Effects of Goal-Setting Instruction on Academic Engagement for Students At Risk

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Abstract
Research indicates teachers feel teaching goal-setting is an effective way to enhance academic engagement. However, teachers ultimately feel unprepared to embed goal-setting instruction into academic content to support active student engagement. Given the importance teachers place on goal-setting skills, there is a need to identify strategies to support teachers embedding goal-setting instruction across the academic day. Therefore, the purpose of this study was to investigate the effects of goal-setting instruction on academic engagement for middle school students at risk for academic failure. Results indicated a functional relation between goal-setting lessons and students’ active academic engagement. Limitations, suggestions for future research, and implications for practice are provided.

Keywords
self-determination, high incidence, disabilities, academics/standards, education, middle grades, single subject, research

Inequalities in economic and social outcomes have led to youth having to increasingly rely on their skills and motivation to ensure a high quality of life (Organisation for Economic Co-Operation and Development [OECD], 2015). Providing students with opportunities to develop non-cognitive skills (e.g., goal-setting, self-discipline, organization, self-advocacy) can help build motivation and support academic skill development (Duckworth, 2015). Non-cognitive skills are critical to ensuring students at risk persist in secondary education and successfully attain positive post-school outcomes (e.g., employment, post-secondary education [PSE]; Heckman, 2008). Research has demonstrated students, who are provided non-cognitive skill instruction, demonstrated increased levels of academic achievement, academic engagement, and reduced disruptive behaviors (Farrington et al., 2012; McWhirter, McWhirter, McWhirter, & McWhirter, in press). However, youth who have been deemed “at-risk” (e.g., poor grades, poor attendance, having a disability) need additional support to develop non-cognitive skills that will help them access the same opportunities and achieve the same positive post-school outcomes as their peers (McWhirter et al., in press).

While a number of research-based strategies to teach non-cognitive skills such as goal-setting and self-management (e.g., Farrington et al., 2012; Gutman & Schoon, 2013) have been identified over the last decade, researchers in education have continued to identify the need for bridging the research-to-practice gap (Duckworth, 2015; Kapferer, 2015). Over the past several years, attempts have been made to address the inequalities in social and economic outcomes by providing instruction in some of the various non-cognitive skills needed to succeed in the global market place. While research illustrates the importance of developing non-cognitive skills and the relationship of those skills to positive post-school outcomes, there continues to be a need to find better ways to enhance the right set of non-cognitive skills. Because of the advances in science, the field of education can now better understand how to conceptualize and measure non-cognitive skills more systematically (Kapferer, 2015). As Duckworth (2015) mentioned in her commentary on the OECD (2015) report, there is a need for continued investment in the development of interventions that address non-cognitive skills across the life span.

Non-cognitive skills are important in education because these skills can help develop and reinforce students’ academic skills (e.g., math, reading, writing; Kapferer, 2015). Academic and non-cognitive skills are interdependent and should not be taught in isolation from one another. Research suggests that, if schools do not pay closer attention to non-cognitive skill instruction, they may fail to

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improve students’ academic skills (Garcia, 2014; OECD, 2015). School curricula should include ways to both directly promote specific non-cognitive skills and to develop them indirectly by leveraging academic skills (i.e., cognitive; Garcia, 2014). The integration of non-cognitive and academic skill instruction will improve upon existing non-cognitive skill curricula.

Specifically, non-cognitive skills are important dimensions that explain some poor decisions made by adolescents and their choices made later in life (e.g., employment, PSE; Farrington et al., 2012; Heckman, Stuxrud, & Urzua, 2006). Non-cognitive skills develop over time depending on the learning context students are exposed to (Duckworth, 2015; Kapferer, 2015). When considering non-cognitive skill development, one can expect these skills to emerge in early adolescence and continue to develop throughout young adulthood (Duckworth, 2015; Nagaoka et al., 2015). Researchers and practitioners are beginning to understand the critical role non-cognitive skills play in student performance in school and post-school, including the impact on academic engagement, persistence in secondary and PSE, and long-term quality of life (Farrington et al., 2012; Nagaoka et al., 2015).

According to Farrington et al. (2012), all aspects of academic performance (cognitive, non-cognitive) are expressed through academic behaviors (e.g., completing homework, study habits) and have a strong impact on student grades. Farrington et al. noted changing students’ academic mind-sets and teaching students how and when to use learning strategies is associated with increased learning overall and improved academic success. Farrington et al. also indicated college retention is strongly influenced by students who have strong academic mind-set, academic engagement, goal-setting, self-efficacy, and study skills (skills often acquired in early adolescence). In a meta-analysis, Robbins et al. (2004) found academic goal-setting, self-efficacy, and other academic skills (e.g., study habits) were the strongest predictors of persistence in PSE. Robbins et al. concluded that motivation and self-efficacy were related to performance, whereas, academic goal-setting influenced students’ decisions to stay in PSE over time. In addition, Brown et al. (2008) expanded findings of Robbins et al. and concluded the constructs of goal-setting, self-efficacy, and PSE performance were interrelated (i.e., academic goal-setting predicted self-efficacy, which predicted performance in PSE). These non-cognitive skills (e.g., goal-setting, academic mind-set/self-efficacy) act as critical levers for improving students’ academic performance both in secondary and PSE settings.

