USING SELF-MANAGEMENT STRATEGIES TO INCREASE ON-TASK BEHAVIORS OF STUDENTS WITH INTELLECTUAL DISABILITIES IN INCLUSIVE CLASSROOMS IN TÜRKİYE (TURKEY)

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ABSTRACT

Low levels of on-task behaviors can be troublesome for both teachers and students leading to difficulties associated with regulating off-task and disruptive behaviors and providing continuous prompts. Research indicates that students with intellectual disabilities (IDs) frequently engage in off-task and disruptive behaviors (e.g., talking, sleeping, and making negative statements). According to teachers, the on-task behaviors of students with (IDs) are unsatisfactory due to a behavioral deficit; as a result, these students demand more individual time and attention from adults than their typically developing classmates. This dependence on external prompts can have negative consequences for students with IDs, including exclusion from general education classes and school dropout. Although empirical investigations to address on-task behaviors is limited in Türkiye, Turkish educators indicated that one of their primary concerns was to manage off-task behaviors of students with disabilities in their classrooms. General education classroom teachers also have suggested that special education classrooms were a better placement for students with IDs because of the need to manage off-task behaviors via one-on-one or small group instructional arrangements. As a result of these off-task issues, there is a need for interventions to assist teachers in improving on-task behaviors of students with IDs which may, in turn, promote the inclusion of these students into general education classrooms.

One such intervention is self-management. Self-management strategies in general and self-monitoring in particular have been found to be effective in enhancing on-task behaviors of students with IDs due in part to intrusiveness, adaptability, and reactivity impact. These interventions can also be used to promote inclusion because the responsibility of behavior management passes from the teacher to the student. This change in responsibility could leave teachers more time to teach instead of providing continuous prompts given the higher teacher-student ration in general education classrooms. Unfortunately, there are several limitations in self-management research in Türkiye including the following: (a) the implementation of self-management interventions to improve on-task behaviors has been prominently conducted with students with autism spectrum disorders (ASD) and learning disabilities (LD); (b) the vast majority of these interventions has been conducted in segregated settings such as special education classrooms in middle school settings; and (c) systematic planning in generalization and maintenance has been lacking or limited that have caused lack of generalization of increased on-task behaviors to other settings. Given that

Türkiye has only two studies investigated self-management interventions with students with IDs, these interventions have similar concerns as Western countries including lack of investigations in general education classrooms and the absence of generalization and maintenance planning.

In the current data set, self-management interventions (i.e., self-monitoring, self-evaluation, token economy) was utilized to improve on-task behaviors of 4 students with IDs in general education classrooms in Türkiye. A single case multiple-baseline across participants design was used. Therefore, this study aimed to investigate (a) the magnitude of the effect of self-monitoring of the on-task behaviors of Turkish students with IDs, (b) the extent to which the on-task behaviors of Turkish students with IDs generalized and maintained after exposure to self-monitoring training, (c) the effect of self-monitoring on the academic behaviors of Turkish students with IDs, and (d) the relationship between the implementation of self-monitoring and teacher reports on changes in students' on-task behaviors.

Self-management interventions were implemented across three settings (i.e., Turkish-Language Art [TLA], math, social studies), and generalization data were collected in English-Language Art classes (ELA). Additionally, an average of 16-week maintenance data were collected from all the intervention settings (i.e., TLA, math, social studies). Based on two statistical analyses (i.e., Tau-U and Performance Criteria Based Effect Size [PCES]), the effect of self-management interventions was *immediate, generalized* across settings, and *maintained* over long period of time. $PCES_{immediate}$ was computed to be 1.14 with a significant effect. The overall impact of the Tau-*U* intervention was 1.00 CI95 (.705 to 1.00), with generalization and maintenance effects of 1.00 CI95 (.695 to 1.00) and 1.00 CI95 (.592 to 1.00), respectively. The total PCES values were determined to be 1.2 for high effectiveness, 1.08 for generalization, and 1.2 for strong effect maintenance. The classroom teachers' overall classroom behavior ratings were also aligned with the increased on-task behaviors. Therefore, study findings suggested that self-management interventions that originated in the West can be implemented in diverse cultural contexts, specifically with Turkish students with IDs in inclusive classrooms. Implications for future studies are discussed.

CHAPTER 1. INTRODUCTION

Schools have trended toward teaching students with disabilities in the least restrictive environment, including general education classrooms (Briesch & Daniels, 2013; Individuals with Disabilities Education Improvement Act [IDEIA], 2004). A critical skill required in general education classrooms is demonstrating on-task behaviors (Rojewski et al., 2015). Low levels of on-task behaviors can be problematic for both teachers and students (Dalton et al., 1999) due to the challenges of managing off-task and disruptive behaviors and providing ongoing prompts (Servatius et al., 1992). These challenges become more problematic in classrooms with larger student-to-teacher ratios (Murphy & Korinek, 2009). If low levels of on-task behaviors are not addressed, it can result in further challenges, such as exclusion from general education classrooms (Briesch & Daniels, 2013; Wood et al., 2012) and school dropout (Finn & Zimmer, 2012).

Research indicates that students with intellectual disabilities (IDs) frequently engage in off-task and disruptive behaviors including talking, sleeping, and making negative statements (Briesch & Chafouleas, 2009; Mitchem et al., 2001). These behaviors result in an overreliance on external prompts from adults (i.e., paraprofessionals and teachers; Yucesoy Ozkan & Sonmez, 2011) which can limit the learning time for all students in the classroom (Mitchem et al. 2001). Additionally, when teachers need to manage off-task and disruptive behaviors, they have less time to teach (Agran et al., 2003; Gok & Erbas, 2011; Mitchem et al., 2001; Murphy & Korinek 2009), which may, in turn, lead to the exclusion of disruptive students from general education classrooms in order to maximize learning. Thus, there is greater focus on finding interventions to help teachers create positive classroom climates in inclusive settings (Huang et al., 2013; Wehmeyer et al., 2003).

Interventions have been developed that target on-task behaviors, often with positive results (Hansen et al., 2014). One identified intervention is self-management. Self-management strategies help individuals manage their own behaviors and decrease their reliance on adults and other external agents through the personal application of behavior strategies (Cooper et al., 2020; Mitchem et al., 2001). Because self-management interventions work toward transferring the responsibility of behavior management from the teacher to the learner (Mitchem et al., 2001; Wood et al., 2002) and have been shown to be efficacious in previous research (i.e., Clemons et al., 2016; Dalton et al., 1999; Wood et al., 2002), educators and school administrators may consider self-

management interventions to promote the inclusion of students with IDs into general education classrooms (Boswell et al., 2013; McDougall et al., 2006; Mitchem et al., 2001).

Self-management strategies include self-evaluation, goal setting, self-charting, and self-monitoring (Martella et al., 2012). Although self-monitoring has been predominantly used among these strategies (McDougall et al., 2017), combining these interventions has been promoted for more resilient behavior change than relying strictly on one in isolation (Alberto & Troutman, 1999; Todd et al., 1999). Thus, the combination of these interventions has been employed in variety formats to improve the on-task behaviors of individuals with disabilities in the literature. As an example, Dalton et al. (1999) included self-monitoring and self-evaluation interventions in combination with a token economy with students with learning disabilities in a general education classroom setting. More recently, electronic devices, such as MotivAider® (e.g., Boswell et al., 2013) and I-connect (e.g., Will & Mason, 2014), were incorporated within these interventions.

Although self-management strategies in general and self-monitoring specifically appeared to be effective in improving on-task behaviors of students with IDs due in part to their obtrusiveness for undesired behaviors, versatility, and reactivity effect (Cooper et al., 2020; Riden et al., 2021; Wood et al., 2002), there is limited research on the generalization and maintenance of on-task behaviors. In a review study to investigate self-management interventions for students with IDs in public school settings, Hughes et al. (1991) indicated that most studies did not collect generalization and maintenance data. Despite over several years of research, researchers have not focused on the generalization and maintenance of self-management strategies (i.e., McDougall et al., 2017; Yucesoy- Ozkan, & Sonmez, 2011). Unfortunately, data for generalization and maintenance is neglected (Kartal & Yucesoy-Ozkan, 2015; Wood et al., 2002), and the systematic planning of these phases is lacking when compared to baseline and intervention phases (McDougall et al., 2017; Wood et al., 2002).

This lack of systematic planning is troublesome given that generalization and maintenance must be programmed in a systematic manner and are desired outcomes of interventions (Skinner 1953; Stokes & Baer, 1977). Established behavior change in a treatment setting does not always guarantee the long-term generalization and/or maintenance of newly acquired behaviors (MacDuff et al., 2001; Sailor et al., 1988). For example, students with ID who have been taught on-task behaviors (e.g., raising their hand, listening to their teacher, participating in discussions) may fail to demonstrate these responses spontaneously in non-training settings because of a lack of

generalization planning to novel settings. Thus, preparing students to display a variety of target behaviors in non-training settings requires systematic generalization and maintenance programming (Koegel et al., 1978).

In addition to limited research on generalization and maintenance, self-management interventions have been mainly conducted in segregated settings (e.g., special education resource room). For example, McDougall (1998) reviewed more than 240 self-management studies over three decades, and only 14 of these were conducted in general education classroom settings, contrary to the promoted applicability and efficacy of self-management interventions in general education classrooms (Wood et al., 2002). McDougall (1998) recommended more extensive research on the use of self-management in inclusive general education settings over 20 years ago and this recommendation was restated by Wood et al. (2002) and Briesch and Daniels (2013). Unfortunately, implementation of self-management interventions is still being implemented in segregated settings, and these interventions are mainly conducted with individuals with Autism Spectrum Disorders (ASD) or Learning Disabilities (LD) in the most current studies (i.e., Beckman et al., 2019; Ennis et al., 2018; Kolbenschlag & Wunderlich, 2019; Roberts et al., 2019; Romans et al., 2020; Scalzo et al., 2015; Xin et al., 2017; Xu et al., 2017). Additionally, implementing these strategies with students with IDs in elementary settings appear to be sparse (Le Lant & Lawson, 2019).

1.1 Purpose and Significance of Study

Despite the aforementioned limitations (e.g., inadequate maintenance and generalization programming, widespread use in segregated settings), self-management strategies show promise in improving on-task behaviors of students with disabilities (McDougall et al., 2017). Yet, student engagement studies have largely focused on students in upper elementary school and beyond, with less emphasis on younger students and those with IDs (Le Lant & Lawson, 2019). The investigations on the implementation of such programs also remain sparse in Turkey (Yucesoy-Ozkan et al., 2014). Of those investigations that did occur in Türkiye, they were limited for the following reasons: (a) similar to the USA, studies were conducted in segregated settings (i.e., Yucesoy-Ozkan et. al., 2015), (b) the investigation of generalization and maintenance of interventions were limited (i.e., Kartal & Yucesoy-Ozkan, 2015; Yucesoy-Ozkan et al., 2014), (c) studies were conducted primarily by Yucesoy-Ozkan and her team restricting the research base to

a few researchers, (d) no studies were conducted in an inclusive elementary school setting, and (e) studies have not integrated an electronic device (i.e., Mot) into their intervention procedures.

Given the importance of improving on-task behaviors and the promise of self-management interventions, additional research is needed where generalization and maintenance assessments are programmed systematically. Therefore, the contribution of this study to the literature is threefold. First, with the implementation of self-management interventions with elementary students with IDs, it will contribute to the research on improving the on-task behaviors of this specific subgroup. Second, it will contribute to the understanding of the effects of systematic programing for generalization and maintenance by assessing the effects of self-management interventions on on-task behaviors across different settings and across time, which is often overlooked in prior research studies (Sulu et al., 2022). Third, it will contribute to the understanding of how ABA-based interventions that originated in the West, can be implemented in diverse cultural contexts, specifically with Turkish students with IDs.

1.2 Research Design

A single-case multiple-baseline with probes design across participants was employed for this study (Kazdin, 2011). A multiple-baseline design was described by Baer et al. (1968) as an alternative to a withdrawal design (Cooper et al., 2020) and became the most common single-case design used in the field (Cooper et. al., 2020). Withdrawal designs require the removal of the intervention package and its reintroduction. Thus, changes in the dependent variable can be associated with the presence or absence of the intervention package (Ottenbacher, 1986). Although each application and withdrawal of the intervention package strengthens the demonstration of a functional relationship between the dependent variable and the intervention package, this design is not appropriate for skill acquisition interventions (e.g., self-management skills) due to the likelihood that resulting behavior change on behaviors such as on-task behaviors may be irreversible. On the other hand, multiple-baseline designs can establish a functional relationship between environmental interventions and the resulting behavior change through the time-lagged application of the treatment variable across different participants, settings, and behaviors (Baer et al., 1968; Cooper et al., 2020; Kazdin, 2011; Martella et al., 2012). Thus, the multiple-baseline design has been found to be preferable to the withdrawal design as it controls threats to interval validity without the need to remove the intervention package (Backman et al., 1997).

In the current study, on-task behavior data were collected with four students across four different content topics, such as math, Turkish Language Arts (TLA), social studies, and English Language Arts (ELA). Baseline, intervention, fading, and maintenance data were collected in math, TLA, and social studies. Generalization data were collected in ELA. After data stability occurred in the baseline data, a self-monitoring program was taught to the first student in the three content topics (i.e., math, TLA, and social studies) simultaneously while baseline data were still being collected for on-task behaviors for the second student. Once stable on-task behavior data were attained for the first student, self-monitoring was taught to the second student. Once stable on-task behavior data were attained for the second student, self-monitoring was taught to the third student. After attaining stable data points in the intervention phase, the self-monitoring program faded where self-monitoring occurred every other session, then once in three sessions, and finally one session per week. To move to each level of fading, the participants needed to show a minimum of 80% on-task behaviors for 3 consecutive days. Once self-monitoring was completely removed, the maintenance phase began, and data continued to be collected. Additionally, generalization data were collected in ELA classes without the presence of self-monitoring. A minimum of five data points were collected for each phase (i.e., baseline, intervention, fading, and maintenance) across all the participants included in the study.

1.3 Research Questions

The current study's research questions are as follows:

1. What was the magnitude of the effect of self-monitoring for the on-task behaviors of Turkish students with IDs?
2. What was the extent to which the on-task behaviors of Turkish students with IDs generalized and maintained after exposure to self-monitoring training?
3. What was the effect of self-monitoring on the academic behaviors of Turkish students with IDs?
4. What was the relationship between the implementation of self-monitoring and teacher reports on changes in participants' on-task behaviors?

CHAPTER 2. REVIEW OF THE LITERATURE

2.1 Students with Intellectual Disabilities

Throughout history, the intellectual disability literature has experienced systematic changes in terminology, definition, explanatory causes, classification systems, practices, and policies (Burack et al., 2021; Schalock, 2011; Schalock et al., 2021). Schalock et al. (2021) listed these changes including the (a) utilization of more precise terminology (e.g., intellectual disability versus mental retardation), (b) integration of holistic and functional approaches (e.g., intellectual functioning and adaptive behaviors combined in biomedical, psychoeducational, social perspective, and justice perspectives), (c) use of evidence-based practices by including a wide range of supports (e.g., ABA interventions), (d) implementation of rigorous assessment methods (e.g., increased use of standardized assessments to establish subgroup classification in conceptual, social, and practical skills), (e) empowerment of individuals and their caregivers (e.g., active caregiver involvement in decision making processes in developing education programs), (f) better understanding of multidimensional assets of context (e.g., culture, society, language, policies), and (g) incorporation of an explicit notion of professional responsibility (e.g., professional ethics and standards, clinical judgement) (Luckasson & Schalock, 2013; Luckasson & Schalock, 2015; Schalock, 2011).

2.1.1 Identification of Individuals with Intellectual Disabilities

The identification of individuals with IDs has changed over time based on *social*, *clinical*, *intellectual*, and *dual criterion* definitions (Schalock et al., 2007; Schalock, 2010**)**. The initial definition of ID hinged upon a person's failure to socially adapt to their environment and the natural behavioral prototype (Doll, 1941). With the emergence of the medical paradigm, the emphasis changed to a *clinical* model based on an individual's complex range of symptoms (Schalock et al., 2007; Schalock, 2011). Although this approach did not deny social criteria entirely (Schalock, 2011), increased emphasis was placed on organicity, heritage, sickness, and the need for segregation (Devlieger et al., 2003). With the rise of intelligence as an explanation for social class along with the mental testing movement (Schalock, 2011), the definition switched to intellectual functioning as evaluated by an IQ test, which had been the sole diagnostic tool for

several decades (Burack et al., 2017). The common criteria used to identify a person as having ID was an IQ score two standard deviations below the population mean. IQ tests were considered adequate enough to evaluate a person's capacity to manage environmental demands and adaptive behaviors (Bertelli et al., 2017; Schalock et al., 2007; Schalock, 2011). In the current dual-criterion approach that was initiated in 1959,

> the American Association on Mental Deficiency (AAMD), further titled American Association on Intellectual Disabilities [AAID]) Manual on Terminology and Classification in Mental Retardation (5th ed.; Heber 1959) incorporated a measure of adaptive behavior to support the use of IQ tests for the first time. (Burack et al., 2021, p. 340)

In this definition, adaptive behavior refers to the conceptual skills (e.g., language, money, and time concepts), social skills (e.g., interpersonal skills and social problem solving) and practical skills (e.g., activities of daily living, occupation; Maulik et al. 2011) needed to function in the community. Adaptive behavior skills are included

> In the most recent iterations of both the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013) and the World Health Organization's (WHO) International Classification of Diseases for Mortality and Morbidity Statistics (ICD-11, to be instituted in 2022; WHO, 2018). (Burack et al., 2021, p. 340)

Thus, the diagnosis of IDs is based on an overall IQ score of approximately 70 or two standard deviations below the population mean of 100 on standardized tests such as the Stanford-Binet and Wechsler Intelligence Scales along with adaptive behavior deficits. IQ cutoffs are categorized by four levels of ID: mild (IQ 50-55~70), moderate (IQ 35-40 to 50-55), severe (IQ 20-25 to 35-40), and profound (IQ < 20-25). According to the DSM-5-TR, the following three criteria must be met:

> A. Deficits in intellectual functions, such as reasoning, problem solving, planning, abstract thinking, judgment, academic learning, and learning from experience, confirmed by both clinical assessment and individualized, standardized intelligence testing.
>
> B. Deficits in adaptive functioning that result in failure to meet developmental and sociocultural standards for personal independence and social responsibility. Without ongoing support, the adaptive deficits limit functioning in one or more activities of daily life, such as communication, social participation, and independent living, across multiple environments, such as home, school, work, and community.
>
> C. Onset of intellectual and adaptive deficits during the developmental period. (DSM-5-TR, 2022, p. 41)

In both diagnostic systems (i.e., DSM-5 and WHO), the term “mental disorder” was changed to “intellectual disability,” and thus the emphasis on disability was replaced by a developmental health problem (Gormez, 2019). It is also important to note that the term “intellectual developmental disorder” is used in the DSM 5-TR and the term “intellectual disability” is placed in parenthesis as an equivalent term.

