to lengthen the timeframe of the intervention. Because all participants believed that PSI helped them and because all participants demonstrated some level of improvement on one or more measures, it is plausible that an increase in the length of the intervention might lead to greater effects that are more consistent across participants. If a future study was implemented in the same manner as this study, these effects would be more likely seen in

the pre- and post-assessments than the time series data due to issues within the time series data discussed below.

### **Issues within the Time Series Data**

Another reason for the lack of consistency in the results may be due to issues within the time series data (i.e., its momentary nature and susceptibility to events external to the study). Potential issues within the times series data first surfaced with Max's baseline data. His data were exceptionally consistent for the time series questions. While it was expected that each participant would have an average level during baseline phase, it was also expected that there would be some variation around this level. Max demonstrated no variation in his baseline data. Additionally, when intervention sessions began it became clear that the participants' responses to the time series questions did not match information they were providing the researcher during the intervention sessions. Subsequently, the researcher determined that an additional question should be added to the final interview in an attempt to determine the nature of the participants' interactions with the time series questions. Participants were provided graphs of their time series data and were asked to interpret them and describe their rationales for their interpretations.

One of the strengths of single-case designs is the use of time series data which allows for the investigation of intervention effects over a period of time for individual participant (Kazdin, 1982). In addition, single-case designs allow the researcher to examine how the participant, the participant's current contexts (e.g., health, life events), and intervention interact and influence results. This study is no exception because the results from this study, particularly the final interview, provide insights into how participants, their lives, and PSI interacted across the span of the study. Findings from



participant interviews about their time series data indicate that participants often viewed their data points as representing the moment they responded to the time series questions rather than an overall change in self-determination and social-emotional levels. For example, several participants were able to associate specific data points with specific life events that occurred during the study period. Kim identified the outlier in the intervention phase of her data as being associated with learning that a friend had passed away. Greg reported that his lower data points were due to either “having a bad day” or frustration he experienced when he was attempting to change his learning behaviors to include the skills and strategies needed to help him achieve his weekly goals. As he became more comfortable with the skills and strategies, his self-determination and social-emotional levels increased. Toby reported that the last few data points in his intervention phase, which indicated much lower self-determination and social-emotional levels than previously reported, were related to issues occurring in his personal life that were completely separate from the intervention. This information indicates that participants’ responses to the time series questions were influenced by the “temporal proximity” of the emotions they experienced (Larsen & Fredrickson, 2003, p. 42). Temporal proximity refers to the amount of time between the emotional experience and when the emotional experience is described. For example, if a person was asked how they are feeling parenthood when his/her child is throwing a tantrum the response is likely to be negative. However, that same person will likely respond positive several hours after the tantrum has ended. While participants were prompted to respond to the time series questions based on the previous 24 hours, responses from the final interviews indicated their responses were more momentary in nature (i.e., how they were feeling when they

received the text) and some life events (e.g., death of a close friend, family concerns) influence emotional responding for longer periods of time yet are not reflective of an overall sense of well-being. Therefore, insights such as these suggest that the strength of single-case designs to capture the more momentary changes in participants' performance on dependent variables actually may have served to complicate the determination of intervention effects in this study. This is because the data points represented momentary emotions rather than global appraisals of the participants' feelings and beliefs about their lives and abilities during the semester.

Another issue within the time series data that may help to explain the inconsistency in the results is the extent to which the time series data were reflective of the ebb and flow of a typical academic semester. It is reasonable to assume that most students begin the semester feeling fairly positive about their classes since assigned readings are usually introductory and few assignments are due. As the semester progresses and classes become more intense, there can be a natural increase in stress for many students because of the increased demands of the courses. These negative emotions of stress, anxiety, and being overwhelmed continue to increase from midterms through final exams. Many of the participants in this study indicated that they felt improvements in their self-determination and social-emotional levels when interpreting their time series graphs. When the results of the visual analysis indicated that participants' self-determination and/or social-emotional levels remained stable through the treatment phase, participants explained that they saw improvements in this data because during a typical semester their self-determination and social-emotional levels experience a dip in

levels that correspond to the increased academic demands, stress, and anxiety that can accompany midterm and final exams.

### **Intersection of Times Series and Self-Report Data**

The intersection of time series and self-report data may also have contributed to the inconsistent results. Self-report data has long been criticized because of its susceptibility to socially desirable responses (see Stone, 2000 for a review of issues in self-report data). To combat this, researchers often include specific questions in a self-report instrument to identify when a respondent is providing socially desirable responses; however, this is difficult to do in a single-case design given the constraints of time series data. Researchers must have measures that are relatively quick to administer. This limits the number of items that can be used on a self-report instrument used in a single-case study. Therefore, extraneous items, such as those used to determine social desirability, may be eliminated. When a participant provides socially desirable responses during one phase of a single-case design study, it becomes impossible to determine the presence of intervention effects. In this study, Max revealed he was not comfortable with the researcher during the baseline phase and, therefore, provided more socially desirable responses. Once the intervention sessions began and Max became more comfortable with the researcher, his responses to the time series questions became more reflective of how he was actually feeling relative to the focus of each question. Therefore, his time series data demonstrate intervention effects in the opposite direction originally hypothesized. He appears to have decreased in levels of self-determination and social-emotional levels which is opposite of what the participant self-reported during the final interview.

Another concern with these self-report data that is the extent to which participants' understood the constructs contained in the questions. In contrast to social desirability, literature on self-report data does not address this issue as readily. Certainly this issue can be overcome in many self-report situations by providing an explanation and/or definition of the construct. For example, on a questionnaire about alcohol consumption a researcher might clarify questions regarding how many alcoholic drinks are consumed by providing a definition of what constitutes one drink (e.g., 12 ounces of beer, 5 ounces of wine). While definitions of constructs, such as "control" and "positive emotions", were provided to participants such constructs are still subject to each participant's interpretation. These types of constructs are less tangible in nature. In this study, participants reported that as they participated in PSI their definitions and understandings of some constructs changed, which then affected how they responded to the time series question. For example, Kim stated that as she participated in PSI her understandings of the self-determination time series questions changed. In the beginning of the intervention she recognized that she had control in her life and that her behaviors and actions were related to what happened in her life. Her beliefs were largely passive. She understood her behaviors impacted what happened in her life, but she did not understand that she could purposefully alter her behavior to change what happened in her life. As she progressed through the intervention she began to have a more active understanding of these constructs. She realized that she had control to achieve specific goals in her life that were important to her. She learned that by changing her behaviors (e.g., writing for short periods of time each day) she could change what happened in her life (e.g., complete assignments on time). This represents a major shift in her level of

self-determination. However, when visually analyzing her time series graphs, as well as effect sizes from the data and results from the multilevel modeling analysis, results indicate that there was no change in her self-determination levels.

The results from this study indicate that participation in PSI has some effect on the self-determination and social-emotional levels of postsecondary students with learning disabilities and/or ADHD. However, due to the inconsistent nature of the findings it is unclear the magnitude of the intervention effect. These results may be due to the length of the intervention, issues within the time series data, and/or the intersection of time series and self-report data. More research is needed in order to better determine the effects of PSI on self-determination and social-emotional levels, as well as how the issues that were present in this time series data and the intersection of time series and self-report data impacted the results.

### **Implications and Future Research**

There are several implications from this study. These implications relate to both the further development of PSI and intervention research in general and to methodological issues. In the area of intervention research, including the further development of PSI, implications include the need for relationship building between the participants and researchers and the need to understand the intersection of the participants, their contexts, and the intervention. Methodological implications include the importance of engaging participants in the interpretation of their data, the use of multilevel modeling with multiple baseline data, the use of text messaging to collect time series data, and the measurement of academic performance at the postsecondary level. Possible directions for future research are discussed.