While research suggests non-cognitive skills affect academic and long-term success for students, there is evidence that non-cognitive skills are also malleable factors that can be influenced through experimental interventions (Bruhn, McDaniel, Fernando, & Troughton, 2016). For example, experimental studies show self-management, goal-setting, problem solving, and decision making can be acquired through classroom-based interventions that lead to improved academic outcomes (Bruhn et al., 2016; Mooney, Ryan, Uthing, Reid, & Epstein, 2005). Several studies have examined the effects of non-cognitive skill instruction (specifically goal-setting and self-regulation/self-management) for students at risk for academic failure. For example, Mooney et al. (2005) conducted a literature review of self-management interventions to improve academic performance of students with emotional disturbance. Self-management interventions were categorized as (a) self-monitoring, (b) self-evaluation, (c) self-instruction, (d) goal-setting, and (e) strategy instruction. Results indicated self-management interventions employed across studies were effective for improving the academic performance of study participants. In addition, Bruhn et al. (2016) conducted a systematic review of the literature to identify the specific components and procedures to teach goal-setting, self-management, and problem-solving and the associated outcomes of students with behavior problems. Bruhn et al. concluded students were more likely to attain their goals when they were directly involved in setting the goals; however, most interventions reviewed dictated goals to students. They also concluded that in many of the studies reviewed students did not receive any feedback on progress toward goals or reinforcement for using self-management strategies and goal attainment. All studies included in the Bruhn et al. review included goal-setting interventions that took place outside the general education classroom.

In addition, with the standards-based education movement and implementation of the Common Core State Standards (CCSS), this seems an opportune time to begin thinking about how to ensure schools are using non-cognitive skill instruction to help further develop and reinforce academic skills or vice versa (Duckworth, 2015; Farrington et al., 2012; Rowe, Mazzotti, & Sinclair, 2015). Many of the CCSS imply students should be acquiring certain non-cognitive skills as a result of mastering the standard. For example, one standard is to engage effectively in a range of collaborative discussions with diverse partners (CCSS.ELA-LITERACY.SL.8.1.B). As a component of this standard, students are expected to track progress toward specific goals and deadlines (i.e., goal-setting and attainment). Another example includes CCSS.ELA-LITERACY.L.8.3, the use of language and its conventions when writing, speaking, reading, or listening; these are skills students need for self-management and educational problem solving and decision making.

Over the last decade, researchers and educators have expressed a need for understanding how to integrate non-cognitive skill instruction such as goal-setting into the general academic curriculum (Garcia, 2014; OECD, 2015). Goal-setting is defined as the process of identifying something you want to accomplish (e.g., academic, prosocial,
behavior) and establishing measurable actions and timelines for achieving that something ("Goal Setting," n.d.). However, teachers feel unprepared to embed non-cognitive skills, specifically goal-setting instruction, into academic content to support active student engagement (Education Week Research Center, 2014; Morningstar, Lombardi, Fowler, & Test, 2015). Furthermore, Stang, Carter, Lane, and Pierson (2009) surveyed general and special education teachers of elementary and middle school students with disabilities and found both groups indicated that incorporating non-cognitive skills into the curriculum was very important and rated problem solving, self-management/self-regulation, decision making, and goal-setting and attainment, as extremely important components to include in the curriculum.

Given the importance teachers place on goal-setting and lack of strategies integrating specific non-cognitive skills into the general curriculum, there is a need to identify strategies to support teachers embedding goal-setting instruction across the academic day. Therefore, the purpose of this study was to investigate the effects of goal-setting instruction on academic engagement for middle school students at risk for academic failure. Research questions included the following:

**Research Question 1:** What was the effect of goal-setting instruction on students’ active academic engagement?

**Research Question 2:** What are teachers’ perceptions of the use of goal-setting instruction to increase students’ active academic engagement and ability to set educational goals?

**Research Question 3:** What are teachers’ perceptions of integrating goal-setting instruction into the general academic curriculum?

**Method**

**Participants**

Participants included one female and five male middle school students (ages 12–13) at risk for academic failure participating in seventh- and eighth-grade general education classrooms. Teachers at the middle school collaborated daily to review student performance on formative assessments in reading and writing and other data (e.g., behavior, attendance) to identify students at risk for academic failure and determine individual intervention needs. Participants included four White students (i.e., Kirk, Neil, Aubrey, and Zeb) and two Hispanic/Latino students (i.e., Emiliano and Frank). Emiliano and Frank were identified as English language learners, and Kirk and Emiliano were identified as students with specific learning disabilities. Two students (Kirk and Emiliano) participated in eighth-grade math/science class, two students (Neil and Aubrey) participated in seventh-grade math/science class, and two students (Zeb and Frank) participated in seventh-grade intensive reading class.