The 2006 definition of IDs in Türkiye includes individuals who (a) differ in mental functions two standard deviations below the mean, (b) have deficiencies or limitations in conceptual, social, and practical adaptation skills, (c) had these characteristics appear in the developmental period before the age of 18, and (d) need special education and support education services (Resmi Gazete, 2006).

Therefore, individuals with IDs have significant limitations in intellectual functioning and adaptive behaviors as expressed in conceptual, social, and practical adaptive skills (Schalock et al., 2021). These functional limitations are broad and include self-esteem and self-determination (e.g., Einfeld & Tonge, 1996), the development of basic self-help skills, motor and adaptive skills (e.g., dressing, grooming), language development (e.g., Borkowski et al., 2007), behavior challenges (e.g., Cooper et al., 2020), academic performance (e.g., Schalock et al., 2021), mood, anxiety, and emotional problems (e.g., Cooper et al., 2009; Gormez & Kirkpinar, 2017; Merikangas et al., 2009), and social skills (e.g., Einfeld & Tonge, 1996). As a result, individuals with IDs face serious difficulties in daily life, are at a significantly higher risk of physical illness, and have a five to twelvefold higher risk of death in comparison to those without IDs (Bourke-Taylor et al., 2017).

2.1.2 Etiology and Prevalence

In addition to the definition and characterization of IDs, knowing the etiology and prevalence of ID is vital in identifying functional limitations and providing support for this subpopulation through policies (Schalock et al., 2010). The etiology of IDs is largely considered as a multifactional construct compromising four risk factor categories (i.e., biomedical, social, behavioral, and educational) that interact over the life span and across generations (Schalock, 2010). The etiology of IDs can be placed into three general risk categories—prenatal, perinatal, and postnatal. Within these risk categories, there are two primary sub-categories—biological and psychological (Schalock, 2010). Table 1 (Schalock, 2010, p. 230) provides a list of significant risk factors.

Table 1. Examples of Prenatal, Perinatal, and Postnatal Risk Factors in Intellectual Disability

Prenatal
• Biomedical: chromosomal disorders, metabolic disorders, transplacental infections (e.g., rubella, herpes, HIV), exposure to toxins or teratogens (e.g., alcohol, lead, mercury), undernutrition (e.g., maternal iodine deficiency)
• Social: poverty, maternal malnutrition, domestic violence, lack of prenatal care
• Behavioral: parental drug use, parental immaturity
• Educational: parental disability without supports, lack of educational opportunities
Perinatal
• Biomedical: prematurity, birth injury, hypoxia, neonatal disorders, rhesus incompatibility
• Social: lack of access to birth care
• Behavioral: parental rejection of caretaking, parental abandonment of child
• Educational: lack of medical referral for intervention services at discharge
Postnatal
• Biomedical: traumatic brain injury, malnutrition, degenerative/seizure disorders, toxins
• Social: lack of adequate stimulation, family poverty, chronic illness, institutionalization
• Behavioral: child abuse/neglect, domestic violence, difficult child behaviors
• Educational: delayed diagnosis, inadequate early intervention, inadequate special education services, inadequate family support

Although the prevalence of IDs varies by study location, socio-economic status (SES), ethnicity, and gender, most estimates fall within the range of 5-30 per 1000 individuals. Patrick and colleagues (2021) analyzed the data for 8-year-old children across nine demographics who participated in the 2014 Autism and Developmental Disabilities Monitoring Network in the USA and the results indicated that the prevalence of ID was 11.8 per 1000. A global meta-analysis conducted by Maulik and colleagues (2011) revealed that the prevalence of IDs was 10.37 per 1000 population. The outcomes of these meta-analysis were similar with other studies conducted in the U.S. and other developed countries. Further, researchers found that the prevalence varied significantly by geographic region and was inversely related to SES (i.e., having lower IDs prevalence across higher SES and vice versa; Patrick et al., 2021). Furthermore, Black and Latinx males had the highest prevalence while white females had the lowest (Patrick et al., 2021).

Although some Turkish researchers have estimated the prevalence of IDs for their population using the global estimates (e.g, Eripek, 2006), there is no research on the actual prevalence of IDs within the Turkish population.

2.2 On-task Behaviors

Skinner (1938) describes behavior as "the movement of an organism or of its parts in a frame of reference provided by the organism by various external objects or fields" (p. 6). Behavior is not a property or attribute of the organism that exhibits it (Johnston & Pennypacker, 1993). Rather, behavior occurs only when an organism interacts with its environment (Cooper et al., 2020; Johnston & Pennypacker, 1993). Likewise, because no interaction is indicated, independent conditions or changes in the environment do not establish behavioral characteristics (Johnston & Pennypacker, 1993). As Skinner (1969) stated, "to be observed, a response must affect the environment" (p.130). Generally, behaviors and, thus their conditioning, can be grouped into two categories—respondent and operant (Pear & Eldridge, 1984).

The term respondent behavior refers to behavior that is elicited as a result of antecedent stimuli (Schoenfeld, 1976; Skinner, 1938). Natural selection established the topography and function of behaviors that provide an organism with a set of "ready-made" survival responses such as when low lighting conditions acts as a stimulus, the pupils of eyes increase in size to allow lighter in to maximize our vision. Operant behavior, in contrast, is defined as a behavior whose future frequency is determined primarily by its history of past consequences (Rescorla & Solomon, 1967; Skinner, 1938, 1953). Operant behaviors cannot be defined by its own topography but are rather defined functionally by their effects in the environment (Cooper et al., 2020; Skinner & Belmont, 1993). Operant behavior is observable in such things as student attendance and active participation (Skinner & Belmont, 1993) and can be measured when the behavior is defined operationally.

An operational definition of a behavior includes an objective, precise, technological, and complete description of the behavior in order to enable the observer to determine whether the behavior has occurred or not (Cooper et al., 2020). This definition must provide a rationale for the construct by defining the actions or procedures required to measure it (Kerlinger & Lee, 1999). Thus, an operational definition must specify a behavior's scope in such a way that two or more persons can agree on the behavior is being measured.

Generally speaking, the characteristics of on-task behaviors include passive behaviors (e.g., being in one's seat orienting one's head and eyes toward the teacher during lecture and teacher instructions) and active behaviors (e.g., typing on computer, working on assigned activity, choral responding, raising a hand, responding verbally or motorically to teacher instruction, writing, tracking with finger or eyes while reading, participating/speaking during classroom discussions) (Beckmen et al., 2019; Bedesem et al., 2012; Boswell et al., 2013; Bruhn et al., 2016; Cook & Sayeski, 2020; Kartal & Yucesoy-Ozkan, 2015; Xin et al., 2017). In addition to the definition of on-task behaviors, some researchers also operationally identified off-task (e.g., buttocks off seat of chair without permission or feet not flat on the floor) and disruptive behaviors (e.g., student talking, whispering, or mouthing to others without permission; touching another student's body or possessions; playing with pencil and ripping paper). Therefore, the students in these studies were taught to distinguish on-task behaviors from off-task behaviors with examples and non-examples of the target behavior (Beckmen et al., 2019; Bedesem et al., 2012; Bruhn et al., 2016; Clemons et al., 2018; Dalton et al. 1999).

2.3 On-task Behaviors and Individuals with IDs

Martella and colleagues (2012) stated that while examining students' behavior, there are two categories of concern: behavioral deficiencies and behavioral excesses. Behavior deficiencies refer to behaviors that do not occur frequently enough such as students raising their hands to talk; behavioral excesses include behaviors that occur too often such as students speaking out without raising their hand (Martella et al., 2012). In this regard, on-task behaviors appear to be a common behavioral deficiency among students with IDs along with common behavior excesses of off-task and disruptive behaviors. Teachers have stated that the on-task behaviors of students with IDs are unsatisfactory due to a behavioral deficiency in on-task behaviors; hence, these children require more individual time and attention from adults compared to their typically developing peers (Center & Ward, 1987).

A deficiency that relates to a lack of on-task behavior for students with IDs is a failure to respond to the natural cues that prompt them to perform a task; instead, these students with IDs rely on artificial external cues (Agran et al., 2003; Koyama & Wang, 2011). This reliance on artificial external cues can be problematic for students with IDs. When describing their perceived levels of instructional assistance, these students describe emotions of helplessness, embarrassment,

rejection, and stigmatization (Broer et al., 2005; Richards et al., 2015). An additional problem is that these students are also more likely to receive office referrals and are more likely to be excluded from general education classrooms, which may result in school dropouts (Wood et al., 2002).

Finn (1989) argues disengaging from school was a long-term process and that problems of engagement (i.e., lack of on-task behavior) and poor academic achievement in the early years of school may be more influential in the decision to drop out of school than later experiences. Research indicates that students with IDs have lower level academic success due to frequent off-task behaviors (Lei et al., 2018). Given that on-task behaviors and task engagement have been defined one of the most motivating variables that have a significant impact and contribute to academic achievement (Finn, 1989; Fredricks et al., 2004; Lei et al., 2018) and school dropouts, it is important to address these behaviors in early years in the school.

The lack of school success of these students is likely due to several additional issues. Some researchers have claimed that students with disabilities exhibit specific behaviors that contribute to their cognitive deficiencies and impair their ability to perform in a general education classroom, such as hyperactivity, inattentiveness, and poor social skills. (Rock et al.,1997; Shimabukuro et al.,1999; Truesdell & Abramson, 1992). In addition to individual factors, reinforcing unwanted behaviors can increase behavioral problems such as off-task behaviors among students with IDs (Matson et al., 2011; Muller et al., 2021). For example, teachers' classroom management strategies that involve providing attention to off-task behavior may reinforce such behavior. Such interactions have been found to be influential on students' disruptive behaviors in inclusive classrooms (Sucuoglu et al., 2010). Therefore, when teachers' classroom management strategies have been improved and teachers learn how to reinforce wanted behaviors rather than unwanted ones, the undesired classroom behaviors (e.g., off-task behaviors) of students with disabilities can be decreased (Sutherland et al., 2008). Therefore, employing interventions that can assist teachers in developing positive classroom climates in inclusive settings is important. (Wehmayer et al., 2003).

2.4 Defining Self-Management

One intervention has been shown to work with several of the aforementioned behavior difficulties is self-management interventions. Two terms have historically been used interchangeably— self-control and self-management. Although self-control interventions within

school settings were first published in the early 1970s as interventions for learners with disabilities, researchers started to use *self-management* as the preferred term in the 1980s (McDougall, 1998). This change in terminology resulted primarily from the negative connotations associated with the term "control" rather than from substantive conceptual changes (McDougall, 1998). Additionally, Cooper et al. (2020) recommended using self-management for three reasons. First and foremost, self-control is a deceptive term used to indicate that the ultimate "control" over one's actions rests with the "self." Therefore, self-control is a technically inaccurate term. While Skinner (1953) recognized that a person could have practical control over a specific behavior by manipulating environmental variables that impact the occurrence and nonoccurrence of that behavior, he claimed that self-control is really made up of learned skills that, when emitted, enact changes in one's environment; the environmental changes that take place, as a result, lead to changes in one's behavior. Thus, these "self-controlled" behaviors are learned through the individual's interactions with the environment. Second, and relatedly, behavior analysts dismiss the idea that self-control utilizes a secondary and inner self that controls external behavior (i.e., mentalism). Third, the term "self-control" is frequently used as a cause of behavior (e.g., "he was able to delay gratification because of his self-control"), and as a type of behavior (e.g., "she demonstrated self-control by delaying gratification"). A term cannot operate as both an independent variable and as a dependent one at the same time. Self-management, on the other hand, is an independent variable with one possible outcome being "self-control" or behavior change.

Behaviorally then, self-management refers to a set of skills one can be taught. Therefore, self-management is defined as the personal application of behavior change tactics related to identifying, monitoring, and arranging antecedents and consequences for specified target behaviors (Cooper et al., 2020; Martella et al., 2012; Mooney et al., 2005). For the purpose of this study, I will use the term self-management because it is a more descriptive term in that we manage our environment to facilitate desired behavior as opposed to controlling our own behaviors independent of environmental concerns.

Research indicates that self-management interventions have multiple advantages over other behavior change methods (Cooper et al., 2020; Dollard et al.,1996; McDougall et al., 2017). First, self-management interventions have the potential to influence internal behaviors that are directly inaccessible to external change agents (i.e., thoughts, feelings, and depression; Cooper et al., 2020; Patterson & McDowell, 2009). Second, the self-administration of rewards/feedback

allows individuals to track their behaviors which in turn may lead to more opportunities for feedback/rewards given that some behaviors may be missed by a change agent in larger group settings (Craft et al.,1998; Cooper et al., 2020). Third, individuals who learn how to apply self-management interventions develop the skill to potentially manage a limitless range of behaviors (Cooper et al., 2020) such as those used in reading, math, and spelling (Carr & Punzo, 1993). Finally, self-management interventions can be used to benefit the larger society by helping people preserve resources, recycle, and reduce other behaviors that harm nature such as fuel consumption (Cooper et al., 2020; Epstein, 1997). Thus, self-management is one of the ultimate goals of ABA (Alberto & Troutman, 1999).

Researchers have investigated self-management strategies over the past 50 years with the aim of improving or maintaining desired positive behaviors while also decreasing undesirable behaviors through the use of these strategies (Moore et al., 2013). Several strategies fit under the general term "self-management." Several of the first self-management strategies were described by Bandura and Perloff (1967) and Glynn et al. (1973). These strategies included: (a) *self-assessment* where students examine their own behavior and determine if they performed the specific targeted behavior, (b) *self-recording/self-monitoring* where students can observe and record their own behavior, (c) *self-determination of reinforcement* where students can decide the nature and the quantity of reinforcement they should get based on their performance of a certain behavior or set of behaviors, and (d) *self-administration of reinforcement* where students physically administer their own reinforcers. Future research has since included additional self-management strategies such as *goal setting* and *self-charting* (Martella et al., 2012). *Goal setting* entails establishing a performance criterion as well as identifying and implementing behavioral strategies to satisfy a predetermined goal (Alberto et al., 2022; Martella et al., 2012). *Self-charting* entails teaching students how to graph and track their own behavior (Martella et al., 2001; Martella et al., 2012).

2.5 Defining Self-Monitoring

Of the self-management skills taught, self-recording/self-monitoring are most frequently implemented in behavior change programs (Martella et al., 2012). According to a meta-analysis conducted by Yucesoy-Ozkan and Sonmez (2011), self-monitoring strategies were employed alone in 22 studies and in combination with other strategies in 12 studies, for a total of 34 studies.

McDougall et al. (2017) stated that self-monitoring remains the most frequently employed self-management strategy and has increased in popularity over the last decade. Among studies using self-monitoring strategies, on-task behaviors appeared to be the most commonly targeted. Outcomes of these studies have shown to be promising for enhancing student outcomes.

Self-monitoring has been defined as observing and recording one's own behavior (Cooper et al., 2020; Slattery et al., 2016). One aspect of self-monitoring interventions includes reinforcement in which an external agent reinforces the individual's behavior contingent on desired changes in the targeted behavior (Slattery et al., 2016). Martella et al. (1993) made the distinction between self-recording and self-monitoring given the fact that these two terms are used interchangeably. According to their definition, self-recording strategies are used when students observe and record their own behavior with the help of external prompts such as "You are on task, mark that down" (Martella et al., 2012). Self-monitoring, on the other hand, occurs when external prompts are not provided and students must self-evaluate and then record their own behavior (Dalton et al., 1999). Because of the absence of external prompt, self-monitoring has been defined as being more challenging for students with disabilities to employ (Dalton et al., 1999; Martella et al., 2012). For the purpose of this study, I will use procedures that will involve both recording and evaluating one's own behavior (i.e., self-monitoring).

Self-monitoring can take numerous forms and incorporate a variety of strategies. For example, Caldwell et al. (2012) combined self-monitoring with goal setting, performance feedback, and reinforcement in a juvenile facility. The outcomes of this study revealed participant's on-task behaviors improved along with a modest-to-moderate improvement in academic accuracy and productivity. Researchers have also integrated tactile prompts (e.g., MotivAider®) as an alternative to auditory cueing devices and verbal prompting, both of which may be more intrusive, time-consuming, stigmatizing, and adult-driven (Boswell et al., 2012). The MotivAider® (2000) is a low cost, discrete electronic device resembling a pager that can simply be configured to vibrate on a fixed or variable time schedule (Legge et al., 2010). Studies that used this electronic device indicated that the combination of MotivAider® with self-monitoring were highly effective at improving on-task behaviors of at-risk students in general education classrooms (Briesch & Daniels, 2013) and segregated settings (Boswell et al., 2013).

2.6 Effectiveness of Self-Monitoring Interventions

Research has shown self-monitoring interventions are not only effective in improving on-task behaviors but also vocal stereotypy (Scalzo et al., 2015), disruptive behaviors (Rosenbloom et al., 2016), task completion (Yucesoy-Ozkan et al., 2014), and academic outcomes (Wood et al., 2002). Although the number of studies aimed at improving the on-task behaviors of students with ID are somewhat lacking in the literature, studies conducted with this population appear to be promising. For example, Hughes and Boyle (1991) assessed the efficacy of a self-management package that included self-monitoring and a token economy system with three students with moderate IDs in a self-contained classroom. The researchers used a multiple baseline across behaviors design that included baseline, self-monitoring with a token economy, and self-monitoring without a token economy. Prior to the intervention phase, the participants were trained how to use a self-monitoring form by answering the question "Was I on task?" played from an audio-type recorder. Tones were played at intervals ranging from 15 to 120 seconds, with an average of 45 seconds. In the pre-training sessions, the researchers taught the participants to distinguish on-task and off-task behaviors using modeling and questioning strategies, demonstrations of self-monitoring recording with the self-monitoring form and practicing self-monitoring themselves. Following that, students were instructed to begin self-monitoring on the first assigned activity. When participants started to demonstrate progress on the first task, they were told to employ self-monitoring on the second and, eventually, third tasks. Once data patterns for the three tasks stabilized, the token economy was phased out in the same order that self-monitoring was added. Students were informed that they would continue to self-monitor but would get no check marks. According to the results, the participants' on-task and task engagement behaviors improved significantly, and these improvements persisted even after the token economy was withdrawn.

Boswell et al. (2013) evaluated a self-monitoring intervention using the MotivAider® with an 11-year-old middle school student with IDs in a resource room setting. The researchers used an ABAB withdrawal design and developed a self-monitoring form titled "Am I working?" to which the participant responded "yes" or "no" when prompted by the MotivAider® at 3-minute time intervals for a total of 15 minutes while completing independent math assignments. Prior to the intervention sessions, the participant was taught distinguish on-task and off-task behaviors with the help of a visual cue card that included images of on-task and off-task behaviors and the use of

the self-monitoring form and MotivAider®. During the intervention sessions, the participant was given a self-monitoring form, a MotivAider®, and a visual cue. The researchers collected data on the participant's on-task behaviors at 3-minute intervals throughout the baseline and intervention sessions. The participant's arithmetic fluency was assessed before and after the intervention. According to the results, the participant demonstrated increased on-task behavior, accurate self-monitoring of his on-task behaviors, and a 100 percent gain in math fluency.