## **Relationship Building**

Findings from this study suggest the need for emphasizing relationship building as part of the future development of PSI. It is likely that this is important with respect to intervention studies in general. Information from participants indicated that the relationship they developed with the researcher allowed them to be more honest in responding to the self-report data. In addition, some participants also discussed their belief that PSI should be implemented by someone who was trustworthy, compassionate, and that they feel comfortable with. Previous research has found that students who have positive relationships with their teachers perform better academically (Allsopp et al., 2005; Hughes, Luo, Kwok, & Loyd, 2008) and have higher levels of subjective well-being, or happiness (Suldo & Huebner, 2006). While there have been discussions regarding whether intervention effects are solely due to the intervention or if the interventionist was part of the effect, research has not explored the direct impact of relationships between interventionists and participants. Future research regarding PSI should include relationship building activities prior to data collection in order to explore how this effects participants' self-report data. In addition, intervention research in general should consider including relationship building activities and researchers should investigate the impact positive relationships between the interventionists and participants have on intervention effects.

## **Intersection of Participants, Their Contexts, and Interventions**

Another implication arising from this study is the need to explore the intersection of participants, their contexts, and interventions and how this intersection affects intervention development and outcomes. In this study, the contexts of the individual

participants (e.g., family issues, health issues) affected their responses to the time series questions, thus impacting the overall results of the study. When reviewing their data following the completion of the intervention, many participants stated they believed their self-determination and social-emotional outcomes had improved even though this conclusion was in contrast with what the data showed in the time series graphs. Participants explained the discrepancy between the data and their interpretations was often due to their particular contexts (e.g., personal lives, time in the semester such as during midterms). Therefore, it is plausible to assume that the time series data are representative of both intervention effects and personal contexts. This makes it difficult to determine the exact nature of the intervention effect.

Further, data from the final interviews indicated several participants entered the study with specific expectations and assumptions about an intervention for students with learning disabilities and/or ADHD. They stated they typically had experienced interventions and teaching approaches that were deficit-focused and unresponsive to their individual needs (i.e., one-size-fits all intervention model). PSI's focus on personal strengths appeared to be novel and contradictory to what participants expected in an intervention aimed at improving their self-determination and social-emotional levels within a meaningful context of a school setting. Several participants commented on the use of strengths versus weaknesses in the intervention. One participant stated he appreciated the focus on strengths rather than his weaknesses. Other participants directly asked why remediation of deficit areas was not included in the intervention. Another participant spoke about the benefits of learning about his strengths from a deficit perspective. Rather than stating he believed a strength of PSI was that he learned how to

use his strengths, he stated that it was helpful to learn about his weaknesses so he could change the way he learned. He interpreted learning to use his strengths as highlighting how he typically learned as a weakness. Finally, another participant interpreted the fact that PSI is responsive to each participant's individual needs by allowing him/her to bring their own meaningful context (i.e., their coursework and experiences within courses) to intervention sessions as meaning that there really was not a plan for each intervention session. In her final interview she spoke of her experiences in previous interventions where she was told the interventions were not "therapy". Since PSI allowed her to discuss events in her life (i.e., difficulties with coursework and relationships with her professors) that were bothering her at the moment as part of her meaningful context, she believed that the researcher may have allowed her an opportunity to "vent" and discuss personal issues rather than follow the process of the intervention. The participants' expectations/assumptions regarding PSI provide insight into how people think about interventions for students with disabilities in general. These expectations/assumptions may impact how a person interacts with an intervention. For example, if a participant believes the intervention will not be effective because it does not focus on remediating deficits, he/she may be less likely to engage in activities where their strengths are engaged because they do not view these activities as helpful for "fixing" him/her. The lack of engagement with the intervention activities may suppress the intervention effects. An intervention may be labeled as ineffective when in reality it is effective when participants follow-through with intervention activities appropriately. Further, if interventionists have specific beliefs regarding what constitutes an intervention, it is possible that they will implement it with less fidelity thereby leading to reduced



intervention effects. Therefore, future research with PSI should continue to explore the intersection of the participants, their contexts, and the intervention. Methodological research should examine how this intersection impacts intervention effectiveness.

### **Engage Participants in Interpreting Results**

A strength of single-case designs is that they allow the researcher to closely monitor the intervention effects over time for each participant (Kazdin, 1982). This allows the researcher to draw conclusions about why the intervention may or may not have demonstrated treatment effects based on the data and what they know about the participants. However, these interpretations are typically from the researcher's perspective and based on the knowledge of the participant the researcher has. This study included the participants' interpretations of their data. This provided the researcher with additional insights into how the intervention was performing. Future studies should include participants' interpretations of their data in order to draw more in-depth conclusions about how an intervention is impacting participants and increase the validity of the interpretations of study results.

### **Methodological Research with Multiple Baseline Data and Multilevel Modeling**

Recent research in single-case designs has investigated the use of multilevel modeling to analyze time series data (Ferron et al., 2009; Ferron et al., 2010; Van den Noortgate & Onghena, 2003a, 2003b). Multilevel modeling offers distinct benefits to the analysis of single-case designs including increased reliability when compared to visual analysis alone since it offers researchers the ability to detect both across participant and within participant effects. However, much of the research done to date has focused on simulation research with the data meeting all the assumptions of multilevel modeling

(i.e., independent errors that have a normal distribution and equal variances) including specifying the correct model. These studies have indicated that the fixed effects tend to be robust whereas random effects tend to contain more bias. Few studies have investigated how estimates are impacted when models are misspecified, what happens when assumptions are violated, and there are more complex variance structures. Models are misspecified when incorrect variance structures are assumed or variables that influence the dependent variables are excluded. For example, in this study a review of participants' time series data indicated that the amount of variability present in the data depend upon the individual (i.e., some participants have little variability in their data and others have a large amount of variability in their responses). Therefore, the multilevel modeling conducted in this study specified a variance structure in which the amount of variance included was different for each participant. However, the variance structure could have been modeled with a single variance for all participants at level-1. Current research does not indicate how the parameter estimates would be affected by these differences in variance structures for these data. Further, current research has investigated data that meet the assumptions of multilevel modeling. Given the small number of level-2 units typically present in multiple baseline design it is difficult to estimate the shape of the distribution for the residuals. Therefore, future research needs to investigate the impact of model misspecification on the estimates yielded from multilevel modeling as well as how violations to the assumptions of normality impact the estimates in multiple baseline designs.

## **Methodological Research on Texting**

The text messaging component of this study was a new form of data collection based on traditional methods. This new method utilized current technology to collect data similar to other methods in psychological and emotional research (Larsen & Fredrickson, 2003). The participants in this study engaged in six practice opportunities with this method of data collection. They were all provided a card with the time series questions on it, explained the meaning of the questions, explained the process for sending and receiving questions, and provided an opportunity to ask questions. The first practice session yielded a variety of responses from participants. Some participants used a different scale to answer the questions. Others responded in words or complete sentences rather than the one to ten scale. After the first opportunity for data collection, students were again asked if they had any questions about the time series questions. Students were asked once more if they had questions during the practice period. Regardless of this practice and opportunities for questions, final interviews revealed that some of the participants responded to the questions differently than anticipated. For example, one participant indicated that the text messaging helped to remind her to accomplish her goals. This participant achieved the majority of her goals. The consistent pattern in achievement did not indicate a shift in self-determination abilities, but it is possible that without the weekly questions she may not have demonstrated a consistent performance. Future research should explore the impact text messaging specifically has on PSI. This could be accomplished utilizing a group design in which all participants participate in PSI. One group could receive weekly text messages as in this study as well as the pre- and post-assessments, and the other group could complete pre- and post-assessments

only. The two groups could be compared on the pre- and post-assessments to investigate the impact of receiving text messages on the effectiveness of PSI.