Prior to data collection, researchers obtained Institutional Review Board approval and written consent from the school’s principal, parents, and students indicating willingness to participate in the study. Participants met the following inclusion criteria: participants (a) were in the seventh or eighth grade, (b) participated in the general education classroom, (c) were identified by the teacher as a student at risk for academic failure exhibiting low rates of academic engagement, (d) had a good record of attendance (i.e., five or less absences during the previous school year), and (e) provided parent consent and student assent.

**Setting**

The study took place in a middle school located in the Pacific Northwest of the United States. The school was comprised of approximately 570 students and included a diverse student population (i.e., 62% White, 25% Hispanic/Latino, 8% multiracial, 2% Asian, 2% American Indian/Alaska Native, and 1% Black). The median class size was 30 students. Seventy percent of students were considered economically disadvantaged, 13% were students with disabilities, and 15% were English language learners. The school followed a school-wide model of Positive Behavior Interventions and Supports and provided additional targeted instruction in literacy and math using a multi-tiered system of support framework.

Specifically, the intervention took place in a Tier 2 classroom during three separate class periods. The Tier 2 classroom provided targeted academic support for students at risk for academic failure and included students with and without disabilities. The class periods included one seventh-grade math/science combination class, one eighth-grade math/science combination class, and one seventh-grade intensive reading class. The seventh- and eighth-grade math/science combination classes were 1 hr 50 min blocks, and the seventh-grade intensive reading class was a 50-min block. Class sizes ranged from 24 to 28 students. The classroom included a white board with information related to topics covered throughout the day, a bulletin board with a monthly calendar, and student assignment work bins. Math vocabulary was hung from the ceiling, and paragraph reading and writing strategies posters were hung on the windows and back wall. The classroom expectations were posted above the main door. The arrangement of student tables changed throughout the academic term. Tables were either organized in (a) rows facing the front of the room with two students per table or (b) rectangle groupings with four students (i.e., two on each side). The teacher’s desk was in the back right-hand corner of the room and the instructional assistant’s (IA) desk was in the front right corner of the room. The classroom also included a technology stand with computers, a projection screen, electric pencil sharpeners, and a hand washing station with water fountain.
Materials

Instructional materials were developed by the researchers (i.e., first and second authors) and included three mini-lessons and an instructional packet with student materials. Goal-setting theory and the Self-Determined Learning Model of Instruction (SDLMI) informed the development of content for the three mini-lessons. The SDLMI is a theoretical model for providing instruction in goal-setting and attainment to students with and without disabilities (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). The three mini-lessons focused on developing (a) a Specific, Measurable, Action-oriented, Realistic, and Timebound (SMART) goal, (b) an action plan to identify steps to achieve the SMART goal, and (c) a Goal Attainment Scale (GAS; Kiresuk, Smith, & Cardillo, 1996) to evaluate the progress toward the SMART goal. The instructional packet contained four comic strips created using ToonDoo© (Jambav, 2012), a free online software to develop comics. Comics depicted characters talking about goal-setting and sharing goals and action steps with each other. Comics were developed by an eighth-grade student in a neighboring school to ensure authentic content. Other student materials included a SMART goal graphic organizer, an action planning template, and values checklist (available from authors by request). Finally, data collection materials included (a) the Behavioral Observations of Students in Schools (BOSS) web application© (http://www.pearsonclinical.com/education/products/100000780/behavioral-observation-of-students-in-schools-boss.html#tab-details) accessed via researchers’ smart phones, (b) anecdotal data recording forms, (c) an instructional fidelity checklist, and (d) paper and pencils.

Interventionist and Data Collectors

Instruction on goal-setting was provided by the middle school teacher assigned to provide instruction in the Tier 2 math/science and intensive reading classes. The teacher was a White female, with 12 years of experience as a middle school teacher. She held dual licensure in K-12 general education and special education. The teacher was assisted by two IAs in the classroom. Both IAs were White females with approximately 6 years of experience as an IA. Four researchers served as the data collectors for the study. Two researchers (first and second authors) held PhDs in special education with an emphasis on secondary transition. The other two data collectors (third and fourth authors) were second-year doctoral students in special education with a primary focus of secondary transition. Both doctoral students held master’s degrees in special education and had taught students with disabilities for a combined 7 years.