More recently, Clemons and colleagues (2016) used self-monitoring interventions combined with I-Connect for three high school students with disabilities, one of whom had an IDs (named Miranda in the study). An ABAB single-case design was used. On-task behaviors were recorded using a 15-second momentary time sampling recording system during 30-minute observation sessions. I-connect training included teaching participants to differentiate on-task and off-task behaviors. After the initial training, recorded videos of the participants' behavior during baseline were viewed by the participants. During the viewing, the investigators would pause the video and ask the participants whether or not they were on-task. Next the participants were trained how to use I-Connect along with being asked to collect their own behavior in a mock session. The pre-training was finalized by providing feedback based on the participants performance in the training session. According to the results, Miranda's on-task behaviors improved when the intervention program was implemented. Additionally, her on-task behaviors maintained at the same levels as during the intervention phases at 2- and 4-weeks following the intervention.

2.7 Generalization and Maintenance of Self-Monitoring Interventions of On-task Behaviors

Although self-monitoring has been shown to be an effective intervention for improving the behaviors of students with IDs, there is a paucity of research demonstrating generalized responding and maintenance of learned behaviors. According to Stokes and Osnes (1989), the successful acquisition of a behavior may not be an indication of the success of an intervention. The initial change in behavior does not guarantee that the same behavior will be generalized nor be maintained in other appropriate circumstances (Baer et al., 1968; Cooper et al., 2020). There is a need for demonstrated comprehensive and durable changes in order to define the intervention as successful (Skinner, 1953; Strokes & Osnes, 1989). In this regard, assessing and planning the

generalization and maintenance of behavior change (i.e., on-task behavior) in self-monitoring interventions seems crucial.

The demonstration of behavior-change under different untrained circumstances across *participants, settings,* and/or *behavior* provides evidence that generalization has taken place (Stokes & Baer, 1977). Thus, measures of the behavior (e.g., on-task) should be implemented with other participants, settings, and behaviors. Successful generalization of skills acquired through self-monitoring interventions maybe possible through systematic planning and fading of the interventions (Kolbenschlang & Wunderlich 2019). Stokes and Osnes (1989) listed possible strategies to teach generalization of newly acquired skills such as (a) train sufficient examples, (b) program common stimuli, and (c) sequential modification (Neely et al., 2018).

The approach known as train sufficient examples involves instructing the student to respond to a subset of all potential stimulus and response examples and evaluating the student's performance with untrained examples (Cooper et al., 2020). As an example, Marzullo-Kerth et al. (2011) investigated the efficacy of training sufficient examples to teach three students with ASD to share. In this study, the students were taught to share objects from different classes of materials such as art supplies, snack foods, toys, and gym equipment. Generalization was evaluated both within and across classes of materials not taught. In addition, instruction was provided in various contexts to encourage generalization across settings and discriminating of non-sharing circumstances was examined. According to the findings, generalization of sharing within within and across settings was demonstrated across all students included in the study

Program common stimuli involves introducing typical aspects of the generalization environment into the educational context. (Cooper et al., 2020). Petursdottir and colleagues (2007) investigated the effects of scripted peer-tutoring reading activities with and without common stimuli in improving the social interactions of a kindergartener with ASD with his peer without disabilities. The researchers provided common play-related stimuli (i.e., toys with 20 pieces) during peer-tutoring reading. When typical play-related stimuli were programmed into peer tutoring activities, the tutor would praise the reader after each line of text and have him put one toy object in its proper location (such as one piece of a marble run on top of another). The findings showed that the addition of play-related activities to the peer-tutor reading increased social interactions during free play.

The method that is consistent with a multiple-baseline design is sequential modification. Sequential modification is defined as implementing behavior-change programs in all conditions for which generalization is desired is frequently used (Strokes & Baer, 1977). Thus, this strategy requires identifying the key people and places and train in their presence (Cooper et al., 2020). Strokes and Baer (1977) explained the rationale of this strategy as follows.

> If a desired generalization is not likely to be exhibited after changing a behavior in a particular condition, or a number of conditions, e.g., settings, then the researcher or practitioner works to effect changes across conditions as a matter of course, rather than as an outcome of the display or non-display of generalization. Thus, a behavior analyst is likely to advise the scheduling of consequences in every relevant condition in preference to the dispensing of consequences in only one or a few conditions, while hoping for generalization, but likely not seeing it. (p. 353)

For example, Wood and colleagues (2002) provided a self-monitoring intervention across three settings including math, science, and social studies where on-task behaviors were expected to be demonstrated. Additionally, the researchers collected generalization data in language-arts, reading, and physical education classes where the self-monitoring interventions were not introduced. According to the results, self-monitoring effects could generalize when sequentially introduced into multiple (i.e., three) settings.

The demonstration of the durability of behavior across time without the presence of intervention package is referred to maintenance (Strokes & Osnes, 1989). Duration of sustainable behavioral change varies depending on the targeted skills (Cooper et al., 2020); however, longer durations of data collection in maintenance (e.g., > 6 months) have been recommended for on-task behaviors in the literature (Dalton et al., 1999; Wood et al., 2002) due to the importance of on-task behaviors for learner success in school settings (Kartal & Yucesoy Ozkan, 2015; Wood et al., 2002). Therefore, it is critical to determine if behavior change maintains once the intervention is removed. To this end, there are two features to the measurement of maintenance: (a) the determination of latency to maintenance, which is defined as the elapsed time between cessation of final intervention phase to the initial maintenance data collection (Neely et al., 2016; Neely et al., 2018), and (b) the maintenance length, which is defined as the elapsed time between initial and final maintenance data points (Martella et al., 2012).

A method of programming for maintenance is to gradually fade an intervention. According to Rush and Kazdin (1981), gradually fading an intervention on newly acquired behaviors is preferable to stopping the intervention all at once (Rush & Kazdin, 1981). Three methods have

been suggested to fade an intervention including (a) sequential-withdrawal, (b) partial-withdrawal, and (c) partial-sequential withdrawal (Rusch & Kazdin, 1981). Sequential-withdrawal involves the gradual elimination of each component of a multi-part intervention in a systematic manner (Rusch & Kazdin, 1981). For example, if a self-management intervention includes self-monitoring, self-evaluation, and a token economy system the self-monitoring component is initially withdrawn, then the self-evaluation component is withdrawn, and finally the token economy component is withdrawn.

The partial-withdrawal method entails withdrawing either a subset of the treatment or the entire treatment from one of the baselines in a multiple-baseline design across individuals, behaviors, or contexts (Rusch & Kazdin, 1981). For instance, a self-management intervention could be withdrawn from one of the participants in a multiple baseline across participants while the intervention is still in use with other participants. Finally, the partial-sequential withdrawal design involves removing a portion of a multiple-component treatment from one of the baselines in a multiple-baseline study, and then removing the same component for the next baseline and so in in a sequential manner (Rusch & Kazdin, 1981). Martella et al. (1993) employed a partial-sequential withdrawal in order to fade a self-management intervention across three phases. The intervention was designed to decrease negative statements of a participant. In this study, training components (i.e., self-monitoring form, small and large reinforcement menus) were gradually removed across two settings when the participant's negative statements approached zero and were maintained for four consecutive sessions. After four sessions with no negative words, the first step involved the removal of charting and obtaining "big" reinforcers. In the second stage, Brad received a "small" reinforcer once per day if he had no negative statements across both settings. In the third stage, instead of receiving two separate forms for each setting, Brad was given a single self-monitoring form to utilize across both settings. In this phase, the "little" reinforcer was not used (Martella et al., 1993).

Rock and Thead (2007) gradually faded a self-monitoring intervention across five phases where the participants fewer opportunities to monitor their own behaviors. The length of the interval was increased across these phases (i.e., 5 min to 10 min, 10 min to 20 min) and eventually the intervention was completely removed. According to the results, the participants' levels of academically engaged behavior and productivity were above those during baseline and near the levels during intervention.

Even though the importance of assessing and systematically planning for generalization and maintenance has been well established for decades in the field of ABA (Hughes et al., 1991), the generalization and maintenance of self-monitoring outcomes remain limited (Yucesoy Ozkan & Sonmez, 2011). Recent studies either neglected to investigate the programming for generalization and maintenance (e.g., Beckman et al., 2019; Boswell et al., 2013; Ennis et al., 2018; Rosenbloom et al., 2016) or trained and hoped that it would happen without any additional programming while collecting generalization data (Kolbenschlang & Wunderlich, 2019). Not surprisingly, outcomes of such investigations revealed negative generalization outcomes for on-task behaviors of students with disabilities (Kolbenschlang & Wunderlich, 2019). As a result, it seems as if self-monitoring interventions may not efficiently promote generalization of on-task behaviors without explicit programming (Cook & Sayeski, 2020; Kolbenschlang & Wunderlich, 2019), which contradicts the assumption that self-monitoring interventions can result in generalization and maintenance of learning behaviors across different settings, individuals, and contents (Cook et al., 2020; Wood et al., 2002). Given this ambiguity in the literature, it is important to investigate whether self-monitoring interventions lead to sustained and generalizable improvements in on-task behaviors for students with IDs without explicit programming or if programming needs to take place.

2.8 Self-monitoring Interventions in Turkey: Assessment of Generalization and Maintenance

Systematic planning and assessment of generalization and maintenance for self-monitoring interventions is sparse in Turkey. Only two studies were published in peer-review journals in Turkish and English databases that evaluated the use of self-monitoring interventions with Turkish students with disabilities. First, Yucesoy-Ozkan et al. (2014) implemented a self-monitoring intervention along with antecedent cue regulation, self-evaluation, and self-reinforcement to enhance the acquisition and maintenance of self-management skills and assignment completion (e.g., separation of sentences to its elements, subtraction with single-digit numbers, addition with two-digit numbers) with three participants with IDs aged 10 to 11 years old. A multiple-probe design with probe conditions across subjects was used to assess the effects of the intervention. The setting was a segregated one-on-one setting (i.e., rehabilitation center where the participants received weekly special education services). The intervention included a task analysis of the steps

to complete an assignment and included an antecedent cue (take the pictured card off of the file), self-regulation (the picture showed what to do), self-monitoring (keeps a record by matching his activity with the answer key and writes the total number of correct responses), self-evaluation (color the number of small boxes depending on his performance), and self-reinforcement (circles the corresponding performance degree based on his performance). The participants were taught the task analysis using the least obtrusive prompts for each participant. Data were collected through daily probe sessions. Findings revealed that all three participants acquired self-management skills and engaged in higher task completion. Additionally, task completion maintained over 2 and 4 weeks following the intervention, and these effects generalized across different assignments.

Second, Kartal and Yucesoy-Ozkan (2015) assessed the efficacy of a class-wide self-monitoring intervention provided to four preschool participants with disabilities and their typically developing peers within the preschool classroom. On-task behavior data were collected for the participants with disabilities using a multiple-baseline design across participants. In the pre-training sessions of the self-monitoring intervention, the researchers provided to the participants the definition and demonstration of on-task and off-task behaviors, an explanation of the importance of on-task behaviors, an introduction of the materials used to collect data, and videos showing children demonstrating on-task and off-task behaviors. Additionally, the participants received training on how to monitor their own behavior using the provided materials. Data for on-task behavior and self-monitoring skills were collected. On-task behavior of the participants were collected through 10-second intervals; data on self-monitoring behaviors were recorded through task analysis where the participants' behaviors were recorded correct, incorrect, or no response. According to the findings, the on-task behaviors and self-monitoring skills of all participants improved compared to baseline levels. However, the on-task behaviors of one of the participants showed a drop compared to the intervention session.

Although self-monitoring interventions appeared to be effective for improving participant outcomes across two studies, the assessment of generalization within these two studies was limited. Only Yucesoy-Ozkan et al. (2014) conducted a generalization assessment that included a pre-and post-test assessment using full probe sessions. According to the results, the self-management strategies generalized to different behaviors (note: the behaviors were not listed nor defined). All three participants exhibited 0% accuracy (again, it was not specified what behavior was measured) in the pre-test and improved to 100% accuracy in the post-test. The assessment of maintenance for

these studies were lacking for two reasons. First, the assessment of maintenance was conducted either (a) immediately upon completion of the intervention and meeting the mastery criterion (Kartal & Yucesoy-Ozkan, 2015) or (b) for only 2 to 4 weeks after the completion of the intervention (Yucesoy-Ozkan et al., 2014). Second, the number of collected maintenance data points were limited to only two in Yucesoy-Ozkan et al. (2014) and two to four in Sonmez and Yucesoy-Ozkan (2015). However, maintenance assessments ought to occur for an extended period of time (Dalton et al., 1999), particularly for on-task behaviors. Although there is no specific guideline for the length of maintenance in the current literature (Neely et al., 2018), it seems reasonable that maintenance data should be collected for several weeks at a minimum or at least until the end of an academic term. Because on-task behaviors are essential skills that students with disabilities need throughout their life in a variety of educational settings (Kartal & Yucesoy Ozkan, 2015), Cooper and colleagues (2020) suggested that the amount of time a newly acquired behavior needs to be maintained is based on the importance of that behavior for the individual's life (Cooper et al., 2020). From this perspective, there is a need of future studies to collect maintenance data over a longer time period, which can be possible through systematic planning of such phases (Wood et al., 2002).

CHAPTER 3. METHOD

3.1 Data Analysis

To calculate the efficacy of collected data, effect size analyses were conducted initially. This phase of the study included the extraction of collected data and calculating digitized data across two different effect size measurements.

3.1.1 Data Extraction

The PlotDigitizer, a reliable and valid software program for digitizing single-case graphical data (Aydin & Yassikaya, 2022), was used for the data extraction. Data extraction was performed for only data in baseline (A), intervention and fading (B), maintenance (C) and generalization (D). The digitized data were transferred to the Microsoft Excel file and rounded to the nearest integer value by looking at each graph, as suggested by Aydin and Yassikaya (2022). Once the data extraction process was finished, effect sizes were calculated using these digitized data. Data extraction was conducted for maintenance and generalization, and each of them was contrasted with baseline and intervention phases for each student. In this multiple design with the following phases—A (i.e., baseline), B (i.e., intervention and fading), and D (i.e., generalization)—the first contrast would be A-D and the second contract would be B-D.

3.1.2 Effect Size Calculations

Two different effect size analyses were used to calculate the effect size of the collected data. First, Tau-*U* (Parker et al., 2011) values were calculated via the web-based calculation engine http://singlecaseresearch.org/calculators/tau-u (Vannest et al., 2016). Tau-*U* is a non-parametric measurement of the baseline trend (Parker et al., 2011). This effect size measurement was found to be more resistant to autocorrelation, which can influence single-case effect size assessments (Parker et al., 2011). In addition, Tau-*U* gives confidence intervals (CI) that compare all data points (Dowdy et al., 2021). It is recommended to utilize the non-overlap of all pairs to interpret Tau-*U* values, even though there are no clear benchmarks to do so (Vannest & Ninci, 2015). As a result,

the following cutoff scores were adopted for the interpretations: small effect = .65 and lower medium effect = .66 and.92, and a strong effect = .93 and above (Parker & Vannest, 2009).

Due to the lack of clear benchmarks for interpreting Tau-*U* results (Dart et al., 2014; Vannest & Ninci, 2015), an additional effect size approach, performance criteria-based effect size (PCES) measurement of single-case experimental design, was used. Aydin and Tanious (2022) suggest the PCES methods for determining the effect size based on the degree of skill acquisition. They indicated that PCES values can be determined using the research-established criteria for mastery. Estimates based on the PCES offer the ability to solve issues associated with nonoverlap-based methods, such as estimating the magnitude of intervention effect and recognizing socially meaningful behavior change (i.e., clinical significance). PCES methodologies consist of PCES without baseline trend (PCES), PCES with baseline trend ($PCES_{trend}$), and PCES with immediate effect (PCESimmediate). PCES without baseline trend values and PCESimmediate were estimated in this study. Using the split-middle method, it is possible to assess whether a baseline trend influenced treatment efficacy on a single-case graph. According to the formulas proposed by Aydin and Tanious (2022), PCES and $PCES_{trend}$ values were calculated manually for the studies using a mastery criterion.

There are established benchmarks for individually analyzing PCES and $PCES_{trend}$ values (Aydin & Tanious, 2022). For the graphs, PCES interpretations were based on the more determined PCES values (PCES or $PCES_{trend}$). The following interpretations were used for the average effect sizes**:** ineffective for .39 and below, very small effect for .40-.60, small effect for .61-.84, moderate effect for .85-1.01, effective for 1.02-1.16, high effect for 1.17 and above.

3.2 Interrater Agreement for Effect Size Analyses

This study included two types of agreement data: (a) data extraction via PlotDigitizer, and (b) effect size of the studies. Two researchers (a doctoral candidate in special education, whose research interest is statistical analysis of single-case experimental designs, and I) calculated interrater agreement. The two researchers extracted data via PlotDigitizer. The digitized data were rounded to the nearest integral value on the Microsoft Excel File by the two researchers, independently. Then, the two researchers compared the all the rounded data. A point-by-point method was used by dividing the agreements by the agreements plus disagreements and multiplying by 100. The researchers had 99% agreement.

Next, effect size calculations were conducted by the two researchers independently for all the data extracted from the graph. Initially, the researchers used http://singlecaseresearch.org/calculators/tau-u to calculate Tau-*U* effect size. A point-by-point method was used by dividing the agreements by the agreements plus disagreements and multiplying by 100. The researchers had 100% agreement. Lastly, PCES effect sizes were calculated by hand by the two researchers. Again, a point-by-point method was used by dividing the agreements by the agreements plus disagreements and multiplying by 100. The researchers had 100% agreement.

3.3 Students and Setting

Given that this study is secondary analysis of collected data, the following procedure was conducted by the primary investigators. The researchers employed the following inclusion criteria in the study: (a) having a diagnosis of IDs, (b) receiving educational services in inclusive classrooms for academic content, (c) displaying off-task behaviors that hinder learning in the classroom, and (d) being a second, third, or fourth grader in elementary school. Four elementary students met these criteria and participated in the study.

The study took place in an elementary school located in West Türkiye. Each student was part of an inclusive classroom (note that the majority of classes take place in a single classroom in Turkey; thus, teachers move around, and students stay in the same class most of the day). A special education faculty member and their team collected data from four elementary students with IDs in inclusive classrooms.

The research team consisted of a total of six people. The primary investigator was a male special education faculty member with 6 years of teaching experience for students with disabilities in private schools and institutions. He earned his master's and Ph.D. in special education and worked as a clinical special education faculty member at local universities for over 8 years. His five female undergraduate students majoring in special education participated on the research team. Of the five, one research team member was in her junior year and the other four research team members were in their senior year at the college. The age of the research team members ranged between 19- to 25-years with a minimum of 3-month experience working with students with disabilities in clinical settings.