### **Measurement of Academic Performance in the Postsecondary Setting**

Several participants stated they believed their academic performance had increased as a result of participating in PSI. While academic performance was not a dependent variable in this study, it is plausible that PSI could lead to increased academic outcomes given its foundation in self-determination, positive psychology, and effective practices for postsecondary students with learning disabilities and/or ADHD (see Chapter 2 for a discussion of academic outcomes correlated with these foundational areas). Future studies should investigate this connection. However, in order to do this methodological research should be conducted to determine how best to monitor academic progress in the postsecondary setting. Research studies often rely on participants' GPAs as measures of academic performance. GPAs are the result of individual grades earned in individual courses. These courses have different requirements, different grading systems, and different instructors assigning grades. These differences can lead to a wide variety of meaning from one semester to another in the post-secondary setting. If a student's GPA increases, is it due solely to an increase in academic performance or the result of taking few courses (thereby maximizing study time per course), an easier course load, or a difference in grading systems? Further, many college courses require a few assignments over the course of the semester (e.g., midterm and final exam). This makes it difficult to assess academic performance within an individual semester based solely on grades. At the postsecondary level when schedules can vary widely from semester to semester it may be difficult to assess change in academic performance over the duration of an eight-

week intervention such as PSI. Therefore, methodological research should be done to identify accurate methods of measuring academic performance during a semester and between semesters.

### **Limitations**

This study was designed to minimize threats to both internal and external validity; however, it is not without limitations. The participants were volunteers who all received services for their disability from Students with Disabilities Services (SDS).. The fact that the participants volunteer for the study creates some limitations. It is possible that postsecondary students with learning disabilities and/or ADHD who seek assistance through SDS have a higher level of self-determination than students who do not seek assistance. Further, since they chose to participate in a study aimed at improving outcomes for them, they may have been more self-determined than students receiving services from SDS who decide not to participate. They may also have had a better self-awareness than their peers which may have impacted the findings from the study.

Another limitation was the use of fixed baseline and treatment phases. It is generally recommended in the single-case literature to wait for the baseline to stabilize prior to implementing the intervention (Barlow et al., 2009; Kazdin, 1982). However, given the constraints of the academic semester and the fact that the intervention has a set number of sessions, waiting for the baselines to stabilize may have resulted in the extension of the study beyond a single semester which could have introduced several threats to the internal validity of the study.

This study utilized self-report instruments. Much of the self-determination and emotion research data uses self-report data given the nature of the questions. Participants

need to tell the researchers how they are feeling and what they are thinking which is not always observable. Responses provided in self-report measures are susceptible to social desirability; that is participants' responses may reflect what they think is the correct answer rather than how they are truly feeling.

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## APPENDICES

## Appendix A

### *Content and Face Validity Questions*

1. Does the personal strengths intervention contain elements reflective of [self-determination, positive psychology, effective practices for postsecondary students with learning disabilities]?
2. Does it appear reasonable that the personal strengths intervention will improve [self-determination, affect, outcomes for postsecondary students with learning disabilities]?
3. What are the strengths of the personal strengths intervention as related to [self-determination, positive psychology, postsecondary students with learning disabilities]?
4. What changes, if any, do you feel need to be made to the personal strengths intervention?

## Appendix B

### *Questions for Pilot Test of PSI*

1. How do you feel about the intervention?
2. Does the intervention include appropriate activities for postsecondary students with learning disabilities? Why or why not?
3. What changes, if any, do you feel need to be made to the intervention?

## Appendix C

### *Active Learner Student Questionnaire II (ALSQ-II)*

#### Active Learner Student Questionnaire II

Name: \_\_\_\_\_ Date: \_\_\_\_\_

The purpose of this questionnaire is to help you understand your learning strengths so you can work on incorporating those strengths into your daily life.

Read each statement and then write:

**Y** for **yes** if it always applies to you

**S** for **sometimes** if it applies to you sometimes

**N** for **no** if it never applies to you

#### **ORGANIZATION**

##### **Time Management**

\_\_\_\_\_ I use a planner or calendar effectively.

\_\_\_\_\_ I keep track of tests and assignments successfully.

\_\_\_\_\_ I attend class regularly.

\_\_\_\_\_ I set appropriate goals for myself.

##### **Materials Management**

\_\_\_\_\_ I keep an organized, separate notebook (physical or digital) for each class.

\_\_\_\_\_ I bring items I need to class.

\_\_\_\_\_ I have items at home I need for studying or for homework.

##### **Test Taking**

\_\_\_\_\_ My nervousness does not affect my ability to perform well on tests.

\_\_\_\_\_ I complete tests on time.

\_\_\_\_\_ I read directions or questions carefully.

\_\_\_\_\_ I typically answer multiple-choice questions correctly.

\_\_\_\_\_ I typically answer true/false questions correctly.



\_\_\_\_\_ I usually perform well on essay tests.

\_\_\_\_\_ During a test, I remember what I studied.

### **Study Skills**

\_\_\_\_\_ I usually find it easy to start studying.

\_\_\_\_\_ I stay focused regularly when I study.

\_\_\_\_\_ I am not easily distracted by what happens around me when I study.

\_\_\_\_\_ I easily study from my notes.

\_\_\_\_\_ I easily study from books.

\_\_\_\_\_ I know how to organize information from books and notes in a way that helps me to learn.

\_\_\_\_\_ I remember information for tests.

### **Note Taking**

\_\_\_\_\_ I successfully take notes during a lecture in class.

\_\_\_\_\_ The notes I take are organized and easy to understand.

\_\_\_\_\_ I successfully take notes from a taped lecture.

\_\_\_\_\_ I take notes when I read that help me to learn.

\_\_\_\_\_ I focus on important points when I take notes.

### **GENERAL LEARNING**

\_\_\_\_\_ I know what aids I need to use to help me learn.

\_\_\_\_\_ I effectively organize information sequentially.

\_\_\_\_\_ I compare and contrast ideas effectively.

\_\_\_\_\_ I understand how information is organized into categories that help me learn.

\_\_\_\_\_ I can determine cause-and-effect relationships.

- \_\_\_\_\_ I am able to problem-solve.
- \_\_\_\_\_ I learn successfully when the “big picture” is explained first and the small details are explained second.
- \_\_\_\_\_ I learn successfully when the small details are explained first and the “big picture” is explained second.
- \_\_\_\_\_ I learn successfully when I get to work with others.
- \_\_\_\_\_ I learn successfully when I get to work independently.
- \_\_\_\_\_ I learn successfully when I present information to others.
- \_\_\_\_\_ I learn successfully when I discuss new information.
- \_\_\_\_\_ I learn successfully when I participate in hands-on activities.
- \_\_\_\_\_ I learn new information successfully through problem-solving activities.
- \_\_\_\_\_ I learn successfully when new information is presented visually through the use of pictures, figures, charts, or other graphics.
- \_\_\_\_\_ I learn successfully when I am able to see new information through the use of text/print.
- \_\_\_\_\_ I learn successfully when new information is presented orally.

## **READING**

### **Vocabulary**

- \_\_\_\_\_ I understand difficult words when I read.
- \_\_\_\_\_ When I am reading and encounter a difficult or unknown word I know how to figure out its meaning.
- \_\_\_\_\_ I remember vocabulary words I learn.

### **Comprehension**

- \_\_\_\_\_ I understand the overall ideas when I read material for my classes.
- \_\_\_\_\_ I understand the main idea when I read.
- \_\_\_\_\_ I understand the details when I read.

\_\_\_\_\_ I understand stories that I read.

\_\_\_\_\_ I read quickly.

\_\_\_\_\_ I understand what I read from a computer screen.

\_\_\_\_\_ I know what aids I need to use when I read to help me.

## **WRITING**

### **Mechanics**

\_\_\_\_\_ I spell most words correctly.

\_\_\_\_\_ I correctly use capitalization.

\_\_\_\_\_ I correctly use commas.

\_\_\_\_\_ I correctly use colons and semicolons.

\_\_\_\_\_ I write sentences well.

\_\_\_\_\_ I proofread my work for spelling, punctuation, capitalization, and sentence structure well.

### **Composition**

\_\_\_\_\_ I write paragraphs with clear topic sentences and appropriate supporting details.

\_\_\_\_\_ I easily choose words that say what I mean.

\_\_\_\_\_ I organize my ideas when I write stories.

\_\_\_\_\_ I organize my ideas when I write research papers and essays.

\_\_\_\_\_ I brainstorm ideas prior to writing.

\_\_\_\_\_ I write clear introductions and conclusions.

\_\_\_\_\_ I locate the information I need when I write research papers and essays.

\_\_\_\_\_ I keep my writing focused on my topic.

\_\_\_\_\_ I proofread my writing to know if makes sense.

\_\_\_\_\_ I have someone else read my writing to help me proofread my work.

\_\_\_\_\_ I know what aids I need to use when I write to help me.

## Appendix D

### *Questions for Pilot Test of Active Learner Student Questionnaire II*

1. Were the items clearly worded? If not, which items were not clearly worded? How do the items need to be changed to be clearer?
2. Were the answer choices appropriate? If not, what changes need to be made for the options to be appropriate?
3. Does the Active Learner Student Questionnaire II reflect learner strengths rather than learning difficulties? If not, what changes need to be made to reflect learner strengths?
4. Do you feel the Active Learner Student Questionnaire II was able to identify your learning strengths? Why or why not?
5. Are there any items you feel need to be added to the Active Learner Student Questionnaire II?

## Appendix E

### *Sample Items from the VIA-IS*

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Character Strength	Sample Items
Creativity	I do not have any special urge to do something original.
Curiosity	I am never bored.
Open-mindedness	I make decisions only when I have all the facts.
Love of learning	I always go out of my way to attend educational events.
Perspective	People describe me as “wise beyond my years.”
Bravery	I do not always stand up for my beliefs
Persistence	I finish things despite obstacles in the way.
Integrity	I always keep my promises.
Vitality	I want to participate fully in life, not just view it from the sidelines.
Love	I have great difficulty accepting love from anyone.
Kindness	I am never too busy to help a friend.
Social intelligence	I always know what makes someone tick.
Citizenship	I never miss group meetings or team practices.
Fairness	I am strongly committed to the principles of justice and equality.
Leadership	In a group, I try to make sure everyone feels included.
Forgiveness & mercy	I am unwilling to accept apologies.
Humility & modesty	I am proud to say that I am an ordinary person.
Prudence	“Better safe than sorry” is one of my favorite mottoes.
Self-regulation	I am a highly disciplined person.

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Appreciation of beauty & excellence	I often fail to notice beauty until others comment on it.
Gratitude	I always express my thanks to people who care about me.
Hope	I always look on the bright side.
Humor	Few people would say I am fun to be with.
Spirituality	I do not believe in a universal power or a god.

---

*Note.* From Peterson & Seligman (2004)

## Appendix F

### *Fidelity Checklist*

#### *Fidelity Checklist*

ID: \_\_\_\_\_ Date: \_\_\_\_\_

Session Topic: \_\_\_\_\_

Please indicate whether or not The Personal Strengths Intervention (PSI) component was indicated on the session notes.

PSI Component	Activity	Yes	No	N/A
Reflection of Progress	If applicable, was the previous goal reviewed?			
	Was it determined if the previous goal was achieved or not?			
	If the goal was achieved, was a plan for savoring discussed?			
	If the goal was not achieved, did the participant and researcher engage in problem-solving activities to determine how the goal could be achieved in the future?			
Goal Setting	Was the participant given an opportunity to provide a goal related to the session topic?			
	If the goal was not appropriate did the researcher help the participant revise the goal so it was appropriate (i.e., can be accomplished in one week, appropriate given the individual's needs, includes observable and measurable behaviors)?			
	Did the goal relate to a course(s) that the participant is enrolled?			
Planning to Achieve	Was the participant given the opportunity to develop a plan to achieve his/her goal?			
	If necessary, did the researcher help revise the plan to achieve?			
	Does the plan to achieve include the use of the participant's strengths?			
	Does the plan to achieve include the use of appropriate strategies for meeting the goal?			
Monitoring of Progress	Was the participant given the opportunity to develop a monitoring plan?			
	If necessary, did the researcher help to revise the monitoring plan?			
	Does the monitoring plan include clear information sources for determining if the goal was achieved?			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Appendix G

### *Guidelines for Documenting Learning Disabilities for the University of South Florida*

#### **University of South Florida Students with Disabilities Services**

##### **Guidelines for Documenting Learning Disabilities**

Students seeking support services from Students with Disabilities Services (SDS) on the basis of a previously diagnosed learning disorder (LD) must submit documentation that verifies their eligibility under Section 504 of the Rehabilitation Act, the Americans with Disabilities Act (ADA) and the ADA Amendments Act. **The documentation must describe a disabling condition, which is defined by the presence of *significant* limitations in one or more major life activities.** Merely submitting evidence of a diagnosis, and/or a discrepancy between ability and achievement on the basis of a single subtest score is not sufficient to warrant academic accommodations. Similarly, nonspecific diagnoses, such as individual “learning styles,” “learning differences,” “academic problems,” and “test difficulty/anxiety” in and of themselves do not constitute a disability. The guidelines below are intended to provide guidance for the assessment process, including the areas that must be assessed in order for SDS staff to make appropriate decisions. Examples of specific tests that may be used within each area are available upon request. Please do not hesitate to contact SDS at (813) 974-4309 if you have any questions.

**Students submitting documentation of a learning disorder must provide a copy of the comprehensive psychoeducational report in order for the student to be eligible for accommodations and/or modifications.**

Such documentation should include:

1. Clear and specific evidence of a learning disability, including the exact **DSM-IV diagnosis** when appropriate.
2. **Testing must be comprehensive.** Objective evidence of a substantial limitation in cognition and learning must be provided. Minimally, the domains to be addressed must include, but are not limited to:
  - a. **Diagnostic interview** – include relevant background information in support of the diagnosis. This may include a self-report of limitations and difficulties, a history of the presenting problem(s), a developmental history, academic history, including summaries of previous evaluation results and reports of classroom behavior and performance, a history of the family’s learning difficulties and primary language spoken in the home, any pertinent medical and psychological history, a discussion of possible comorbid conditions.
  - b. **Complete psychoeducational or neuropsychological evaluation** – actual test scores must be provided; standard scores are preferred. It is not acceptable to administer only one test or to base the diagnosis on only one of several subtests. Individualized Education Plans (IEPs) in and of themselves, are not sufficient documentation. The assessment instruments used must be reliable, valid, and standardized for diagnosing LD in an **adult population**. The following areas are generally assessed:
    - **Aptitude** – intellectual assessments
    - **Achievement** - current levels of academic functioning in relevant areas such as reading, mathematics, oral and written language



- **Information Processing** - specific areas of information processing (e.g. short and long term memory, sequential memory, auditory and visual perception/processing, processing speed, executive functioning, motor ability).

3. The testing report should clearly detail how the individual's disabling condition affects a major life activity and the resultant functional limitations in the academic setting. This may include information on the severity and pervasiveness of the disorder. The evaluator should also specify how the test results relate to the individual's functioning.