The special education faculty member (primary investigator) trained each research team member on how to collect reliable data until they reached a minimum of 90% agreement. To do this, the faculty member (a) operational defined on-task and off-task behaviors (provided visuals and demonstrated each behavior), (b) introduced the partial interval recording form, and (c) demonstrated how to set up 30-second intervals on the phone. Next, the faculty member demonstrated how to collect data with the partial interval recording data sheets by watching a video sample (I do). Then he and the research team members collected data together (we do). The faculty member and research team members then collected data independently from a different video (you do). The collected data were compared by using an interobserver agreement (IOA) calculation (see Appendix F). Then, the faculty member and each research member collected data from the targeted students independently until they reached 90% IOA for three consecutive sessions. Finally, the faculty member introduced the procedural fidelity checklist and self-management intervention package (i.e., a self-monitoring form, a self-evaluation checklist, a timer, tokens, backup reinforcers, teacher overall rating classroom behavior). The research team members were also trained how to collect procedural fidelity checklist, providing tokens, and exchanging tokens with backup reinforcers.

3.4 Materials

Materials for the self-monitoring program will consist of a prompting device (i.e., a timer), a self-monitoring form, and a self-evaluation checklist.

3.4.1 Timer

Each student was provided with a timer to use for the duration of the study (see Appendix A). This small electronic device can be programmed to vibrate fixed time schedules (e.g., 5-min intervals) and placed on the students' desks.

3.4.2 Self-Monitoring Form

Similar to the self-monitoring intervention procedures developed by Martella et al. (1993) and Dalton et al. (1999), a self-monitoring recording form was developed for students to record their on-task and off-task behaviors in all settings (see Appendix B). The recording form had a

heading “Are you working?” with 8 boxes in which the student circles “yes” when they are on-task or “no” when they are off-task (each class is 40 min in length in Turkish elementary schools). Each of the eight boxes represents 5-min intervals and all for students to record their responses when a timer vibrates. Students were provided picture cards on which on-task and off-task behaviors were illustrated. A token economy was used to reinforce students for on-task and appropriate self-monitoring behaviors. Depending on the student’ preferences, researchers provided tokens and a list of backup reinforcers (i.e., edible or tangibles) to exchange for tokens.

3.4.3 Self-Evaluation Checklist

A self-evaluation checklist was provided for the students by the researchers. The checklist consisted of three intervals of time: before class, during class, and after class. All the questions in each phase had yes/no questions (see Appendix C). For *Before class*, students were asked (a) if they completed their homework, (b) if they found out what they needed to do in the classroom, and (c) if they got started on time. For *During class*, students were asked if they self-monitored their on-task behaviors. For *After class*, students were asked (a) if they followed teacher directions, (b) if they worked on the assignment during the entire time they were given, and (c) if they had homework tonight. Classroom teachers evaluated the students’ overall classroom behavior on the same scale. The *teacher general classroom behavior rating* was gathered without informing teachers of the design/condition of the intervention. This evaluation scale was used in the same manner as Dalton et al. (1999). A final student self-evaluation was provided at the end of class with a Likert-like scale of 1 to 5 (1 poor, 2 needs improvement, 3 okay, 4 good, and 5 great) for overall classroom behavior. Each rating was operationally defined by the researchers (see Appendix D).

3.5 Dependent Measure

On-task behavior was defined as: (a) being in one’s seat, (b) listening to teacher instruction passively (keeping eyes focused on teacher), (c) following and working on the assigned activity, (d) addressing teacher directions, (e) asking questions of the teacher, and/or (f) participating in classroom discussions. As with the Dalton et al. (1999) study, off-task behaviors were defined as

> (a) not in seat (buttocks were not on the seat of chair without permission, feet did not have to be on the floor), (b) talking with others (student talking, whispering, or

> mouthing to others without permission), (c) interrupting others (passing a note, touching another student's body or possessions), (d) not working on assigned task (such as scribbling or doodling instead of writing, reading a magazine instead of the text), and (e) engaging in bodily movements unrelated and/or interfering with assigned task (such as playing with pencil and ripping paper). (pp. 162-163)

Academic data were collected through assigned activities and quizzes by classroom teachers. There was no additional researcher developed assessment tool to evaluate.

Data were collected with using a 30-s whole interval recording during the 40-min observation period; thus, there were 80 intervals for each observation (see Appendix E). If a student engaged in off-task behaviors at any time throughout the 30-s interval, the interval was recorded as off-task for that interval. During the sessions where interobserver agreement data were collected, the research team members were placed on opposite sides of the classroom, but both interns were able to observe the student's on-task behaviors clearly. Direct observations were conducted 3 days per week for each student by the special education faculty member and his reserach team.

3.6 Interobserver Agreement for Data Collection of On-task Behaviors

IOA were collected a minimum of 30% of each condition during baseline, intervention, maintenance, and generalization phases. A minimum of two members of the research team were present for at least 35% of the sessions to collect data simultaneously and independently. As an example, if there were no sessions for the intervention phase, three sessions were randomly selected for agreement data to be collected by two research team members independently. At the end of the session, collected data sheets were compared to calculate interobserver agreement between the research team (see Appendix F). The minimum interobserver agreement level was expected to be 80% and was calculated by dividing the number of agreements the by total number of intervals observed. Interobserver Agreement (IOA) levels are shown in Table 3 for each of the students.

Table 2. Findings for IOA

	Baseline	Intervention	Fading	Maintenance
Student 1				
TLA	88.12%	93.75 %	95 %	100%
	(85%-100%)	(90%-96%)	(90%-100%)	--
Social	92.5%	98.75 %	100%	97%
	(83%-96%)	(96%-100%)	–	(95%-100%)
Math	85%	91.37 %	100%	85%
	(83%-96%)	(85%-100)	–	(83%-90%)
ELA	100%	100%	91.25%	92.5%
	–	–	(88%-100%)	(85%-100%)
Student 2				
TLA	93,75 %	92.75%	91.37%	100%
	(83%-100%)	(89%-96%)	(89%-94%)	–
Social	98,75 %	100%	100%	98%
	(97%-99%)	–	–	(96%-100%)
Math	91.37%	95%	97.5%	100%
	(85%-100%)	(90%-100%)	(94%-98%)	–
ELA	100%	91.25%	93.75%	100%
	–	(85%-95%)	(85%-95%)	–
Student 3				
TLA	94.25%	97.25 %	100 %	100%
	(93%-98%)	(95%-98%)	–	–
Social	97%	95.5 %	97%	100%
	(85%-100%)	(90%-97.5%)	(85%-100%)	–
Math	95%	100 %	100%	100%
	(91%-97%)	–	–	–
ELA	100%	100%	97.50%	100%
	–	–	(95%-100%)	–
Student 4				
TLA	100%	100%	97.5%	100%
	–	–	(95%-100%)	–
Social	93.25%	100%	100%	100%
	(90%-100%)	–	–	–
Math	100%	100%	100%	100%
	–	–	–	–
ELA	97.5%	100%	100%	100%
	(95%-100%)	–	–	–

3.7 Procedural Fidelity

Self-monitoring pre-training procedural fidelity included a total of 18 steps (see Appendix G). Procedural fidelity data were collected for all self-monitoring pre-training sessions. IOA was calculated between the two research team members by dividing the number of intervals with agreements by the total of number of intervals (those with agreement and disagreements). The result was multiplied by 100. The self-monitoring training was conducted with 100% procedural fidelity for the four students who participated in this study. IOA data were collected from all the self-monitoring pre-training sessions (i.e., 4) and reported as 100%.

3.8 Social Validity Measure

A social validity questionnaire (see Appendix H) was provided to teachers and students (see Appendix I) to determine the acceptability of the intervention at the end of the intervention. The questionnaire was adapted from Rosenbloom (2018) and included a total of 11 questions for the students and 10 questions for the teacher. Given that Rosenbloom (2018) used I-Connect as part of the self-monitoring intervention package, the questions regarding I-Connect were replaced with the timer. In these questionnaires, teachers and students answered eight yes/no and three open-ended questions. Teachers and students were provided a Likert-like rating for each question from 1 (strongly disagree) to 5 (strongly agree).

3.9 Design and Procedure

A multiple-baseline design across participants was used to evaluate the efficacy of self-management interventions (see Appendix J). While data were collected across baseline, intervention, and maintenance for math, TLA, and social studies, only maintenance and generalization data were collected for ELA.

3.10 Baseline

A minimum of five data points were collected for each student within this setting. Concurrent data collection took place across the other settings (e.g., TLA, ELA, and social study classes). Ongoing classroom producers remained. Teachers used the national curriculum and textbooks that were specified and distributed by the Turkish Ministry of Education. The instruction

of each lesson (i.e., TLA, social studies, math, and ELA) was based upon the designated grade goals in the curriculum. There were no additional interventions, structured behavior management, and discipline system in use; however, the classroom teachers rated overall classroom behaviors of the students at the end of each session.

3.11 Self-Management Pre-Training

Similar to Dalton et al. (1999), the research team taught students to discriminate on-task and off-task behaviors and how to use the self-monitoring recording form during two-40 min sessions after baseline data were collected. The research team provided 10 visual examples of on-task and off-task behaviors in random order. These pictures included students seating in their seat vs. not in seat, listening to teacher instructions by keeping eyes focused on teacher vs. doodling, raising a hand vs. talking with others while the teacher was lecturing, writing what is on the board vs. ripping papers and playing with pencils. The mastery criterion for this phase was to make 100% correct discriminations between on-task and off-task behaviors four consecutive times in a four-picture array (e.g., one example of on-task behaviors, and three examples of off-task behaviors or one example of off-task behaviors, and three examples of on-task behaviors). When the on-task/off-task training was completed, the research team taught students how to use the self-monitoring recording form.

Similar to Boswell et al. (2013), the research team provided a recording form and the timer to the students. The special education faculty member demonstrated how to turn on the timer and say, “Look, I set up the timer clicking on the button, now I will sit and work on my assignment.” The faculty member engaged in on-task behaviors for 5 minutes. When the timer buzzed, the faculty member said “I have been sitting on my chair and working on my assignments. These are on-task behaviors, I will circle yes.” In the following interval, the faculty member showed off-task behaviors such as looking around, walking in the class. When the timer buzzed, the faculty member said, “Look, I have been looking around and walking in the class. These are off-task behaviors, I will circle no.” After four intervals of demonstration of two on-task and two off-task behaviors (20 mins), the faculty member said to the student, “Let’s do it together.” The faculty member turned on the timer with the student and said, “excellent job, <student ‘name>! Yes, you turned on the timer.” The student was then prompted to engage in on-task behaviors. The faculty member praised the student’s on-task behaviors intermittently until the timer buzzed (e.g., “great job, <student

‘name>! you are still engaging in on-task behaviors”). The faculty member then asked, “Are we circling yes or no?” If the student answered the question correctly, the faculty member reinforced the student’s response by saying “excellent job, <student ‘name>! Yes, we have been engaging in on-task behaviors and you circled yes.” If the student made an error, an error correction procedure was employed in the following manner. The faculty member demonstrated the behaviors and said, “we were sitting on desks and doing the activities, these are on-task behavior so we will circle yes” and tested “are we circling yes or no?” The faculty member role played this scenario for two on-task and two off-task behaviors, a total of four intervals and said, “Now, we will self-monitor our on-task behaviors while Mr. XX is teaching.”

A special education classroom teacher taught social studies lesson based on the curriculum that the students were being taught in the general education classroom. Only the special education teacher, two of the research team members, and the student were in the class while the special education classroom teacher taught the class. During the 20-min practice sessions (includes a total of four intervals; each interval is 5 mins), the faculty member prompted the student to begin (i.e., “Let’s start”) when the teacher was about to start teaching. The faculty member and the student self-monitored the student’s on-task behaviors independently. At the end of each practice, the special education classroom teacher paused teaching, and the faculty member compared the answers (i.e., yes or no) given to each interval in self-monitoring forms. If there were no disagreements, the faculty member reinforced the student’s self-monitoring behavior as “excellent job, <student ‘name>! You, correctly checked all boxes given your on-task/off-task behaviors for that interval.” If there were any disagreements, the faculty member showed the interval where the disagreement took place and said, “you did an excellent job XX number of intervals; however, you should have coded for yes/no for this interval. Let’s try this one more time, we aim to get them all correct.” This procedure continued until the student and the faculty member had 100% agreement three consecutive sessions.

Finally, the faculty member said, “we self-monitored our on-task/off-task behaviors by using the form. Now, you know how to self-monitor your on-task/off-task behaviors. After self-monitoring your on-task and off-task behaviors in the class you will answer the questions on the *before, during, and after class* checklist. After each class you will answer the following questions.” The faculty member read the questions and demonstrated how to answer each, “If I did my assignment, I would circle yes; if I did not, I would circle no.” Next, the faculty member provided

a test, “If I did my assignment, would I circle yes or no?” If the student answered the question correctly, the faculty member reinforced the student’s response saying “excellent job, <student ‘name>! Yes, we would circle yes.” If the student made an error, an error correction procedure was employed in the following manner. The faculty member read the question and said, “If I did my assignment, I would circle yes” and provided a test, “would we circle yes or no”.

Following the training sessions, the students were taught in a separate classroom for 3 consecutive days. During these days, the research team assisted and prompted the use of the self-monitoring form and the *before, during, and after class* checklist. The research team collected on-task behaviors of the students in the same manner as applied in training sessions until student collected on-task behaviors with a minimum of 88.5 % accuracy in 40-mins class sessions (included 8 intervals total) in addition to filling out their *before, during, and after class* checklist.

3.12 Self-Monitoring

Each student self-monitored on the recording form eight times (intervals) across 40 minutes in each session classes. In the beginning of the class, the students programmed the timer for 5-min intervals and clicked start. Each time the timer buzzed, the students circled their on-task/off-task behaviors on their self-monitoring form. The students provided a general classroom behavior rating at the end of the class session. Similar to Dalton et al. (1999), students received five points on a daily report card when they successfully self-evaluated their on-task behavior recorded on the form (i.e., self-monitored their on-task behavior). After the intervention, during breaks, a research team member and the student had a short debriefing session with about the student’ general classroom behaviors for that session. Following the student’ s explanation of his rating, the student was shown the teacher’s rating. Similarities and/or differences were discussed along with ways of improving the rating. For example, if the student informed the research team that he earned a "2" because he shouted at another student for taping his shoulder, the research team showed the teacher’s rating and provide an explanation for the rating. The research team then provided feedback by proposing other suitable answers, such as calmly asking the other student to stop tapping his or her shoulder.

Gradual Fading

The self-monitoring recording form was systematically faded in this phase in three steps—the self-monitoring intervention was provided with 8 min intervals every other session, then once every three sessions, and finally once per week. The gradual fading procedure from one step to the next continued when the students showed a minimum of 80% on-task behaviors for 3 consecutive days. Additionally, a minimum of three generalization data points were collected for each student during this phase.

3.13 Generalization

In addition to the first three settings where self-management interventions were concurrently introduced (i.e., math, Turkish-art, and social studies), generalization data were collected in ELA class where self-management interventions were not introduced. A minimum of three generalization data points were collected during each condition (i.e., baseline, intervention, gradual fading, and maintenance) for each student.

3.14 Maintenance

After the students demonstrated a minimum of 80% on-task behaviors in the third step of fading for 3 consecutive days, the intervention was completely removed, and maintenance data collection began. Maintenance data included two sets of data. *The first maintenance data set* were collected upon completion of mastery criterion in fading phase and lasted for 2 weeks. *The second maintenance data set* was collected after an average of 16 weeks of cessation of the intervention based on time-lagged application of the treatment variable across the students in the current study. A minimum of three generalization data points were collected for each student during maintenance.

CHAPTER 4. RESULTS

4.1 Effect Size Analyses

Tau-*U* values were calculated for a total of 12 AB contrasts in the intervention phase, 12 AB contrasts in the maintenance phase, and 12 AB contrasts in the generalization phase. This study included a total of 1515 intervention pairs, 565 maintenance pairs, and1593 generalization pairs. Table 3 shows unweighted average Tau-*U* values for each student. According to the Vannest and Ninci (2015) cutoff score ranges, self-management interventions appeared to have a strong effect on improving the on-task behaviors of students. The overall Tau-*U* was 1.00 CI_{95} (.705 to 1.00). In addition to the intervention effect, findings in maintenance and generalization also indicated a strong effect size. The effect sizes for maintenance and generalization were 1.00 CI_{95} (.592 to 1.00) and 1.00 CI_{95} (.695 to 1.00), respectively.

PCES values were calculated for a total of 36 tiers deprived. $PCES_{immediate}$ was calculated for 4 tiers. $PCES_{trend}$ was not calculated since no data set showed a trend in the baseline. The overall PCES value was 1.2 (high effect), and $PCES_{immediate}$ was 1.14 (high effect). The maintenance and generalization findings align with the immediate and intervention effects. The overall maintenance effect was 1.2 (high effect), and the overall generalization effect was 1.08 (effective).

Table 3. Effect Size Analyses

	Number of AB Contrasts	**Total Pairs**	**Number of Tau-*U* Calculation**	**Weighted Tau-*U* (95% CI)**	**$PCES_{immediate}$**	**PCES**
Student 1						
Intervention	3	155	3	1.00 (.632 to 1.00) Strong	0.95 Moderate	1.06 Effective
Maintenance	3	90	3	1.00 (.568 to 1.00) Strong	—	1.12 Effective
Generalization	3	135	3	1.00 (.628 to 1.00) Strong	—	1.1 Effective

Table 3 continued

Student 2						
Intervention	3	310	3	1.00 (.730 to 1.00) Strong	1.03 Effective	1.1 Effective
Maintenance	3	150	3	1.00 (.630 to 1.00) Strong	__	1.08 Effective
Generalization	3	351	3	1.00 (.710 to 1.00) Strong	__	1.04 Effective
Student 3						
Intervention	3	450	3	1.00 (.728 to 1.00) Strong	1.25 High Effect	1.23 High Effect
Maintenance	3	225	3	1.00 (.653 to 1.00) Strong	__	1.22 High Effect
Generalization	3	486	3	1.00 (.728 to 1.00) Strong	__	1.06 Effective
Student 4						
Intervention	3	600	3	1.00 (.728 to 1.00) Strong	1.36 High Effect	1.42 High Effect
Maintenance	3	100	3	1.00 (.391 to 1.00) Strong	__	1.36 High Effect
Generalization	3	621	3	1.00 (.739 to 1.00) Strong	__	1.21 High Effect
Total						
Intervention	12	1515	12	1.00 (.705 to 1.00) Strong	1.14 High Effect	1.2 High Effect
Maintenance	12	565	12	1.00 (.592 to 1.00) Strong	__	1.2 High Effect
Generalization	12	1593	12	1.00 (.695 to 1.00) Strong	__	1.08 Effective

4.2 Effectiveness of Findings

Figure 1 illustrates the performance of participating students during baseline, intervention, maintenance, and generalization sessions. A minimum of five data points were collected across all the conditions. Given that one of the characteristics and contribution of this collected data was the systematic planning for generalization and long-term maintenance (i.e., over 4 months), the findings were separated into two categories (i.e., self-monitoring interventions in intervention and fading phases, self-monitoring interventions in generalization and maintenance phases) to make comparisons between initial intervention effect and generalization and long-term maintenance data.