4. The documentation should include a history of current and past accommodations and whether or not they were useful. Recommendations for future accommodations and services are helpful and should be included. However, the determination of whether an accommodation is reasonable and appropriate within the University environment rests with Services for Students with Disabilities.

5. Testing should be **current**. Accommodations are based on the current nature and impact of the disability. In general, this means that **testing must have been conducted within the last three years prior to your request for accommodations**.

6. All reports should be on letterhead, typed, dated, and signed, and otherwise legible. The name, title, and professional credentials of the evaluator, including information about license or certification as well as area of specialization, employment, and state in which the individual practices must be clearly stated. Use of diagnostic terminology indicating a specific disability by someone whose training and experience are not in these fields is not acceptable. Evaluators should not be related to the individual being assessed. Diagnoses written on prescription pads and/or parent's notes indicating a disability are NOT considered appropriate documentation.

#### **General Guidelines for all Disabilities**

It is important to recognize that accommodation needs can change over time and are not always identified during the initial diagnostic process. A prior history of accommodation, without demonstration of current need, does not in and of itself warrant provision of a like accommodation. SDS will make the final determination as to whether appropriate and reasonable accommodations are warranted and can be provided to the individual. In addition to documentation as described above, transfer students should provide written verification of accommodations received (and dates served) from the previously attended school(s).

#### **All documentation submitted to SDS is considered confidential.**

Documentation should be sent to the following address:

University of South Florida  
Students with Disabilities Services  
4220 E. Fowler Ave., SVC 1133  
Tampa, FL 33620-6923

Documentation may be faxed to (813) 974-7337.

## Appendix H

### *Guidelines for Documenting AD/HD for the University of South Florida*

#### **University of South Florida Students with Disabilities Services**

##### **Guidelines for Documenting Attention-Deficit/Hyperactivity Disorder**

Students seeking support services from Students with Disabilities Services (SDS) on the basis of a previously diagnosed Attention-Deficit/Hyperactivity Disorder (AD/HD) must submit documentation that verifies their eligibility under Section 504 of the Rehabilitation Act, the Americans with Disabilities Act (ADA) and the ADA Amendments Act. **The documentation must describe a disabling condition, which is defined by the presence of *substantial* limitations in one or more major life activities.** Merely submitting evidence of a diagnosis, and/or a discrepancy between ability and achievement on the basis of a single subtest score is not sufficient to warrant academic accommodations. Similarly, nonspecific diagnoses, such as individual “learning styles,” “learning differences,” “academic problems,” “attention problems,” and “test difficulty/anxiety” in and of themselves do not constitute a disability. The guidelines below are intended to provide guidance for the assessment process, including the areas that must be assessed in order for SDS staff to make appropriate decisions. Examples of specific tests that may be used within each area are available upon request. A verification form is also available to provide guidance in the assessment process. Please do not hesitate to contact SDS at (813) 974-4309 if you have any questions.

While it is recognized that psychological testing alone does not justify an AD/HD diagnosis, such testing is considered an important part of establishing the impact of the disorder on learning and determining appropriate accommodations. It is also essential in determining the presence or absence of other conditions that frequently co-occur with the disorder, which may be of relevance in the classroom. Comprehensive psychoeducational or neuropsychological evaluations **may be required** to support specific accommodation requests. Evaluators should not be related to the individual being assessed.

At a *minimum*, all documentation in support of an AD/HD should include the following information:

**1. DSM-IV or ICD Diagnosis (text and code) and information concerning co-morbidity**

In order to establish a history of the condition and recency of evaluation.

a. Date of diagnosis.

b. Date of last contact. *The assessment must be current.* Accommodations are based on an assessment of the current nature and impact of the disability. Evaluations must have been completed within the last **three (3) years prior to accommodation requests**. In addition, depending on the nature of the disability, evaluations may need to be updated on a semester-by-semester or yearly basis.

**2. Evaluation:** A list of questionnaires, interviews, and observations used to identify the AD/HD. A summary should include information regarding **the onset, longevity, and severity of the symptoms as well as treatment history including medication.**

**3. Functional Limitations:** Information concerning the **impact** of the AD/HD on **major life activities** as well as the **functional limitations** in the educational setting. Again, factors to consider include the severity, frequency, and pervasiveness of symptoms.

4. **Accommodations:** History of accommodations. (Optional) *Suggested* recommendations, modifications and/or accommodations.

#### **General Guidelines for all Disabilities**

It is important to recognize that accommodation needs can change over time and are not always identified during the initial diagnostic process. A prior history of accommodation, without demonstration of current need, does not in and of itself warrant provision of a like accommodation.

SDS will make the final determination as to whether appropriate and reasonable accommodations are warranted and can be provided to the individual.

In addition to documentation as described above, transfer students should provide written verification of accommodations received (and dates served) from the previously attended school(s).

*The diagnostic report must include the **name and title, and license number** of the evaluator. A verification form is available to assist in the documentation process.*

**All documentation submitted to SDS is considered confidential.**

Documentation should be sent to the following address:

University of South Florida  
Students with Disabilities Services  
4202 E. Fowler Ave., SVC 1133  
Tampa, FL 33620-6923  
-or-  
Fax: (813) 974-7337

Appendix I

*Demographic Questionnaire*

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Please answer each question with the most appropriate answer.

1. Which best describes you?

- Freshman    Sophomore                       Junior    Senior

2. What is your current major? \_\_\_\_\_

3. What grade level were you in when you were diagnosed with a learning disability?  
\_\_\_\_\_

4. What type of services did you receive for your learning disability?

- Inclusion (spent all of your time in the general education classroom)  
 Resource room (went to a separate room for a portion of the day to get help)  
 Self-contained classroom (spent all of your time in a special education class)  
 Other \_\_\_\_\_

5. In the space provided below, please list the accommodations you have been provided most commonly and indicate whether or not they were helpful.

Accommodation	Helpful	Not Helpful

Appendix J

*Self-Determination Student Scale*

Name \_\_\_\_\_ Date \_\_\_\_\_

**Self-Determination Student Scale**

©1995, 2004

Alan Hoffman, Ed.D. Sharon L. Field, Ed.D.  
Shlomo S. Sawilowsky, Ph.D.

**Directions:** Read each statement carefully. If the statement describes you or your beliefs, place an “X” in the box labeled “**That’s me.**” If the statement does not describe you or your beliefs, place an “X” in the box labeled “**That’s not me.**”

For example, if the statement below describes you, an “X” is placed in the square “**That’s me.**”

A. I prefer sporting activities to academic studies      **That’s me**      **That’s not me**  
     

	<b>That’s me</b>	<b>That’s <u>not</u> me</b>
1. I am a dreamer.	<input type="checkbox"/>	<input type="checkbox"/>
2. I know what is important to me.	<input type="checkbox"/>	<input type="checkbox"/>
3. I have the right to decide what I want to do.	<input type="checkbox"/>	<input type="checkbox"/>
4. When I do <u>not</u> get something I want, I try a new approach.	<input type="checkbox"/>	<input type="checkbox"/>
5. I forget to take care of my needs when I am with my friends.	<input type="checkbox"/>	<input type="checkbox"/>
6. To help me the next time, I evaluate how things turned out.	<input type="checkbox"/>	<input type="checkbox"/>
7. There are <u>no</u> interesting possibilities in my future.	<input type="checkbox"/>	<input type="checkbox"/>
8. Nothing is important to me.	<input type="checkbox"/>	<input type="checkbox"/>
9. No one has the right to tell me what to do.	<input type="checkbox"/>	<input type="checkbox"/>
10. I can only think of one way to get something I want.	<input type="checkbox"/>	<input type="checkbox"/>
11. I can be successful even though I have weaknesses.	<input type="checkbox"/>	<input type="checkbox"/>
12. I can figure out how to get something if I want it.	<input type="checkbox"/>	<input type="checkbox"/>
13. Sometimes I need to take risks.	<input type="checkbox"/>	<input type="checkbox"/>
14. I do <u>not</u> have any goals for school this year.	<input type="checkbox"/>	<input type="checkbox"/>
15. I would <u>not</u> practice in my mind giving a speech to a class because it would just make me nervous.	<input type="checkbox"/>	<input type="checkbox"/>
16. I do <u>not</u> know my weaknesses.	<input type="checkbox"/>	<input type="checkbox"/>

**Please turn to NEXT PAGE ➡**

	That's me	That's <u>not</u> me
17. My weaknesses stop me from being successful.	<input type="checkbox"/>	<input type="checkbox"/>
18. I do things without making a plan.	<input type="checkbox"/>	<input type="checkbox"/>
19. I know my strengths.	<input type="checkbox"/>	<input type="checkbox"/>
20. I do <u>not</u> know where to find help when I need it.	<input type="checkbox"/>	<input type="checkbox"/>
21. It is a waste of time to reflect on why things turned out the way they did.	<input type="checkbox"/>	<input type="checkbox"/>
22. I dream about what my life will be like after I finish school.	<input type="checkbox"/>	<input type="checkbox"/>
23. I tell others what I want.	<input type="checkbox"/>	<input type="checkbox"/>
24. If I want something, I keep at it.	<input type="checkbox"/>	<input type="checkbox"/>
25. I think about how I could have done something better.	<input type="checkbox"/>	<input type="checkbox"/>
26. I make decisions without knowing if I have options.	<input type="checkbox"/>	<input type="checkbox"/>
27. I forget to think about what is good for me when I do things.	<input type="checkbox"/>	<input type="checkbox"/>
28. I am frequently surprised by what happens when I do things.	<input type="checkbox"/>	<input type="checkbox"/>
29. I am too shy to tell others what I want.	<input type="checkbox"/>	<input type="checkbox"/>
30. I am too scared to take risks.	<input type="checkbox"/>	<input type="checkbox"/>
31. Criticism makes me angry.	<input type="checkbox"/>	<input type="checkbox"/>
32. I am embarrassed when I succeed.	<input type="checkbox"/>	<input type="checkbox"/>
33. I plan to explore many options before choosing a career.	<input type="checkbox"/>	<input type="checkbox"/>
34. I prefer to negotiate rather than to demand or give in.	<input type="checkbox"/>	<input type="checkbox"/>
35. I would rather have the teacher assign me a topic for a project than to create one myself.	<input type="checkbox"/>	<input type="checkbox"/>
36. I am unhappy with who I am.	<input type="checkbox"/>	<input type="checkbox"/>
37. My life has no direction.	<input type="checkbox"/>	<input type="checkbox"/>
38. I imagine myself failing before I do things.	<input type="checkbox"/>	<input type="checkbox"/>
39. I like to know my options before making a decision.	<input type="checkbox"/>	<input type="checkbox"/>
40. I think about what is good for me when I do things.	<input type="checkbox"/>	<input type="checkbox"/>
41. Before I do something, I think about what might happen.	<input type="checkbox"/>	<input type="checkbox"/>
42. My friends are lucky to know me.	<input type="checkbox"/>	<input type="checkbox"/>

**Please turn to NEXT PAGE ➡**

	That's me	That's not me
43. I know what grades I am working toward in my classes.	<input type="checkbox"/>	<input type="checkbox"/>
44. Doing well in school does <u>not</u> make me feel good.	<input type="checkbox"/>	<input type="checkbox"/>
45. When I want something different from my friend, we find a solution that makes us both happy.	<input type="checkbox"/>	<input type="checkbox"/>
46. It is important for me to know what I do well in being a good friend.	<input type="checkbox"/>	<input type="checkbox"/>
47. In an argument, I am responsible for how I act on my feelings.	<input type="checkbox"/>	<input type="checkbox"/>
48. I wish someone would tell me what to do when I finish school.	<input type="checkbox"/>	<input type="checkbox"/>
49. I like who I am.	<input type="checkbox"/>	<input type="checkbox"/>
50. Goals give my life direction	<input type="checkbox"/>	<input type="checkbox"/>
51. I imagine myself being successful.	<input type="checkbox"/>	<input type="checkbox"/>
52. Personal hygiene is important to me.	<input type="checkbox"/>	<input type="checkbox"/>
53. My experiences in school will <u>not</u> affect my career choice.	<input type="checkbox"/>	<input type="checkbox"/>
54. When I am with friends, I tell them what I want to do.	<input type="checkbox"/>	<input type="checkbox"/>
55. If I am unable to solve a puzzle quickly, I get frustrated and stop.	<input type="checkbox"/>	<input type="checkbox"/>
56. I make changes to improve my relationship with my family.	<input type="checkbox"/>	<input type="checkbox"/>
57. I do <u>not</u> know if my parent's beliefs are important to me.	<input type="checkbox"/>	<input type="checkbox"/>
58. If I need help with a school project, I can figure out where to get it.	<input type="checkbox"/>	<input type="checkbox"/>
59. I am easily discouraged when I fail.	<input type="checkbox"/>	<input type="checkbox"/>
60. I do things the same way even if there might be a better way.	<input type="checkbox"/>	<input type="checkbox"/>
61. I know what is important when choosing my friends.	<input type="checkbox"/>	<input type="checkbox"/>
62. I could <u>not</u> describe my strengths and weaknesses in school.	<input type="checkbox"/>	<input type="checkbox"/>
63. I like to solve puzzles.	<input type="checkbox"/>	<input type="checkbox"/>
64. Nothing good could come from admitting to myself that I am having difficulty in a class.	<input type="checkbox"/>	<input type="checkbox"/>
65. At the end of the marking period, I compare my grades to those I expected.	<input type="checkbox"/>	<input type="checkbox"/>
66. It is silly to dream about what I will do when I finish school.	<input type="checkbox"/>	<input type="checkbox"/>
67. I do <u>not</u> participate in school activities because I have nothing to contribute.	<input type="checkbox"/>	<input type="checkbox"/>