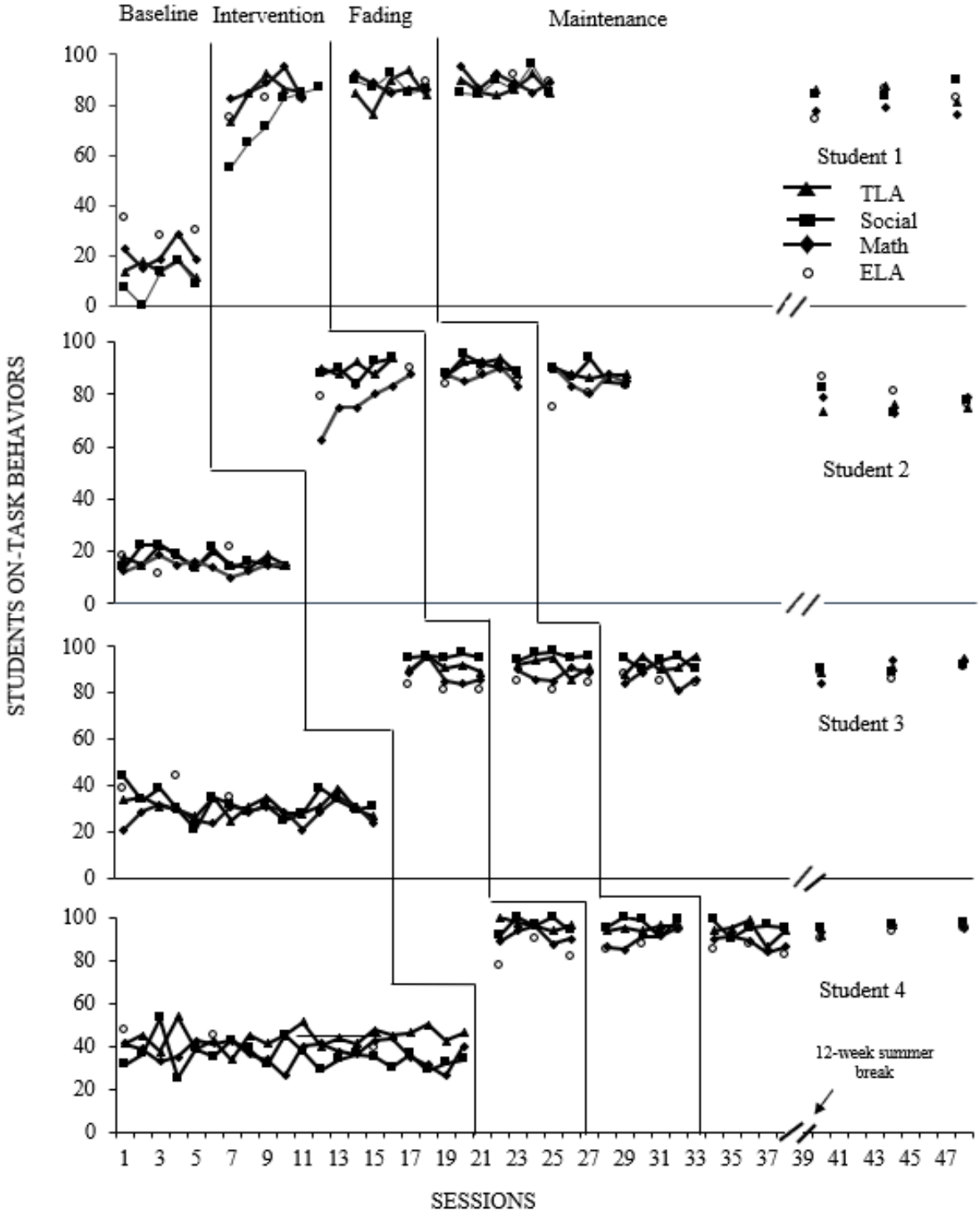

Figure 1. Students' On-task Behaviors

4.3 Self-Monitoring Interventions in Intervention and Fading Phases

4.3.1 Student 1

During the baseline condition, Student 1 engaged in on-task behaviors during 14.9% of class (range: 11% to 18%) in TLA, 9.5% (range: 0% to 14%) in social sciences, and 21% (range: 15% to 29%) in math. After self-management training, the trend and level of the data changed therapeutically. During the intervention, Student 1 engaged in on-task behaviors during an average of 84.35% (range: 73%- to 85%) in TLA, 74.75% (range: 55% to 86%) in social sciences, and 86.75% (range: 83% to 95%) in math. Student 1 met the mastery criterion (i.e., engage in a minimum of 80% on-task behaviors for 3 consecutive days) on the fourth session for TLA, the fifth session for social studies, and the third session for math. During the fading condition, Student 1 engaged in on-task behaviors during an average of 85.75% (range: 76% to 94%) in TLA, 88% (range: 85% to 92%) in social sciences, and 87.75% (range: 85% to 92%) in math.

4.3.2 Student 2

During the baseline condition, Student 2 engaged in on-task behaviors during an average of 17 % (range: 15% to 20%) in TLA, 17% (range: 13% to 22%) in social sciences, and 14% (range: 10% to 19%) in math. After receiving training in self-management, the trend and level of the data changed therapeutically. During the intervention, Student 2 engaged in on-task behaviors during an average of 90.25% (range: 87% to 94%) in TLA, 89.5% (range: 83% to 94%) in social sciences, and 77.2% (range: 62% to 87%) in math. Student 2 met the mastery criterion during the third session for TLA, the sixth session for math, and the third session for social studies. During the fading condition, Student 2 engaged in on-task behaviors during an average of 90.75% (range: 88%-94%) in TLA, 90.5% (range: 87%–91%) in social sciences, and 86.65% (range:83%- 90%) in math.

4.3.3 Student 3

During the baseline condition, Student 3 engaged in on-task behaviors during an average of 31% (range: 25% to 39%) in TLA, 32% (range: 21% to 43%) in social sciences, and 28% (range: 10% to 19%) in math. After obtaining training in self-management, the data trend and level

changed in a therapeutic way. During the intervention, Student 3 engaged in on-task behaviors during an average of 91.75% (range: 88% to 96%) in TLA, 95.75% (range: 95% to 98%) in social sciences, and 88% (range: 85% to 96%) in math. Student 3 met the mastery criterion on the third session for all three classes. During the fading condition, Student 3 engaged in on-task behaviors during an average of 91.8% (range: 86% to 93%) in TLA, 96.25% (range: 93% to 98%) in social sciences, and 88.25% (range: 85% to 90%) in math.

4.3.4 Student 4

During the baseline condition, Student 4 engaged in on-task behaviors during an average of 43% (range: 33% to 53%) in TLA, 35% (range: 25% to 53%) in social sciences, and 37% (range: 26% to 43%) in math. After receiving self-management training, the trend and level of the data changed therapeutically. During the intervention, Student 4 engaged in on-task behaviors during an average of 96.75% (range: 97% to 100%) in TLA, 95.25% (range: 91% to 100%) in social sciences, and 91.25% (range: 88% to 96%) in math. Student 4 met the mastery criterion on the third session for all three classes. During the fading condition, Student 4 engaged in on-task behaviors during an average of 95% (range: 93% to 100%) in TLA, 96.75% (range: 93% to 98%) in social sciences, and 90% (range: 85% to 95%) in math.

4.4 Self-Monitoring Interventions in Generalization and Maintenance Phases

4.4.1 Student 1

Generalization data were collected during baseline, intervention, fading, and the first and the second maintenance data set in ELA Classes. Student 1 engaged in on-task behaviors during an average of 31% (range: 28% to 35%) of intervals during baseline. During the intervention phase, the average on-task behavior was 84% (range: 75% to 90%). Student 1's on-task behavior generalized an average of 89% (range: 86% to 92%) of intervals during the first maintenance data set and 81% (range= 74% to 86%) for the second maintenance data set.

For Student 1, *The first maintenance data set* was collected upon completion of mastery criteria and *the second maintenance data set* after 15 weeks after cessation of the intervention. During the initial maintenance period, Student 1 engaged in on-task behaviors during an average of 87% (range: 83% to 92%) of intervals in TLA, 87.75% (range: 83% to 95%) in social sciences,

and 89.35% (range:85% to 95%) in math. Maintenance data during the following school year indicated that Student 1's data maintained at a level of 85% (range= 81% to 86%) of intervals in TLA, 86% (range = 83% to 90%) in social sciences, 78% (range= 77% to 79%) in math.

4.4.2 Student 2

During baseline for ELA, Student 2 engaged in on-task behaviors during an average of 17% (range = 11%-22%) of intervals. In the intervention period, on-task behavior increased (*M* = 85%; range: 78% to 90%) For maintenance, Student 2's on-task behavior generalized during an average of 80% (range: 75% to 83%) of intervals for the first maintenance data set and 81% (range= 76% to 86%) for the second maintenance data set.

During the initial maintenance, Student 2 engaged in on-task behaviors during an average of 87% (range: 86% to 90%) of intervals in TLA, 87.75% (range: 84% to 93%) in social sciences, and 85% (range: 80% to 90%) in math. In the subsequent school year, Student 2's maintenance data were at an average of 75% (range: 74% to 76%) of intervals in TLA, 78% (range: 73% to 83%) in social sciences, and 77% (range: 73% to 78%) in math.

4.4.3 Student 3

During the baseline period, Student 3 displayed on-task behaviors during 39% (range: 35% to 44%) of intervals. During the intervention period, on-task behaviors increased to 83% (range: 77% to 90%). In the first maintenance data set, Student 3's on-task behavior generalized during an average of 86% (range: 83% to 88%) of intervals. For the second maintenance data set, the average generalization percentage was 89% (range: 86% to 91%).

During the initial maintenance phase, Student 3 engaged in on-task behaviors during an average of 93% (range: 88% to 96%) of intervals in TLA, 92% (range: 90% to 96%) in social sciences, and 86% (range: 81% to 93%) in math. Throughout the subsequent school year, Student 3's maintenance data were at an average of 92% (range: 88% to 95%) of intervals in TLA, 91% (range: 90% to 92%) in social sciences, and 91% (range: 83% to 94%) in math.

4.4.4 Student 4

During baseline, Student 4 engaged in on-task behaviors an average of 43.5% (range: 38% to 47%) of intervals. In the intervention phase, the average on-task behaviors was 86% (range: 77% to 93%). During the maintenance phases, Student 4's on-task behavior generalized with an average of 85% (range: 82%- 87%) of intervals in the first maintenance data set and 92% (range: 90% to 95%) in the secondary maintenance data set.

During the initial maintenance, Student 4 engaged in on-task behaviors during an average of 94% (range: 93% to 98%) of intervals in TLA, 95% (range: 90% to 98%) in social sciences, and 87% (range: 83% to 91%) in math. Maintenance data during the following school year indicated that Student 4's on-task behavior maintained at an average of 94% (range: 91% to 97%) of intervals in TLA, 96% (range: 95% to 96%) in social sciences, 94% (range: 93% to 96%) in math.

4.5 Classroom Teachers' Rating of Overall Classroom Behaviors in Intervention and Fading Phases

4.5.1 Student 1

During the baseline condition, the classroom teacher rated Student 1's classroom behaviors as an average of 1 in TLA, 1 in social sciences, and 1 in math. After self-management training, the trend and level of the teacher's rates increased. The teacher rated Student 1's classroom behaviors as an average of 4.2 (range: 3 to 5) in TLA, 3 (range: 2 to 5) in social sciences, and 5 (range: 5 to 5) in math. The teacher's rating was 5 for all the classes while the intervention was being faded.

4.5.2 Student 2

During baseline, the classroom teacher rated Student 2's classroom behavior as 1.1 (range: 1 to 2) in TLA, 1.2 (range: 1 to 2) in social sciences, and 1 (range: 1 to 1) in math. After self-management training, both the trend and level of the teacher's rates increased. The classroom Student 2's behavior was rated an average of 4.8 (range: 4 to 5) in TLA, 5 (range: 5 to 5) in social sciences, and 4.3 (range: 3 to 5) in math. For all classes, the teacher rated Student 2's classroom behavior as a 5 while the intervention was being faded.

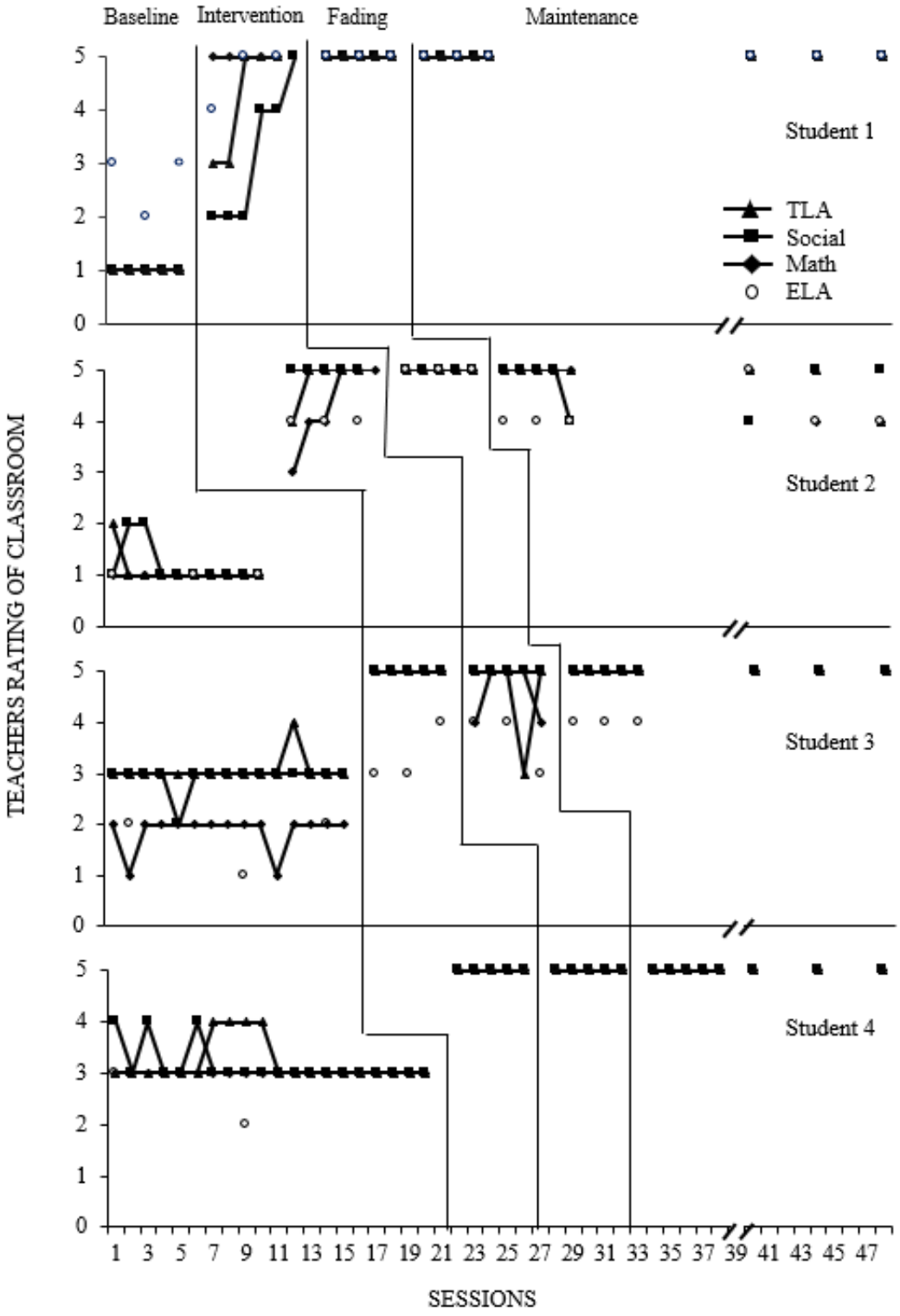

Figure 2. Teachers' Rating of Classroom Behaviors

4.5.3 Student 3

During the baseline condition, the classroom teacher rated Student 3's classroom behaviors as an average of 3 (range: 3 to 4) in TLA, 2.9 (range: 2 to 3) in social sciences, and 1.8 (range: 1 to 2) in math. After self-management training, the trend and level of the teacher's rates increased. The teacher's rating was 5 for all three classes during the intervention phase. During intervention fading, the classroom teacher rated Student 3's classroom behaviors as an average of 4.6 (range: 3 to 5) in TLA, 5 in social sciences, and 4.6 (range: 4 to 5) in math.

4.5.4 Student 4

During the baseline condition, the classroom instructor rated Student 4's classroom behavior as an average of 3.2 (range: 3 to 4) in TLA, 3.1 (range: 3 to 4) in social sciences, and 3 (range: 3 to 3) in math. After self-management training, both the trend and level of the teacher's rates increased. For all classes, the teacher rated Student 4's classroom behaviors as a 5 during both the intervention and fading phases.

4.6 Classroom Teachers Rating Overall Classroom Behaviors in Generalization and Maintenance Phases

4.6.1 Student 1

The ELA teacher rated Student 1's classroom behaviors as 2.6 (range: 2 to 3) in baseline, 4.6 (range: 4 to 5) in intervention, 5 in fading, 5 in first maintenance data set, and 5 in the secondary maintenance data set sessions.

The classroom teacher rated Student 1's classroom behavior a 5 across all the sessions during the first maintenance data set. For the second maintenance phase, Student 1 had an average rating of 5 across all sessions.

4.6.2 Student 2

The ELA teacher rated Student 2's classroom behaviors as a 1 at baseline, 4 during the intervention, 5 during fading, 4 in the first maintenance data set, and 4.3 (range: 4 to 5) in the secondary maintenance data set.

The classroom teacher rated Student 2's classroom behavior as a 5 across all sessions during the first maintenance data set. During the secondary maintenance phase, Student 2 averaged a rating of 4.6 (range: 4 to 5) in TLA, 4.6 (range: 4 to 5) in social sciences, and 4.3 (range: 4 to 5) in math.

4.6.3 Student 3

The ELA teacher gave Student 3 a rating of 1.6 (range:1 to 2) for their classroom behaviors at the baseline, 3.3 (range: 3 to 4) during the intervention, 3.6 (range:3 to 4) during the fading, 4 (rage: 4 to 4) in the first maintenance data set, and 5 in the secondary maintenance data set.

For the initial maintenance data set, the classroom teacher rated Student 3's classroom behaviors as a 5 across all the settings. During the secondary maintenance data set, the classroom teacher rated Student 3' classroom behavior as 5 across all sessions.

4.6.4 Student 4

The ELA teacher rated Student 4's classroom behavior as 2.6 (range: 3 to 4) at baseline, 5 during the intervention, fading, and in the initial maintenance data set. The ELA teacher rated 5 in the secondary maintenance data set.

In the initial set of maintenance data, the classroom teacher rated Student 4's classroom behavior in all contexts as a 5. The classroom teacher also scored Student 4's classroom behaviors as 5 during the secondary maintenance data set across all sessions.

4.7 Findings for Interobserver Agreement in Data Collection of On-task Behaviors

4.8 Social Validity Findings

The social validity questionnaire (see Appendix H) was provided to teachers and students (see Appendix I) to determine the acceptability of the intervention at the end of the intervention.