**Please turn to NEXT PAGE ➡**

	That's me	That's <u>not</u> me
68. I accept some criticism and ignore some.	<input type="checkbox"/>	<input type="checkbox"/>
69. I give in when I have differences with others.	<input type="checkbox"/>	<input type="checkbox"/>
70. I do <u>not</u> look back to judge my performance.	<input type="checkbox"/>	<input type="checkbox"/>
71. I tell my friends what I want to do when we go out.	<input type="checkbox"/>	<input type="checkbox"/>
72. I know how to compensate for my weaknesses in sports.	<input type="checkbox"/>	<input type="checkbox"/>
73. I ask directions or look at a map before going to a new place.	<input type="checkbox"/>	<input type="checkbox"/>
74. I like to be called on in class.	<input type="checkbox"/>	<input type="checkbox"/>
75. When I am angry with my friends, I talk with them about it.	<input type="checkbox"/>	<input type="checkbox"/>
76. I like it when my friends see me do well.	<input type="checkbox"/>	<input type="checkbox"/>
77. When going through the cafeteria line, I pick the first thing.	<input type="checkbox"/>	<input type="checkbox"/>
78. I know how to get help when I need it.	<input type="checkbox"/>	<input type="checkbox"/>
79. I prefer to flip through pages, rather than to use the index.	<input type="checkbox"/>	<input type="checkbox"/>
80. I think about how well I did something.	<input type="checkbox"/>	<input type="checkbox"/>
81. I do <u>not</u> volunteer in class because I will be embarrassed if I am wrong.	<input type="checkbox"/>	<input type="checkbox"/>
82. I do <u>not</u> know where to get help to decide what I should do after I finish school.	<input type="checkbox"/>	<input type="checkbox"/>
83. If my friends criticize something I am wearing, I would not wear it again.	<input type="checkbox"/>	<input type="checkbox"/>
84. I do <u>not</u> like to review my test results.	<input type="checkbox"/>	<input type="checkbox"/>
85. Before I give a report in class, I go over it in my mind.	<input type="checkbox"/>	<input type="checkbox"/>
86. I talk about people without considering how it might affect them.	<input type="checkbox"/>	<input type="checkbox"/>
87. I feel proud when I succeed.	<input type="checkbox"/>	<input type="checkbox"/>
88. When we are deciding what to do, I just listen to my friends.	<input type="checkbox"/>	<input type="checkbox"/>
89. When deciding what to do with my friend, it is not possible for both of us to be satisfied.	<input type="checkbox"/>	<input type="checkbox"/>
90. When I want good grades, I work until I get them.	<input type="checkbox"/>	<input type="checkbox"/>
91. If my team wins, there is nothing to be gained by reviewing my performance.	<input type="checkbox"/>	<input type="checkbox"/>
92. Before starting a part-time job or extracurricular activity, I think about how it might affect my school work.	<input type="checkbox"/>	<input type="checkbox"/>



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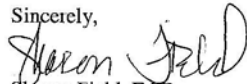
January 29, 2008

Dear Dr. Martin:

I am pleased that you will be making the Self-Determination Assessment Battery User's Guide available for download for educational and research purposes from your OU website. You have our permission to place the Assessment Battery User's Guide and four of the battery instruments (i.e., Self-determination Teacher Perception Scale, Self-determination Parent Perception Scale, Self-determination Observation Checklist and Self-determination Student Scale) on the Zarrow Center web site for free downloading for educational and research purposes. Since ProEd holds the copyright for the Self-determination Knowledge Scale, we are not able to provide permission for that instrument to also be included for free download. However, that instrument is available through ProEd.

Thank you for including our work in this valuable effort to make self-determination materials and assessment instruments available to parents, educators and students.

Sincerely,



Sharon Field, Ed.D.  
Professor (Clinical), Administrative and Organizational Studies  
Co-director, Center for Self-Determination and Transition

*College Theme: The Urban Educator as a Reflective, Innovative Professional*

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## Appendix K

### *Steen Happiness Index*

#### Instructions

*Please read each group of statements carefully. Then pick the one statement in each group that best describes the way you have been feeling for the past week, including today. Be sure to read all of the statements in each group before making your choice.*

#### Question 1

- A. I dislike my daily routine.
- B. I neither enjoy nor dislike my daily routine.
- C. I enjoy my daily routine, but I do like to get away from it.
- D. I enjoy my daily routine so much that I rarely take breaks from it.
- E. I enjoy my daily routine so much that I almost never take breaks from it.

#### Question 2

- A. I feel disconnected from other people.
- B. I feel neither connected nor disconnected from other people.
- C. I feel connected to friends and family members.
- D. I feel connected with most people, even if I do not know them well.
- E. I feel connected to everyone in the world.

#### Question 3

- A. I feel like a failure.
- B. I do not feel like a success.
- C. I feel like I have succeeded more than the average person.
- D. As I look back on my life, all I see are a lot of successes.
- E. I feel I am an extraordinarily successful person.

#### Question 4

- A. Most of the time I am bored.
- B. Most of the time I am neither bored nor interested in what I am doing.
- C. Most of the time I am interested in what I am doing.
- D. Most of the time I am quite interested in what I am doing.
- E. Most of the time I am fascinated by what I am doing.

#### Question 5

- A. I am displeased with myself.
- B. I am neither pleased nor displeased with myself—I am neutral.
- C. I am pleased with myself.
- D. I am very pleased with myself.
- E. I could not be any more pleased with myself.

Question 6

- A. When I am working on a task, I often feel frustrated.
- B. When I am working on a task, sometimes I feel frustrated and sometimes I don't.
- C. When I am working on a task, I am usually not frustrated.
- D. When I am working on a task, I am rarely frustrated.
- E. When I am working on a task, I am almost never frustrated.

Question 7

- A. I am joyless.
- B. I am neither joyful nor joyless.
- C. I am more joyful than joyless.
- D. I am much more joyful than joyless.
- E. Almost everything about my life fills me with joy

Question 8

- A. I dislike my work (paid or unpaid).
- B. I neither like nor dislike my work.
- C. For the most part, I like my work.
- D. My work gives me great satisfaction.
- E. My work provides true and deep satisfaction.

Question 9

- A. I have made more bad choices than good in life.
- B. Some of the choices I have made in life have been good; some have been bad.
- C. I have made more good choices than bad in life.
- D. I have made mostly good choices in life.
- E. Even if I could, I would not change any of the choices I have made.

Question 10

- A. Life is bad.
- B. Life is OK.
- C. Life is good.
- D. Life is very good.
- E. Life is wonderful.

Question 11

- A. My life does not have a purpose.
- B. I do not know my purpose in life.
- C. I have a hint about my purpose in life.
- D. I have a pretty good idea about my purpose in life.
- E. I have a very clear idea about my purpose in life.

Question 12

- A. I have little or no energy.
- B. My energy level is neither high nor low.
- C. I have a good amount of energy.
- D. I feel energetic doing almost everything.
- E. I have so much energy that I feel I can do most anything.

Question 13

- A. I experience more displeasure than pleasure.
- B. I experience pleasure and displeasure in equal measure.
- C. I experience more pleasure than displeasure.
- D. I experience much more than pleasure than displeasure.
- E. My life is filled with pleasure.

Question 14

- A. Time passes slowly during most or all of my activities.
- B. Time passes quickly during some of my activities and slowly for others.
- C. Time passes quickly during most of my activities.
- D. Time passes quickly during all of my activities.
- E. Time passes so quickly during all of my activities that I do not even notice it.

Question 15

- A. I am ashamed of who I am.
- B. I am not ashamed of who I am.
- C. I am proud of who I am.
- D. I am very proud of who I am.
- E. I am extraordinarily proud of who I am.

Question 16

- A. I am discouraged about the future.
- B. I am neither encouraged nor discouraged about the future.
- C. I feel somewhat encouraged about the future.
- D. I feel quite encouraged about the future.
- E. I feel extraordinarily encouraged about the future.

Question 17

- A. When I am working on a task, I pay more attention to what is going on around me than I do to the task.
- B. When I am working on a task, I pay as much attention to what is going on around me as I do to the task.
- C. When I am working on a task, I pay more attention to the task than to what is going on around me.
- D. When I am working on a task, I rarely notice what is going on around me.
- E. When I am working on a task, I pay so much attention to it that the outside world practically ceases to exist.

Question 18

- A. Every day I spend almost all of my time doing things that are unimportant.
- B. Every day I spend a lot of time doing things that are neither important nor unimportant.
- C. Every day I spend some time doing things that are important.
- D. I spend the greater part of each day doing things that are important.
- E. Practically every moment of my day is spent doing things that are important.

Question 19

- A. I am pessimistic.
- B. I am neither optimistic nor pessimistic.
- C. I am optimistic.
- D. I am very optimistic.
- E. I am the most optimistic person I know.

Question 20

- A. If anything, what I do has a negative effect on the world.
- B. In the grand scheme of things, my existence neither helps nor hurts the world.
- C. I am making a small but positive difference in the world.
- D. I am making the world a better place.
- E. My life is having a lasting, positive impact on the world.