4.8.1 Teachers' Opinions

All teachers completed the researcher-developed teacher satisfaction survey upon the completion of the study. This questionnaire included two subcategories. The first subcategory

included a prompt “when my students used self-management interventions, I observed the following results…” and teachers graded five questions with respect to their students (1) getting started to assignment, (2) on-task, (3) task completion, (4) classroom disruption, and (5) productivity. The items are rated on a scale of 1 to 5, with 1 denoting "significantly worse" and 5 denoting "significantly better.” Teacher 1 rated the five satisfaction survey questions with a 5, meaning the student 1 has gotten *significantly better*. Teacher 2 and 3 rated the five satisfaction survey questions with a 4, meaning Student 2 and Student 3 has gotten *better* with the implementation of self-management interventions. Teacher 4 rated the first and fourth items with a 3 (i.e., *same*), the remaining items were rated with a 5 (i.e., *significantly better*).

The second subcategory evaluated the overall impression about the self-management interventions of teachers with five items. Teachers rated (1) simplicity, (2) intrusiveness, (3) personal satisfaction, (4), desire to continue using the intervention package, and (5) consistency of the intervention. The items are rated on a scale of 1 to 5, with 1 denoting "*strongly disagree*" and 5 denoting "*strongly agree*.” Teacher 1 rated the five satisfaction survey questions with a 5, meaning they strongly agreed with the given prompts. Teacher 2 and Teacher 3 rated the five satisfaction survey questions with a 4, meaning student 2 and student 3 have gotten *better* with the implementation of self-management interventions. Teacher 4 rated item one and four with a 4 (i.e., *agree*), the remaining items were rated with a 5 (i.e., *strongly agree*).

Overall, the results suggested that all teachers were satisfied. Teacher 1 was 50/50 (M = 5), 40/50 (M = 4) for Teachers 2 and 3, and 42/50 (M = 4, range: 3 to 5) for Teacher 4. Generally, all teachers found self-management interventions effective in improving on-task behaviors of students with IDs in their classrooms. Teachers also indicated they would use these interventions with other students in their classrooms

4.8.2 Students’ Opinions

All students completed the researcher-developed participant satisfaction survey form upon the completion of the study. This questionnaire included two subcategories. A prompt “when I was using the self-management interventions, I found that…” given, and students rated four items included (1) getting started with assignment was easier, (2) I was able to stay on-task, (3) I was able to complete my assignments faster, and (4) I was able to get more work done. Students’ social validity forms had a “yes” or “no” response option for each of the four items.

Student 1, and Students 4 rated all the items with a “yes” in this category. Student 3 rated item three with a “no,” item one, two, and four with a “yes.” Student 2 rated one and two with a “yes,” item three and four with a “no.”

In the second part of the questionary, overall impression of the self-management intervention with four items such as (1) simplicity, (2) intrusiveness, (3) personal satisfaction, and (4) desire to continue using the intervention. Students answered each item with a “yes” or “no”. Student 1, Student 3and Student 4 rated all the items with a “yes” in this category. Student 2 rated item two and three with a “yes”, item one and four with a “no”.

Overall, the results indicated high levels of satisfaction across all four students. Student 1’s and 4’s social validity scores were 8/8, Student 3’s social validity score was 7/8. Thus, Students 1, 3, and 4 found self-management interventions effective and easy to use. Student 2’s social validity score was 4/8 and reported self-management interventions would have been more effective if the intervention package was easier to use.

CHAPTER 5. DISCUSSION

Improving on-task behaviors is an important goal toward the successful inclusion of students with disabilities in general education classrooms. Research indicates that when on-task behaviors are improved, students with disabilities exhibit lower-level disruptive behaviors and teachers have more time to teach instead of continuously prompting for appropriate behaviors (Cooper et al., 2020; Wehmayer et al., 2003; Yucesoy Ozkan & Sonmez, 2011; Xin et al., 2017). Given the higher rates of off-task behaviors in students with IDs (Briesch & Chafouleas, 2009), the current study aimed to investigate the efficacy of self-management interventions in improving on-task behaviors of students with IDs in inclusive classrooms. The following research questions were investigated in the current study:

(a) What was the magnitude of effect of self-monitoring for the on-task behaviors of Turkish students with IDs?
(b) What was the extent to which the on-task behaviors of Turkish students with IDs generalized and maintained after exposure to self-monitoring training?
(c) What was the effect of self-monitoring on the academic behaviors of Turkish students with IDs?
(d) What was the relationship between implementation of self-monitoring and teacher reports on changes students' on-task behaviors?

To answer all four research questions, four students with IDs, who were taught in inclusive classrooms in Türkiye, participated in this study. To answer the first question, two different analyses were conducted in the current study, Tau-*U* and PCES effect size analyses. The effect size analyses were conducted separately for immediate, intervention, generalization, and maintenance effects. According to the findings, self-management interventions have been found to be effective in improving on-task behaviors of students s with ID in inclusive classrooms. The effect was *immediate*, *generalized* across settings, and *maintained* over long period of time. $PCES_{immediate}$ was calculated 1.14 with a high effect. The overall Tau-*U* intervention effect was 1.00 CI_{95} (.705 to 1.00) with 1.00 CI_{95} (.695 to 1.00) generalization and 1.00 CI_{95} (.592 to 1.00) maintenance effects. Finally, overall PCES values were calculated as 1.2 high effective, 1.08 effective generalization and with 1.2 high effect maintenance score. For the remaining three

research questions, the findings of this study indicated that all students demonstrated improvements in on-task behaviors and teacher ratings for students' overall classroom engagement behaviors improved with the implementation of self-management interventions. Additionally, the improved on-task behaviors were generalized to other settings and were maintained for a longer period of time. The intervention effects of self-monitoring align with previous studies where these interventions have been found to be effective in improving on-task behaviors of students with a wide range of disabilities included ASD (e.g., Imasaka et al., 2020; Xu et al., 2017), Attention Deficit and Hyperactivity Disorder (ADHD; Romans et al., 2020), and LD (Bedesem, 2012). However, the generalization data do not align with previous research. Because increased on-task behaviors of students with disabilities do not generalize to the other settings (e.g., Cook & Sayeski, 2020; Kolbenschlang & Wunderlich, 2019). The findings in the current study reveals that increased on-task behaviors were generalized even after 16-week cessation of the self-management interventions.

Four decades of empirical investigation of self-management interventions have provided a large literature base documenting positive outcomes for students with disabilities in Western countries (e.g., Rosenbloom et al., 2016; Scalzo et al., 2015). Further, these interventions have been classified as evidence-based practices in improving the academic behaviors of students with disabilities, including those who have IDs (Bruhn et al., 2016). Furthermore, self-monitoring interventions appear to be popular among educators due in part to their versatility and unobtrusiveness (Alberto et al., 2022; Cooper et al., 2020; Wood et al., 2002). However, the implementation of these practices remained sparse in Türkiye. To our best knowledge, there were only two studies published (i.e., Yucesoy-Ozkan et al., 2014; Kartal & Yucesoy-Ozkan, 2015) that included individuals with IDs, and these studies had limitations (i.e., little to no planning in generalization and maintenance and were not implemented in special education classrooms). Based on the investigation, several important conclusions can be made.

5.1 Investigating the Effects of Self-Monitoring Interventions within Turkish Culture

Culture is an integral part of guiding applied behavior analysis (ABA) interventions (Liao et al., 2018; Skinner, 1971; Sugai et al., 2012). Given a greater emphasis on socially significant behavior along with the comprehension of the contingent relationship that exists between behavior occurrences and environmental effects (Baer et al., 1968; Cooper et al., 2020; Mayer et al., 2020),

Sugai et al. (2012) defined culture "as the extent to which a group of individuals engage in overt and verbal behavior reflecting shared behavioral learning histories, serving to differentiate the group from other groups, and predicting how individuals within the group act in specific setting conditions (p. 200)." That is, persons from various locations and cultures may have different reactions to the same stimuli, and the use of ABA procedures to teach these responses may differ across cultural contexts (Liao et al., 2018; Liao et al., 2020). Thus, it is important to investigate the ecological differences (e.g., student expectations, teacher attitudes, academic skills) between the Western and Turkish cultures in order to better interpret the efficacy of self-management interventions. Self-management interventions appear to be effective in generalization and long-term maintenance of on-task behaviors in Türkiye as opposed to the current studies in Western countries where generalization of increased on-task behaviors did not occur (e.g., Cook & Sayeski, 2020; Kolbenschlang & Wunderlich, 2019). Exploring ecological differences can further explain these differences in the findings.

People with disabilities are excluded from nearly every aspect of society in Türkiye (Kilincaslan et al., 2019; Koca-Atabey, 2013; Tufan, 2007; Yilmaz, 2020). Koca-Atabey (2013) explored her lived experiences of disability across countries (i.e., Türkiye, the UK, the USA) to assess the ongoing use of the social model of disability in these settings. She indicated that society has should have a willingness and the responsibility to provide friendly environments based to persons with disabilities based on human rights and equal opportunity. Thus, individuals with disabilities can be active members of society based on these policy or political issues in the UK and the USA (Koca-Atabey, 2013). However, in Türkiye, a disability is considered a medical issue where the individual with a disability and their families should solve the "*problem."* In order to get the necessary support for the resolution of a problem, it is typically essential to dramatize the issue, make reference to moral ideals, and in some circumstances even make myths (Tufan, 2007). People with disabilities are "devalued, insulted, and discriminated by the lack of provisions and also by the language" (Koca-Atabey, 2013, p. 1028); therefore, Türkiye is on the bottom rung of valuing people with disabilities as equal members of society, whereas the UK and the USA are on similar rungs (Koca-Atabey, 2013). These outcomes are even worse for those who have ID and psychiatric disorders (e.g., Rakap & Kaczmarek, 2010; Yilmaz, 2020).

One may think Islamic culture, which advocates tolerance and inclusion of people with disabilities into society, may have resulted in a society that has the willingness and responsibility

to educationally integrate students with disabilities in Türkiye (Hauwadhanasuk et al., 2018). However, there was no movement for the education of students with disabilities until the end of the 19th century (Akcamete, 2010). The emphasis on the education of individuals with disabilities began in 1983 with the passage of the special education law (Akcamete, 2010). The implementation of these regulations has been limited in providing adequate support for children with disabilities both in quality and quantity (Kilincarslan et al., 2019), particularly in inclusive settings (Batu et al., 2018; Sulu et al., 2022).

5.1.1 Barriers to Inclusive Education in Türkiye

It is important to note that one of the most important factors for the success of inclusion of students with disabilities into general education classrooms is attitudes towards disability and inclusion (Rakap et al., 2016; Olcay-Gul & Vural, 2015). Unfortunately, general education teachers in Türkiye have historically reported negative attitudes toward individuals with disabilities. General education classroom teachers favor have students with disabilities be taught in special education classrooms instead of general education settings (e.g., Bakkaloglu et al., 2018; Rakap & Kaczmarek, 2010; Sucuoglu et al., 2009) since having special needs was associated with social disapproval (Sazak-Pinar & Guner-Yildiz, 2013). For instance, in one study collected from 190 general education teachers from various geographical regions in Türkiye, only 35% of teachers were willing to include students with severe learning disabilities such as IDs (Rakap & Kaczmarek, 2010). Fortunately, despite of the in-service teachers' attitudes, pre-service teachers' attitudes has been found to be more positive in recent studies (e.g., Akdag & Haser, 2017; Rakap et al., 2016). In a cross-cultural comparison study where American and Turkish pre-service teachers completed surveys, both groups (i.e., American, Turkish) had positive attitudes and there was no statically significant difference (Rakap et al., 2016). However, the knowledge in the majority of the Turkish pre-service teachers regarding inclusion was little to none (Akdag & Haser, 2017).

Overall, social acceptance of students with disabilities in general education classroom is low in Türkiye. Sazak-Pinar and Guner-Yildiz (2013) monitored a total of 43 teachers in their classrooms to gain an insight into social approval and disapproval behaviors of students with disabilities. They observed that if the teachers approved the academic and social behaviors of students with disabilities, they simply said yes. However, if the teachers disapproved, they showed disapproval with statements such as "do not make noise anymore, shut up, be quiet." In comparison,

teachers in Western countries showed greater focus on the desired classroom behaviors of students with disabilities (Wallace et al., 2002) while Turkish teachers ignored these behaviors and reprimanded unwanted classroom behaviors of students with disabilities (Sazak-Pinar & Guner-Yildiz, 2013; Sucuoglu et al., 2007). Additionally, low social acceptance of students with disabilities by their peers is present in Türkiye. Students with disabilities in Türkiye have reported exposure to violence by their peers (Guleryuz, 2009; Yekta, 2010). As a result of these social issues, the attitudes of students with disabilities toward inclusion have been shown to be negative (Ayral et al., 2015). These issues are also seen by families. For example, Icyuz (2016) interviewed caregivers of students with disabilities regarding the inclusion of their children with disabilities. The families indicated that teachers did not spend time with their children and there were not adequate materials to support their children, and the physical conditions of classrooms were insufficient (Icyuz, 2016).

In addition to negative attitudes and low social acceptance of students with disabilities in general education classrooms, teachers' support of academic and social behaviors of students with disabilities in classrooms remained limited (Batu et al., 2018). Thus, general education teachers report that they do not want students with disabilities in their classrooms (Sadioğlu, 2011; Sucuoglu et al., 2010). Research indicates that teachers working in inclusive classrooms do not modify curriculum content based on the students with disabilities' needs in their classrooms (Sucuoglu et al., 2010), and made either none (Ceylan, 2015; Sucuoglu et al., 2010) or minimal changes such as assigning homework and conducting activities that were simpler (Sadioğlu, 2011). Although modifications and accommodations based on the students' individualized education programs have a significant impact on students' progress (Olcay-Gul & Vural, 2015), the individualized education programs are not implemented as they are planned due to lack teacher knowledge (Avcıoğlu, 2011; Demir, & Açar, 2011). Moreover, effective, and sufficient cooperation between teachers and parents have been defined to be non-existent (Avcıoğlu, 2011; Demir, & Açar, 2011; Kargın et al., 2003).

Research historically indicates that teachers cannot manage students' problem behaviors (Batu et al., 2018; Kargın et al., 2003; Sucuoglu et al., 2010) due to in part to their limited classroom management skills in Türkiye. As an example, despite of the importance of clearly defined classroom rules, general education teachers do not establish classroom rules and teach these rules to the students (Sucuoglu et al., 2010). The reinforcement of desired classroom

behavior such as on-task behaviors has been a consistent concern over decades among Turkish researchers (e.g., Akalin, 2007; Ceylan, 2015; Sazak Pınar & Güner Yıldız, 2013; Sucuoglu et al., 2010). Turkish general education teachers have frequently complained about students' problem behaviors and interpreted these behaviors as the nature of disability instead of the consequences of their teaching strategies (Sazak Pınar & Güner Yıldız, 2013). Consequently, they neither respond to nor promote desired student behaviors, and instead of redirecting students to the appropriate classroom behaviors, they tend to reprimand and criticize off-task behaviors (Sazak Pınar & Güner Yıldız, 2013).

As indicated above, despite the needs of students with disabilities and their caregivers, teachers and administrators do not receive the necessary support for teaching in inclusive classrooms (Eldeniz-Cetin, 2015; Olcay-Gul & Vuran, 2015). Sucuoglu and colleagues (2010) listed three considerations when interpreting cultural context and educational system in Türkiye: (a) policies for inclusive education have not improved, (b) even though general education teachers attend training programs organized by the Ministers of Education concerning the needs of students with disabilities, these training programs consist of short-term courses, and (c) classroom management strategies have been overlooked in undergraduate and graduate programs in Türkiye. Although it has been over a decade since the Sucuoglu et al. (2010) study, the support for educators is still insufficient (Kilincarslan et al., 2019).

The cultural context toward disability and inclusion of students with disabilities in Türkiye appears to be different than in western countries. Interpreting the efficacy of self-management interventions, originally developed in the West, some factors should be taken into consideration. In Western countries including the USA, laws and regulations specify the roles and expectations of schools and teachers with regard to the education of students with disabilities more clearly than in Türkiye (Rakap et al., 2016). For example, IDEIA (2005) requires equal opportunity and prohibits discrimination against based on individuals' disabilities. Thus, schools have to ensure integration by providing the necessary accommodations and modifications based on the needs of students with disabilities (Rakap et al., 2016). In Türkiye, on the other hand, segregation and discrimination against individuals with disabilities is still an ongoing issue.

5.1.2 Self-Management in Türkiye

Despite the maltreatments, discriminations, and exclusion of students with disabilities, there may be five reasons to explain the efficacy of self-management interventions. First and foremost, the current study had a high treatment integrity along with a systematic planning for generalization and maintenance from the onset of the intervention. Sulu et al. (2022) review indicated that the quality of self-monitoring studies aiming to improve on-task behaviors of students with disabilities were weak based on What Works Clearinghouse (WWC; Kratochwill et al., 2013) due to the lack of adequate number of data points (i.e., five) and the absence of IOA data across all the phases. In the current study, however, the researchers collected a minimum of five data points with a stable data trend across all the phases and collected IOA data at least 30% of each phase (i.e., baseline, intervention, fading, maintenance, and generalization) for each student with the lowest IOA average being 85%. Additionally, the self-monitoring pre-training program was taught with 100% procedural fidelity, the intervention was faded systematically, and generalization and maintenance were planned from the onset of the intervention with a continuous generalization data collection system across all the phases. Second, self-monitoring interventions have been found to be effective reducing the dependence on adults or other external agents through the personal adaptation of behavioral strategies (Cooper et al., 2020; Mayer et al., 2020). Given that students monitor their own behaviors without any external prompts, the responsibility of behavior management transfers from teachers to the students (Mayer et al., 2020; Mitchem et al., 2001). Considering Turkish teachers do not have the knowledge or the time to promote on-task behaviors of students with disabilities in inclusive educational settings (Batu et al., 2018), the students were able to increase their own behavior without any help from external agents. Third, classroom rules are not taught to students and Turkish teachers usually ignore desired classroom behaviors such as task engagement and use aversive stimulus for off-task behaviors of students (Sucuoglu et al., 2010). In the current study, however, the researchers taught on-task and off-task behaviors with the examples and non-examples of visuals until the students met the criterion to distinguish these behaviors from one another. Fourth, the expected behaviors to earn tokens were clearly defined along with the systematic delivery of reinforcement. Given the ongoing discrimination devaluation and insults in the society (Koca-Atabey, 2013), the students' previous experiences in reinforcing classroom activities might have been rare to none, thereby, the systematic implementation of token economy contingent upon on-task behaviors may have led to

generalization of these skills to other settings along with maintenance in over 16 weeks. Finally, the attitudes of teachers and the students without disabilities in the same classroom with the student might have changed due to the increased on-task behaviors of the students that also might have developed a sense of inclusion. Thus, although not assessed, it is possible that the attitudes of teachers and other students may have changed toward students with disabilities in a positive direction. Overall, considering self-management interventions as an ABA-based practice, this study contributes to a better understanding of how Western-based interventions emerge in varied cultural contexts (Liao et al., 2016), such as Türkiye. Therefore, we suggest that self-monitoring interventions seem to be effective in improving the on-task behaviors of Turkish students with IDs in inclusive classrooms. The initial intervention findings align with findings from Western countries (e.g., Roberts et al., 2017) and China (e.g., Xu et al., 2017), generalization and maintenance of increased on-task behaviors appeared to be consistent as opposed to the Western countries where the generalization of increased on-task behaviors was rare due to lack of systematic programming in these phases.