## Appendix L

### *Permission to use the Positive and Negative Affect Schedule*

Re: PANAS Permission (Dissertation)

**Re: PANAS Permission (Dissertation)**

Watson, David B [david-watson@uiowa.edu]

**Sent:** Tuesday, June 22, 2010 2:03 PM

**To:** Farmer, Jennie

**Cc:** Clark, Lee Anna [la-clark@uiowa.edu]; Thomas, Karen [kthomas@apa.org]

---

Dear Jennie,

Thank you for your interest in the Positive and Negative Affect Schedule (PANAS). I am pleased to grant you permission to use the PANAS in your dissertation research. Please note that to use the PANAS, you need both our permission and the permission of the American Psychological Association (APA), which is the official copyright holder of the instrument. Because I am copying this email to APA, however, you do not have to request permission separately from APA; this single e-mail constitutes official approval from both parties.

We make the PANAS available without charge for non-commercial research purposes. This use includes thesis or dissertation research (such as data collection or surveys) via print or online means, and print and/or digital versions of the final thesis or dissertation document. The digital distribution is limited to non-commercial, secure and restricted web site(s). APA would deny permission to reproduce the full PANAS in the digital version of your thesis if it is to be made available via an online commercial dissertation distribution service, such as ProQuest, or if it is to be made available via the public internet.

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Good luck with your dissertation.

Sincerely,

David Watson

---

David Watson, Ph.D.  
F. Wendell Miller Professor of Psychology  
Editor, *Journal of Abnormal Psychology*

Department of Psychology  
E11 Seashore Hall  
University of Iowa  
Iowa City, IA 52242-1407

## Appendix M

### *Questions for Pilot Test of Text Messaging*

1. Were the questions clear? If the questions were not clear, what needs to be changed about them to make them clear?
2. Were the response options appropriate? If the response options were not appropriate, what changes need to be made to make them appropriate?
3. How time consuming were the questions?
4. How do you feel about this form of data collection? Why?

## Appendix N

### *Text Message Questions*

Please respond to the following questions using a 1 to 10 scale with 1 meaning “none at all or never” and 10 meaning “complete or all the time”.

#### **Self-Determination Questions**

1. In the past 24 hours, what level of control do you feel over your life outside school to do what you want?
2. In the past 24 hours, what level of control do you feel over your life inside school to do what you want?
3. In the past 24 hours, how often do you feel you thought about your behaviors and actions in relation to what happens in your life?

#### **Positive and Negative Affect Questions**

4. In the past 24 hours, how satisfied have you felt with your life?
5. In the past 24 hours, how often have you felt positively (e.g., joy, happiness, contentment, excitement)?
6. In the past 24 hours, how often have you felt negatively (e.g., frustration, depression, sadness, anxious)?

#### **Message Sent to Participants**

1. Control out of sch
2. Control in sch
3. Behaviors & life
4. Satisfied w/ life
5. Positively
6. Negatively





Initial plan to achieve: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Final plan to achieve: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reasons for plan changes: \_\_\_\_\_  
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\_\_\_\_\_  
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\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

Initial monitoring plan: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Final monitoring plan: \_\_\_\_\_  
\_\_\_\_\_  
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Reasons for changes to monitoring plan: \_\_\_\_\_  
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\_\_\_\_\_

Strengths engaged : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Strategies taught: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Appendix P

### *Interview Questions*

1. How do you feel about The Personal Strengths Intervention? Why do you feel this way?
2. What was the most beneficial aspect of The Personal Strengths Intervention for you? Why was it helpful?
3. What was the least beneficial aspect of The Personal Strengths Intervention for you? Why was it not helpful?
4. What, if anything, do you feel needs to be added to The Personal Strengths Intervention? Why do you think needs to be added?
5. What, if anything, would you change about the way The Personal Strengths Intervention was implemented? Why do you think this change is important?
6. How do you feel about the text messaging component of the intervention?
7. Here are graphs of the responses you provided during the text messages. How would you describe your responses?
8. Is there anything else you would like to comment on regarding The Personal Strengths Intervention? What is it?

## Appendix Q

### *Questions for Pilot Test of Interview Questions*

1. Were the interview questions clearly worded? If not, what changes need to be made to make the questions more clear?
2. Is the length of the interview appropriate? If not, is it too long or too short?
3. Do you feel the questions will provide the needed information in order to further develop the personal strengths intervention? If not, what questions need to be added to the interview?

## Appendix R

### *Matrix for Longitudinal Qualitative Trend Analysis*

Participant	Session	Goal Setting				Planning to Achieve				Monitoring of Progress				Goal Achievement			Reasons for Goal Achievement					
		No Goal	Not Achievable	Current Behaviors	Partially Developed	Fully Developed	No Plan	Non-specific Plan	Partially Developed	Fully Developed	No Monitoring	Non-specific	Partially Developed	Fully Developed	Not Achieved	Partially Achieved	Fully Achieved	Did Not Implement	Lack of Time	Life Event	Partially Followed	More Time
1	1			X			X					X			X						X	
1	2				X			X				X			X					X	X	
1	3			X				X			X				X							X
1	4				X			X			X				X							X
1	5				X			X				X			X							X
1	6				X			X				X			X							X
1	7				X				X			X			X							X
1	8				X				X			X										
2	1			X				X			X			X				X				
2	2			X				X				X		X				X				
2	3			X				X				X			X							X
2	4			X				X				X		X							X	
2	5				X			X				X		X					X			
2	6				X			X			X				X							X
2	7				X				X			X			X							X
2	8				X				X			X										
3	1				X			X				X		X						X		
3	2	X						X				X			X					X		
3	3				X			X				X			X							X
3	4				X				X			X		X		X						
3	5				X				X				X		X					X		
3	6				X				X			X			X							X
3	7				X		X					X	X									X
3	8				X				X			X										
4	1	X				X					X			X			X					
4	2	X						X				X			X					X		
4	3			X				X				X		X		X						
4	4	X				X						X			X							X
4	5		X					X				X		X						X		
4	6	X						X				X		X		X						
4	7	X						X			X				X							X
4	8				X				X			X										

Participant	Session	Goal Setting				Planning to Achieve				Monitoring of Progress				Goal Achievement			Reasons for Goal Achievement						
		No Goal	Not Achievable	Current Behaviors	Partially Developed	Fully Developed	No Plan	Non-specific Plan	Partially Developed	Fully Developed	No Monitoring	Non-specific Monitoring	Partially Developed	Fully Developed	Not Achieved	Partially Achieved	Fully Achieved	Did Not Implement Plan	Lack of Time	Life Event	Partially Followed Plan	More Time Needed	Followed Plan
5	1			X				X			X				X						X		
5	2					X			X				X		X			X					
5	3					X			X			X			X						X		
5	4					X			X			X			X						X		
5	5					X			X				X		X						X		
5	6					X				X			X			X							X
5	7					X			X				X	X			X						
5	8					X			X				X										
6	1				X				X				X		X						X		
6	2					X			X				X		X						X		
6	3				X				X			X			X						X		
6	4		X						X				X			X							X
6	5					X			X				X		X						X		
6	6					X			X				X	X				X					
6	7					X			X				X		X						X		
6	8				X					X			X										
7	1			X				X					X			X							X
7	2				X				X				X			X							X
7	3					X			X				X		X							X	
7	4					X			X				X		X							X	
7	5					X			X				X		X							X	
7	6					X				X			X			X							X
7	7					X			X				X			X							X
7	8					X				X			X										

Note. 1 = Hannah; 2 = Greg; 3 = Gabriella; 4 = Max; 5 = Toby; 6 = Sarah; 7 = Kim