5.2 Investigating the Effects of Self-Monitoring Interventions Universally

In addition to investigating the efficacy of an ABA-based intervention within Turkish culture, the several findings of the current study are important. First, according to research conducted by Wood et al. (1998), self-monitoring interventions are increasingly being implemented in segregated settings. They advocated for the continuation of research to be carried out in settings that were inclusive to students with disabilities because there is a lack of evidence-based practices implemented in inclusive general education classroom settings (Agran et al., 2020). Therefore, there should be continued effort in utilizing these practices in general education classrooms to meet the needs of students (Agran et al., 2020; Ryndak et al., 2008). However, a recent review study (Sulu et al., 2022) revealed that the implementation of self-monitoring interventions in inclusive environments is still sparse even though more than 20 years of study have been conducted since the advice made by Wood et al. (1998). Given that the current study was conducted in inclusive classrooms without removing students from general education classrooms, the findings demonstrate that self-monitoring interventions are effective to improve the on-task behaviors of students with IDs. These findings align with the previous studies where self-monitoring interventions were implemented in inclusive elementary schools with students

with ADHD (Szwed & Bouck, 2013) and expands the literature by implementing these practices with students with IDs given that the implementation of these practices is sparse with students with ID in inclusive settings compared to other disabilities categories (Le Lant & Lawson, 2019).

Second, even though the implementation of self-monitoring has historically depended on timers to prompt students to monitor their own behavior through analog recording technologies (Scheibel et al., 2022), technology-based self-monitoring interventions have become prevalent in the last decade with the usage of mobile phones and tablets (e.g., Wills & Mason, 2014). In the current study, however, the researchers used a timer along with a pen and pencil for students to record their own behaviors. Although the integration of advanced technology products (e.g., I-Connect via cellphones) into the intervention could have simplified the method of monitoring, collecting, and graphing data for the researchers (Bruhn et al., 2019), the usage of such technology may not be feasible for educators due to the staggering economy in Türkiye. Nonetheless, the researchers employed cost-effective technology by using a vibrating timer compared to the previous studies where the interventions did not include any technological devices (i.e., Kartal & Yucesoy-Ozkan, 2015; Yucesoy- Ozkan et al., 2014).

Third, based on the review of the self-monitoring literature, several findings related to generalization and maintenance were observed. In the current study, self-monitoring interventions increased the on-task behaviors of students with IDs; increased on-task behaviors were maintained for an average of 16 weeks and generalized to the other settings. These findings are important given that self-monitoring interventions have been found to be effective in improving the on-task behaviors of students with disabilities (e.g., Ennis et al., 2018; Finn et al., 2015) and have been promoted as generalization and maintenance tools in the previous literature (Agran et al., 2003; Sheffield & Waller, 2010). However, a recent review study conducted by Sulu et al. (2022) suggest self-monitoring interventions focusing on the on-task behaviors of students with disabilities appear to be inadequate in systematic planning in generalization and maintenance. According to their findings, only two studies assessed both for maintenance and generalization, and 10 studies assessed for maintenance among 24 studies included published in the last ten years (Sulu et al., 2022). The authors concluded that there was a need for future studies to investigate the generalization and maintenance of self-monitoring interventions as was done in the current study.

Fourth, the findings of this study suggest that self-monitoring interventions can be generalized when a maintenance and generalization teaching strategy was utilized even 87 days

later of the cessation of the intervention. When considering past research, the planning for generalization is poor in quality and quantity, generalization outcomes of self-monitoring interventions appeared to be different across studies. For example, Wood et al. (2002) implemented self-monitoring interventions for at-risk students of school failure and dropout by introducing the intervention sequentially into six different contexts to promote generalization. On the other hand, Cook and Sayeski (2020) assessed the effectiveness of self-monitoring interventions, including the use of a smartphone with a vibrating application to alert high school students with high incidence impairments to self-monitor on-task behaviors in general education classrooms. Though two of the four participants demonstrated moderate increases, the participants did not generalize the on-task behaviors to other settings. The authors did not provide a generalization programming. They based their reasoning on the previous research (e.g., Prater et al., 1992) that the generalization of increased on-task behaviors was rare. Another study conducted by Kolbenschlang and Wunderlich (2019) aimed to investigate a self-monitoring intervention with a discreet auditory prompt with individuals with ASD. While the findings revealed that self-monitoring interventions were effective in improving the on-task behaviors of two of the three participants, the generalization of increased on-task behaviors did not occur in general education setting. These two studies (Cook & Sayeski, 2020; Kolbenschlang & Wunderlich, 2019) collected generalization data at the end of the intervention without any planning form onset of the intervention. As indicated by Strokes and Baer (1977), "generalization has been considered the natural result of failing to practice a discrimination technology adequately, and thus has remained a passive concept almost devoid of a technology (p. 349)."

The generalization process is just as deserving of active conceptualization and technological support as the initial intervention effect of skills (Schlosser & Lee 2000; Stokes and Baer 1977). Given that there is little scope for drawing conclusions regarding the efficacy of these treatments in the absence of information regarding the generalizability of skills to different settings (Neely et al., 2016), self-monitoring interventions may remain limited to be identified as evidence-based practice simply by looking at the initial intervention effect. To attain such goals in a satisfactory manner does not come easily, as there are a number of requirements that need to be met before any behavior modification program can be implemented (Mayer et al., 2020). Research ought to broaden the scope of this existing body of research by regularly assessing the generalization of acquired skills, in particular in their natural environment, and by designing for generalization from

the very beginning of the study (Cooper et al., 2020; Mayer et al., 2020; Neely et al., 2016; Stokes & Baer, 1977; Sulu et al., 2022). Therefore, interventionists should teach adaptive and functional skills in the settings in which the skills would typically occur (also known as the "train in a natural setting" approach), with the goal of introducing the individual to naturally supportive consequences (also known as the "introduce to natural contingencies" approach (Neely et al., 2016).

Despite the continuous emphasis on systematic programming for generalization and maintenance in the field of ABA (Cooper et al., 2020; Neely et al., 2016; 2018; Ninness et al., 1991; Stokes & Baer, 1977), the lack of such planning is a limitation that has been ongoing for decades (e.g., Neely et al., 2018; Strokes & Baer, 1977; Sulu et al., 2022). The most frequent method of examining generalization was *Train and Hope* (Neely et al., 2016; Stokes & Baer, 1977), where after a behavior change is induced by manipulating response consequences, any generality across responses, settings, experimenters, and time is noticed, but not actively pursued (Mayer et al., 2020; Stakes & Baer, 1977). In other words, the researchers do not specify exactly how to increase the possibility that the intended effects will generalize to untrained circumstances (Neely et al., 2016). Previous research suggests leaving generalization/maintenance to chance, the effectiveness of interventions is reduced. (Chandler et al., 1992; Neely et al., 2016). As stated by Wood et al. (2002), such programming may not be effective in promoting the generalization of on-task behaviors:

In the current study, the researchers implemented self-monitoring interventions across three different settings (i.e., TLA, social studies, math), and generalization data were collected from the onset of the intervention. The researchers sequentially introduced the interventions across settings. As recommended Neely et al. (2016), a minimum of at least three generalization data points were collected across all the phases (i.e., baseline, intervention, fading, maintenance). Differing from the previous studies (i.e., Cook & Sayeski, 2020; Kolbenschlang & Wunderlich, 2019), the findings revealed that self-monitoring interventions were effective in promoting the generalization of behaviors to another setting (i.e., ELA).

Fifth, in addition to systematic planning in generalization, the maintenance data were collected over an average of 16 weeks (Sulu et al., 2022). In programming for maintenance and generalization, determining the latency to maintenance and maintenance length are important. While latency to maintenance refers to the time elapsed between the conclusion of the final intervention phase and the collection of the first maintenance data (Neely et al., 2018),

maintenance length refers to the time elapsed between the initial and final maintenance data collection (Sulu et al., 2022). Even though there are no exact guidelines for latency to maintenance or maintenance length (Neely et al., 2018), Sulu et al. (2022) suggest collecting data over an extended time period (such as more than 6 months) for on-task behaviors. On-task behaviors are lifelong skills that students with disabilities need in a variety of educational contexts (Dalton et al., 1999; Kartal & Yucesoy Ozkan, 2015). However, Sulu et al. (2022) indicated that only 12 of the 24 studies collected data in the maintenance phase. Of those studies, latency to maintenance was very short (e.g., less than a week or upon completion of mastery criterion) with the greatest maintenance length being 7 weeks (Sulu et al., 2022). Additionally, seven of the 12 studies did not indicate the maintenance length (e.g., Aykut, 2020; Bruhn et al., 2016). In the current study maintenance data were collected immediately after the fading phase for each individual. Based on these findings, all the students' on-task behavior maintained even after cessation of the intervention. Additionally, maintenance data were collected after the summer break in Türkiye. Although the current study began collecting maintenance data upon completion of the mastery criterion in fading phase with a very short latency for maintenance, to our best knowledge, the maintenance length assessed in this study is the longest duration in the literature— an average of 16 weeks. Therefore, this study contributes to the literature with a longer period of time of collected maintenance data.

Sixth, the current study found the teachers' ratings of overall classroom student behavior improved. The teachers rated the students' behaviors from beginning (i.e., baseline) to the end of the data collection in the 16th week during. These evaluations were correlated to self-management program implementation. The extent of the teachers' involvement in this study was limited to rating the students' behavior after class only. It is also worth noting that the classroom teachers were not informed when the independent variable began being used. Additionally, ELA teachers were never informed about the intervention throughout the study, and they were simply asked to rate students' behaviors. While teachers graded students' overall classroom behaviors as a 1 (i.e., poor) for the first two students in baseline, the teachers' ratings improved to 4 (i.e., good) and 5 (i.e., excellent). Teacher evaluations were also consistent across settings and time, similar to the students' on-task behaviors. For students 3 and 4, the teachers rated overall classroom behaviors as a 3 (i.e., okay). However, the teacher ratings improved to 5 (i.e., excellent) during the intervention, fading, maintenance, and generalization. Although classroom and ELA teachers' evaluations were

subjective, they should be taken into consideration given the correlation with self-management interventions. All four teachers indicated they would use the self-management package again as an effective tool for reducing unwanted classroom behaviors such as off-task behaviors.

5.3 Limitations and Future Research

Though the current study has several contributions to the literature (e.g., systematic planning for generalization and long maintenance length), it is not without limitations. In this section, the limitations of the current study and some research areas for future investigations will be discussed.

First, the behaviors of individuals diagnosed with IDs showed significant improvement as a result of self-management interventions. However, the implementation of the self-management program was carried out by highly trained special education faculty member and their team. One of the limitations in inclusive education is the lack of resources for teachers in Türkiye (Bakkaloglu et al., 2018; Karal, 2021), and the recent ABA literature appears to be limited in its ability to address this issue (Sulu et al., 2022). Research also shows that interventions for individuals who have developmental disorders are not as effective in communities as they are in research settings (Weisz et al. 2005), and they do not maintain over time (Storch & Crisp 2004). This is in part because there is a lack of training for educators and families (Dingfelder & Mandell 2011; Sulu et al., 2022). One strategy for overcoming this obstacle is to encourage general education classroom instructors to take part in self-monitoring interventions (Sulu et al., 2022). Training teachers in general education to develop and incorporate self-monitoring intervention into their everyday practices might be considered the first step that can be made in this direction (Xin et al., 2017). In addition, it is important for parents and other caregivers to receive training in self-monitoring techniques so that there is continuity and consistency between the home and the educational setting (Sulu et al., 2022). Thus, future studies should investigate the efficacy of self-monitoring interventions across settings with the inclusion of caregivers and classroom teachers.

Second, although the researchers collected data from teachers in addition to students' on-task behaviors, and there were no additional data collected regarding the academic outcomes of the students. Lower-level academic achievement of students with IDs requires further empirical investigation on self-monitoring of academic achievement, which includes academic behaviors and grades. Even though on-task behaviors are a critical classroom variable, direct measurements

of academic outcomes are essential to identify whether improved on-task behaviors result in increased academic achievement (Bruhn et al., 2019). Fluency (e.g., items or problem-solving steps completed within a confined time), accuracy (e.g., percentage of or total things completed correctly), and quality are examples of academic outcome measurements (Bruhn et al., 2019). These outcomes are primarily measured via researcher-developed assessments and grades in the self-monitoring literature. Holifield et al. (2010) collected academic accuracy data from 15 to 20 assignments in language arts and math. Bruhn et al (2019) collected academic accuracy on the percent accuracy on one to two step math problems and written expression for two participants. One limitation of this study was defined as lack of in-depth analysis based on curriculum-based measures. Graham-Day et al. (2010) collected academic achievement data based on the participants' grades that were entered by their teachers every day. The findings of this study indicated that academic achievement of the participants did not increase. Clemons et al. (2016) collected indirect data based on the participants academic grades and teacher reports.

It is important to note that direct measurement of academic production and correctness is often challenging to gather and measure in a way that enables accurate comparisons between baseline and intervention phases (Clemons et al., 2016). The collected data in academic accuracy is sparse and the total implementation of these interventions was short with a short latency to maintenance (e.g., upon meeting the mastery criterion) and maintenance length (e.g., 2 to 4 weeks) (Alsalamah, 2017). Additionally, academic outcomes are generally collected from students with ASD and LD. The limited number of studies collected data for academic accuracy can be explained with the paucity in implementation of self-monitoring interventions with students with ID and academic outcomes being collected in more of the recent studies (e.g., after 2010). Nonetheless, future studies should utilize self-monitoring interventions to improve on-task behaviors and collect academic outcomes with students with IDs in inclusive settings. Considering the limitations to the utilization of direct measurement tools particularly in longer maintenance phases across multiple settings, it seems reasonable to collect academic data via curriculum-based measurements once in every five data points in each phase within a study.

CHAPTER 6. CONCLUSION

The current study extends the intervention literature base in three important ways. Research indicates that students with ID frequently exhibit distracting and off-task behaviors (Mitchem et al., 2001). These behaviors lead to excessive dependence on external prompts from adults (i.e., teachers and paraprofessionals; Yucesoy Ozkan & Sonmez, 2011), which can restrict the amount of learning time for all of the children in the classroom (Mitchem et al. 2001). As a result, students with ID may be excluded from general education classrooms, which may lead to school dropout (Briesch & Daniels, 2013; Wood et al., 2012). Though self-monitoring interventions have been found to be effective in improving the on-task behaviors of students with a wide range of disabilities, including ASD and LD, for decades (i.e., Beckman et al., 2019; Ennis et al., 2018; Kolbenschlag & Wunderlich, 2019; Roberts et al., 2019; Romans et al., 2020; Scalzo et al., 2015; Xin et al., 2017; Xu et al., 2017), the implementation of these interventions remained limited for those who have IDs, particularly in inclusive classrooms in elementary schools (Le Lant & Lawson, 2019). Therefore, this study expands the current literature by demonstrating the efficacy of self-monitoring interventions to improve the on-task behaviors of students with IDs in inclusive classrooms.

The second important contribution of this study is the systematic planning for maintenance and generalization in self-management interventions. Although self-management strategies in general and self-monitoring specifically appeared to be effective in improving the on-task behaviors of students with a wide range of disabilities (Bruhn et al., 2016; Cooper et al., 2020; Riden et al., 2021; Wood et al., 2002), there is limited research on the generalization and maintenance of on-task behaviors, particularly for improved on-task behaviors. (Skinner 1953; Stokes & Baer, 1977; Sulu et al., 2022). This lack of systematic planning is problematic in considering the fact that generalization and maintenance must be planned systematically in order to accomplish the desired and anticipated outcomes of interventions (Nelly et al., 2016). A current review study (Sulu et al., 2022) called for studies to establish the maintenance and generalization effects of self-monitoring interventions on on-task behaviors Thus, one of the primary objectives of this study aligns with the recent call for exploring the maintenance and generalization of increased on-task behaviors with the usage of self-monitoring interventions. To do this, the

researchers systematically planned for maintenance and generalization from the onset of the self-monitoring intervention.

Third, this study will contribute to the understanding of how ABA-based interventions that originated in the West can be implemented in diverse cultural contexts with Turkish students with ID, particularly in inclusive classroom settings. Despite of the limited number of studies conducted in self-management interventions, there have been improvements in the research activity of ABA-based interventions in Türkiye (e.g., Kiyak & Tekin-Iftar, 2022; Odluyurt et al., 2016; Tunc-Paftali & Tekin-Iftar, 2021). Though the scope of the ABA-based interventions has increased with the implementation of practices such as PECS (e.g., Odluyurt et al., 2016), these interventions were predominantly implemented in special education classrooms or individualized instructional settings (Sulu et al., 2022). For example, Batu et al. (2018) reviewed the Turkish literature in inclusive practices in elementary and secondary schools. Although there were 142 studies (i.e., 78 masters' thesis, 9 doctoral dissertations, 55 journal articles) undertaken to determine the present status of inclusion implementations, there were few studies conducted to improve inclusion implementations in schools with relation to the concerns listed (Batu et al., 2018). A current meta-analysis conducted by Sulu et al. (2022) also suggest that there were a lack of studies investigating problem behaviors (e.g., off-task, negative statements) of students with ASD in inclusive settings. Although Sulu et al. (2022) included only studies that had an individual with ASD in their review, this appears to be concerning across different disability categories including IDs (Bakkaloglu et al., 2018; Batu et al., 2018; Cakiroglu & Melekoglu, 2014). Therefore, Batu et al. (2018) and Sulu et al. (2022) call for future research to address the aforementioned concerns. It is anticipated that the outcomes of this study not only will amplify the current ABA literature in Türkiye but also will help Turkish educators and policymakers to increase the on-task behaviors of students with IDs in inclusive classrooms, thereby, promoting the inclusion of these students to the general education classrooms.

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APPENDIX A. TIMER

APPENDIX B. SELF-MONITORING FORM

Are you working?							
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
YES	YES	YES	YES	YES	YES	YES	YES
NO	NO	NO	NO	NO	NO	NO	NO

SELF-MONITORING FORM (TURKISH)

Dersle ilgileniyor musun?							
1 EVET HAYIR	**2** EVET HAYIR	**3** EVET HAYIR	**4** EVET HAYIR	**5** EVET HAYIR	**6** EVET HAYIR	**7** EVET HAYIR	**8** EVET HAYIR

APPENDIX C. PARTICIPANT SELF-EVALUATION CHECKLIST

Student:	**Date:**	**Class:**

Before Class	I completed my homework	YES	NO
	I found out what I needed to do in the class	YES	NO
	I got started on time	YES	NO
During Class	I self-monitored my on-task behaviors	YES	NO
After Class	I followed teacher directions	YES	NO
	I worked on my assignment	YES	NO
	I have an assignment	YES	NO

PARTICIPANT SELF-EVALUATION CHECKLIST (TURKISH)

Ogrenci:	**Tarih:**	**Dersin adi:**

Dersten önce	Ödevimi yaptım	EVET	HAYIR
	Ders için gerekli malzemeleri hazırladım	EVET	HAYIR
	Derse zamanında başladım	EVET	HAYIR
Ders Sırasında	Dersle ilgilenme davranışlarımın kaydını tuttum	EVET	HAYIR
Dersten Sonra	Öğretmenin yönergelerini takip ettim	EVET	HAYIR
	Etkinlikleri yaptım	EVET	HAYIR
	Ev ödevim var	EVET	HAYIR

APPENDIX D. TEACHER GENERAL CLASSROOM BEHAVIOR RATING

Teacher	Date	Time/Duration	Students initials	Classroom

1 **Poor**	Student was off task for most of the period (over 40 min), did not follow classroom rules, and/or student was reprimanded or warned regarding behavior more than two times, and/or removed from the classroom.
2 **Needs improvement**	Student worked on the assigned task, followed classroom rules for less than half the period (30 min or less), and/or student was reprimanded or warned regarding behavior over two times
3 **Okay**	Student worked on the assigned task, followed classroom rules for over half of the period (30 min or more), and/or student was reprimanded or warned regarding behavior two times
4 **Good**	Student worked on the assigned task, followed classroom rules, and/or one minor incident such as speaking without permission occurred
5 **Great**	Student worked on the assigned task, followed classroom rules, and/or no warnings or reprimands were needed.

TEACHER GENERAL CLASSROOM BEHAVIOR RATING (TURKISH)

Öğretmen	Tarih	Süre	Öğrencinin adı ve soyadının ilk harfleri	Dersin adı

1 **Zayıf**	Dersin büyük bir kısmında dersle ilgilenmedi (40 dakika), sınıf kurallarına uymadı, kurallara uyması ve dersle ilgilenmesi için en az iki kez uyarıldı ya da azarlandı, sınıftan uzaklaştırıldı.
2 **Geliştirilmeli**	Dersin yarısında çoğunda dersle ilgilenmedi (30 dakika ya da daha az) ancak verilen etkinlikleri yaptı. Kurallara uyması ve dersle ilgilenmesi için ikiden çok kez uyarıldı ya da azarlandı.
3 **Orta**	Dersin yarısından çoğunda dersle ilgilendi (30 dakika daha çok), verilen etkinlikleri yaptı. Kurallara uyması ve dersle ilgilenmesi için iki kez uyarıldı ya da azarlandı.
4 **İyi**	Dersle ilgilendi verilen etkinlikleri yaptı ve sınıf kurallarına uydu. Ancak izinsiz konuşma gibi küçük hadiseler yaşandı.
5 **Pekiyi**	Dersle ilgilendi verilen etkinlikleri yaptı ve sınıf kurallarına uydu. Hiçbir uyarı ya da azarlanmaya gerek kalmadı.

APPENDIX E. DATA COLLECTION SHEET

Participant Initials	Date	Time/Duration	Observer	Classroom

0:30	10:30	**20:30**	30:30
1:00	11:00	**21:00**	31:00
1:30	11:30	**21:30**	31:30
2:00	12:00	**22:00**	32:00
2:30	12:30	**22:30**	32:30
3:00	13:00	**23:00**	33:00
3:30	13:30	**23:30**	33:30
4:00	14:00	**24:00**	34:00
4:30	14:30	**24:30**	34:30
5:00	15:00	**25:00**	35:00
5:30	15:30	**25:30**	35:30
6:00	16:00	**26:00**	36:00
6:30	16:30	**26:30**	36:30
7:00	17:00	**27:00**	37:00
7:30	17:30	**27:30**	37:30
8:00	18:00	**28:00**	38:00
8:30	18:30	**28:30**	38:30
9:00	19:00	**29:00**	39:00
9:30	19:30	**29:30**	39:30
10:00	20:00	**30:00**	40:00

KEY: "+" = On-task: actively engaged with instructional content
"-" = Off-task: not engaged with instructional content exhibiting pre-defined off task behaviors

Percentage of Intervals On-task	Percentage of Intervals Off-task	Reliability On-task

DATA COLLECTION SHEET (TURKISH)

Öğrencinin Adı ve Soyadı'nın ilk harfleri | Tarih | Süre | Gözlemci | Dersin adı

0:30	10:30	**20:30**	30:30
1:00	11:00	**21:00**	31:00
1:30	11:30	**21:30**	31:30
2:00	12:00	**22:00**	32:00
2:30	12:30	**22:30**	32:30
3:00	13:00	**23:00**	33:00
3:30	13:30	**23:30**	33:30
4:00	14:00	**24:00**	34:00
4:30	14:30	**24:30**	34:30
5:00	15:00	**25:00**	35:00
5:30	15:30	**25:30**	35:30
6:00	16:00	**26:00**	36:00
6:30	16:30	**26:30**	36:30
7:00	17:00	**27:00**	37:00
7:30	17:30	**27:30**	37:30
8:00	18:00	**28:00**	38:00
8:30	18:30	**28:30**	38:30
9:00	19:00	**29:00**	39:00
9:30	19:30	**29:30**	39:30
10:00	20:00	**30:00**	40:00

KEY: "+" = Dersle ilgiliniyor: dersle aktif bir şekilde ilgileniyor

"-" = Dersle ilglienmiyor: dersle ilgilenmiyor ya da listelenmiş dersle ilglinememe davranışlarını gösteriyor

Dersle ilgilenme davranışlarının yüzdesi	Dersle ilgilenmeme davranışlarının yüzdesi	Gözlemciler arası givenirliliğin yüzdesi

APPENDIX F. INTEROBSERVER AGREEMENT CALCULATION

On-task behaviors:

$$\frac{\text{Number of intervals agreed}}{\text{Number of intervals agree + number of intervals disagreed}} \text{ X } 100 = \text{interval-by-interval IOA}$$

Procedural fidelity:

$$\frac{\text{Number of steps agreed}}{\text{Number of steps agree + number of steps disagreed}} \text{ X } 100 = \text{interval-by-interval IOA}$$

APPENDIX G. PROCEDURAL FIDELITY

Introduction		
1. Secure student attention	**YES**	**NO**
2. Provide definition of self-management and on-task behaviors	**YES**	**NO**
3. Provide rationale for using self-management interventions to increase on-task behaviors	**YES**	**NO**
Teaching On-task/Off-Task Behaviors		
4. Show student 10 pictures in on-task behavior and off task behaviors and explain them five of them are on-task behaviors, and the other five of them are off-task behaviors.	**YES**	**NO**
5. Demonstrate the examples of on/off- task behaviors (Let me show you, this is an on/off task behavior). Do it for all the pictures	**YES**	**NO**
6. Have the students model the behavior with you (Let's do it together…). Do it for all the pictures	**YES**	**NO**
7. Put four pictures in an array one example of the behavior, and three nonexamples of behaviors (Now your turn, show me on/off-task behavior).	**YES**	**NO**
8. Reinforce correct response.	**YES**	**NO**
9. If the student makes an error, an error correction procedure. "Show the picture and model "this is an on-task/off-task behavior"	**YES**	**NO**
10. Test "is this an on-task or off-task behavior.	**YES**	**NO**
11. Reinforce correct response. Students must distinguish on-task behaviors from off-task behaviors with 100% accuracy in four consecutive times.	**YES**	**NO**
Training MotivAider		
12. Show how to use the self-monitoring form and visual cue to indicate yes or no. (Now I'll teach you how to check yourself.) Talk loudly about the procedure. "Am I on-task?" So, I'm sitting in my chair, doing my job. Let's have a look at the pictures. I'm sitting at my chair, working, and looking at my work (point to pictures on visual prompt). Yes, I'm on-task, so I'll circle yes." Give one non-working example.	**YES**	**NO**
13. Now demonstrate utilizing the MotivAider®, self-monitoring, and visual cue. (How will I know when it's time to check myself? Let me demonstrate...) Demonstrate to the learner how you will connect the MotivAider® and turn it on. Display both on- and off-task behavior. When the vibrator goes off, have the participant indicate yes or no.	**YES**	**NO**
14. Practice until student is 100% accurate for one 20- min practice session (MotivAider® set for 5-min)	**YES**	**NO**

Training self-evaluation checklist		
15. Show how to use self-evaluation checklist to indicate yes or no (Now I'll teach you how to evaluate yourself at the end of the class.) Talk loudly about the procedure “Did I do my assignment? Yes, I completed my assignment so I will circle yes. Did I monitor my self-monitoring behaviors? Yes, I did " Give non-completed examples.	**YES**	**NO**
16. Explain when will use self-monitoring interventions	**YES**	**NO**

PROCEDURAL FIDELITY (TURKISH)

Giriş		
1. Öğrencilerin dikkatini topla	**EVET**	**HAYIR**
2. Kendini yönetme ve dersle ilgilenme davrasnılarını tanımla	**EVET**	**HAYIR**
3. Dersle ilgilenme davranışlarını arttırmak için neden kendini yönetme müdehalelerini kullanma ile iliğili gerekçeyi açıkla	**EVET**	**HAYIR**
Dersle İlgilenme Davranışlarının Öğretimi		
4. Dersle ilgillenme ve dersle ilgilenmeme davranışlarla ilgili 10 resim göster ve bunlardan beşinin dersle ilgilenme davranışı olduğunu ve diğer beşinin dersle ilgilenmeme davranışı olduğunu açıkla.	**EVET**	**HAYIR**
5. Dersle ilgilenme ve dersle ilgilenmeme davranış örnekleri göster (Şimdi benim sıram, bu bir dersle ilgilenme/ilgilenmeme davranışıdır). Tüm resimler için yap	**EVET**	**HAYIR**
6. Öğrencilerle birlikte modellemeyi sağla (Şimdi birlikte yapalım…). Tüm resimler için yap	**EVET**	**HAYIR**
7. Dört resimli bir dizin oluştur		
8. Doğru yanıtı pekiştir	**EVET**	**HAYIR**
9. Öğrenci hata yaparsa, resmi göstererek hata düzeltme prosedürünü uygula “bu dersle ilgilenme/ilgilenmeme davranışı”	**EVET**	**HAYIR**
10. Test “bu dersle ilgilenme mi yoksa dersle ilgilenmeme davranışı mı?”	**EVET**	**HAYIR**
11. Doğru yanıtı pekiştir. Öğrenciler art arda dört kez %100 doğrulukta derse katılma ve derse katılmama davranışlarından ayırt etmelerini sağla	**EVET**	**HAYIR**
MotivAider Eğitimi		
12. Evet veya hayır daire içine almak için kendi kendini izleme formunun ve görsel ipucunun nasıl kullanılacağını göster. (Şimdi size kendinizi nasıl kontrol edeceğinizi öğreteceğim.) İşlem hakkında yüksek sesle konuşun. "Dersle ilgileniyor muyum?" Yani, sandalyemde oturuyorum, işimi yapıyorum. Resimlere bir göz atalım. Sandalyemde oturuyorum, çalışıyorum ve işime bakıyorum (görsel komutla resimlerin üzerine gelin). Evet, dersle ilgileniyorum, bu yüzden evet'i daire içine alacağım."	**EVET**	**HAYIR**
13. MotivAider®, kendi kendini izleme ve görsel ipucunun kullanımını göster. (Kendimi kontrol etme zamanımın geldiğini nasıl bileceğim? Sana göstereyim...) Öğrenciye MotivAider®'i nasıl bağlayacağınızı ve açacağınızı göster. Hem dersle ilgilenme hem de dersle ilgilenmeme davranışlarını Pratik edin. Vibratör kapandığında, katılımcının evet veya hayır demesini sağlayın.	**EVET**	**HAYIR**

14. 20 dakikalık bir alıştırma oturumu için öğrenci %100 doğru olana kadar alıştırma yapın (5 dakikalık MotivAider® seti)	**EVET**	**HAYIR**
Kendini Değerlendirme Çizelgesinin Öğretimi		
15. Evet veya hayır belirtmek için öz değerlendirme kontrol listesinin nasıl kullanılacağını göster (Şimdi size dersin sonunda kendinizi nasıl değerlendireceğinizi öğreteceğim.) “Ödevimi yaptım mı? Evet, ödevimi tamamladım, bu yüzden evet'i daire içine alacağım. Kendi kendini izleme davranışlarımı izledim mi? Evet yaptım "tamamlanmamış örnekler ver	**EVET**	**HAYIR**
16. Kendini izleme stratejisinin ne zaman kullanılacağını açıkla	**EVET**	**HAYIR**

APPENDIX H. TEACHER SOCIAL VALIDITY

Student: Teacher:

Teacher Satisfactory Survey

Please assess this student's academic or learning behaviors in your classroom when they are using self-management interventions.

"When my student used self-management interventions, I observed the following results..."						
1.	Getting started with assignment	1 Significantly Worse	2 Worse	3 Same	4 Better	5 Significantly Better
2.	On-task behavior	1 Significantly Worse	2 Worse	3 Same	4 Better	5 Significantly Better
3.	Completing work	1 Significantly Worse	2 Worse	3 Same	4 Better	5 Significantly Better
4.	Classroom disruption	1 Significantly Worse	2 Worse	3 Same	4 Better	5 Significantly Better
5.	Productivity	1 Significantly Worse	2 Worse	3 Same	4 Better	5 Significantly Better
Overall impression						
1.	Easy to implement	1 Strongly Disagree	2 Disagree	3 Neither	4 Agree	5 Strongly Agree
2.	Not intrusive	1 Strongly Disagree	2 Disagree	3 Neither	4 Agree	5 Strongly Agree
3.	Satisfied with the intervention	1 Strongly Disagree	2 Disagree	3 Neither	4 Agree	5 Strongly Agree
4.	Would like to continue to use the intervention	1 Strongly Disagree	2 Disagree	3 Neither	4 Agree	5 Strongly Agree
5.	Did not notice any inconsistencies when in	1 Strongly Disagree	2 Disagree	3 Neither	4 Agree	5 Strongly Agree

TEACHER SOCIAL VALIDITY (TURKISH)

Öğrencinin adı ve soyadının ilk harfleri: Öğretmen:

Öğretmen Memnuniyet Anketi

Lütfen bu öğrencinin kendini izleme müdahalelerini kullanırken sınıfınızdaki akademik veya öğrenme davranışlarını değerlendirin.

"Öğrencim kendini izleme müdahalelerini kullandığında aşağıdaki sonuçları gözlemledim..."						
1.	Göreve başlama	1 Çok Daha Kötü	2 Daha Kötü	3 Aynı	4 Daha Iyi	5 Çok Daha Iyi
2.	Dersle Ilgilenme	1 Çok Daha Kötü	2 Daha Kötü	3 Aynı	4 Daha Iyi	5 Çok Daha Iyi
3.	Etkinlik tamamlama	1 Çok Daha Kötü	2 Daha Kötü	3 Aynı	4 Daha Iyi	5 Çok Daha Iyi
4.	Problem davranış	1 Çok Daha Kötü	2 Daha Kötü	3 Aynı	4 Daha Iyi	5 Çok Daha Iyi
5.	Verimlilik	1 Çok Daha Kötü	2 Daha Kötü	3 Aynı	4 Daha Iyi	5 Çok Daha Iyi
Genel Izlenim						
1.	Kolay uygulanabilir	1 Kesinlikle Katılmıyorum	2 Katılmıyorum	3 Ne Katılıyorum Ne de Katılmıyorum	4 Katılıyorum	5 Kesinlikle Katılıyorum
2.	Mudalenin kullanimi dersin isleyisini bozmuyor	1 Kesinlikle Katılmıyorum	2 Katılmıyorum	3 Ne Katılıyorum Ne de Katılmıyorum	4 Katılıyorum	5 Kesinlikle Katılıyorum
3.	Mudahale ile ilgili tatmin oldum	1 Kesinlikle Katılmıyorum	2 Katılmıyorum	3 Ne Katılıyorum Ne de Katılmıyorum	4 Katılıyorum	5 Kesinlikle Katılıyorum
4.	Bu mudahaleleri kullanmaya devam etmek isterim	1 Kesinlikle Katılmıyorum	2 Katılmıyorum	3 Ne Katılıyorum Ne de Katılmıyorum	4 Katılıyorum	5 Kesinlikle Katılıyorum
5.	Mudahale sirasinda hic bir tutarsizlik gormedim	1 Kesinlikle Katılmıyorum	2 Katılmıyorum	3 Ne Katılıyorum Ne de Katılmıyorum	4 Katılıyorum	5 Kesinlikle Katılıyorum

APPENDIX I. STUDENT SOCIAL VALIDITY

Participant ID:

Date:

Participant Satisfactory Survey

Please assess this student's academic or learning behaviors in your classroom when they are using self-management interventions.

	When I was using the self-management interventions, I found that…		
1.	Getting started with assignment was easier	**YES**	**NO**
2.	I was able to stay on-task	**YES**	**NO**
3.	I was able to complete my assignments faster	**YES**	**NO**
4.	I was able to get more work done	**YES**	**NO**

	Overall impression of intervention		
1.	Easy to use	**YES**	**NO**
2.	Was not intrusive (define intrusive for participant if needed)	**YES**	**NO**
3.	Satisfied with the device	**YES**	**NO**
4.	Would like to continue to use the intervention	**YES**	**NO**

What was your favorite part of using the device?

Was there anything you did not like about the device? If so, what…

Would you change anything about the intervention?

STUDENT SOCIAL VALIDITY (TURKISH)

Öğrencinin adı ve soyadının ilk harfleri:

Tarih:

Katılımcı Memnuniyet Anketi

Lütfen bu öğrencinin kendini izleme müdahalelerini kullanırken sınıfınızdaki akademik veya öğrenme davranışlarını değerlendirin.

	Kendini izleme etkinliklerini uygularken,		
1.	Ödeve yapmaya başlamak daha kolaydı	**EVET**	**HAYIR**
2.	Dersle ilgilenebildim	**EVET**	**HAYIR**
3.	Ödevimi daha hızlı tamamlayabildim.	**EVET**	**HAYIR**
4.	Daha fazla iş yapabildim.	**EVET**	**HAYIR**

	MotivAider ile ilgili genel izlenimim		
1.	Kullanmasi kolay	**EVET**	**HAYIR**
2.	(gerekirse katılımcı için müdahalecinin ne olduğunu tanımlayın)	**EVET**	**HAYIR**
3.	Bu cihazdan memnun kaldım	**EVET**	**HAYIR**
4.	Bu cihazı kullanmaya devam etmek istiyorum	**EVET**	**HAYIR**

Uygumalayı kullanman en sevdiğin yanı neydi?

Uygulamada beğenmediğin bir şey oldu mu? Varsa neydi?

Bu uygulama ile ilgili herhangi bir özelliği değiştirmek ister misin?