Data Collection

Dependent variable. The dependent variable was a measure of students’ active academic engagement. Active academic engagement was defined as (a) asking questions; (b) responding to teacher’s questions; (c) engaging physically or verbally with materials, objects, and tasks; (d) contributing to assigned cooperative activities; (e) attending to independent work (e.g., writing, actively scanning material); (f) talking to peers about assigned academic work during a cooperative learning group; and (g) calling out the answer to a problem when the teacher permitted or initiated the behavior during instruction. A 10-s partial-interval recording system was used to determine students’ active academic engagement in each class. Active academic engagement was measured using a partial-interval recording system via the BOSS©. The BOSS© allows observers to monitor and record a student’s active and passive engagement during instructional activities, as well as a peer for comparison. The observation period was divided into a series of 10-s intervals. Using the BOSS©, the observer recorded whether the target behavior occurred at any time within the interval (Cooper, Heron, & Heward, 2007). A second observer was trained to conduct observations as a means of collecting inter-rater reliability for this dependent variable. All observers were trained and provided with a data collection procedures manual, including a task analysis for beginning, conducting, and ending a behavioral observation. In addition to partial-interval recording, data collectors were instructed to collect anecdotal notes on behaviors occurring during each observation session.

Academic engagement data were collected 4 to 5 days per week during each class period (i.e., seventh-grade math/science, seventh-grade intensive reading, and eighth-grade math/science) through direct observation in the classroom. All six students were observed during 20-min observation periods, and observations resulted in 96 complete intervals per target student and 24 intervals per peer comparison. The percentage of total intervals in which the academic engagement occurred for the target students was graphed.

Inter-rater reliability. Inter-rater reliability data were collected on the dependent variable (i.e., students’ active academic engagement) for all sessions, including baseline and post-intervention. Specifically, one observer (second author or fourth author) collected data using the BOSS© at the same time the researcher (first author or third author) collected data for a total of 44.0% (i.e., 52/117 sessions) of observations conducted across participants. Interval-by-interval comparison was used to determine agreements and disagreements. An agreement was recorded if both observers identically scored the interval as occurred or did not occur. A disagreement was recorded if intervals were not scored identically. Percent agreement was calculated by
dividing the number of agreements by the number of agreements plus disagreements multiplied by 100. Inter-rater reliability for the dependent variable ranged from 78.3% to 98.3% with a mean of 91.2%.

Social validity. At the conclusion of the study, social validity data were collected on teachers’ perceptions of (a) use of goal-setting instruction to increase students’ active academic engagement, (b) students’ ability to set educational goals, and (c) integrating goal-setting instruction into the general academic curriculum. To evaluate the acceptability, appropriateness, and effectiveness of the goal-setting intervention, the teacher and two IAs responded to a questionnaire. The questionnaire consisted of six open-ended questions related to utility of the goal-setting lessons, willingness to implement the goal-setting lessons in the future, and practicality of the goal-setting lessons as supplements to instruction. To validate the appropriateness of teaching procedures, the teacher and IAs were also asked to review the instructional materials and provide feedback on the acceptability of the intervention. A modified version of the Primary Intervention Rating Scale (PIRS; Lane et al., 2009) was used to assess the acceptability of procedures. The PIRS included eight questions requiring the teacher and IAs to rate on a 3-point Likert-type rating scale (i.e., 1 = no, 2 = not sure, 3 = yes).

Social comparison data. To validate the social importance of participants’ behavior change, social comparison data were collected in addition to social validity data. According to Cooper et al. (2007), social comparison data are collected on the behavior of a random sample of typical peers in the classroom and compared with each participant’s behavior. For this study, researchers randomly selected a typical peer to observe during each observation session across classes (i.e., using a seating chart, the seats were numbered and placed in an envelope, and for each observation the researcher pulled a number out of an envelope). The social comparison data were used as a formative assessment to determine how much behavior change occurred and how much improvement was needed. This helped determine whether or not change in students’ academic engagement was within the socially acceptable range within the general education classroom. Data were collected daily using the same partial-interval recording procedures for students’ active academic engagement.

Experimental Design

This study used a concurrent multiple baseline across participants design (Cooper et al., 2007) to evaluate the effects of the goal-setting intervention on students’ active academic engagement. In this design, baseline data were collected initially on all students, and the student pair with the lowest, most stable data entered intervention first. During baseline, a minimum of 5 data points were collected on each student pair to determine the level of active academic engagement prior to intervention. The first student pair, Kirk and Emiliano (i.e., students with lowest, most stable baseline data), entered intervention first, while baseline data continued to be collected on the other participants. Once Kirk and Emiliano showed an increase in academic engagement for three consecutive sessions following intervention, the intervention was delivered to the next student pair with the lowest, most stable baseline data (i.e., Aubrey and Neil). The final student pair (i.e., Zeb and Frank) entered the intervention phase using the same method.

Procedures

General procedures. The intervention was delivered over approximately five 30-min sessions during each class period (i.e., math/science and intensive reading). The classroom teacher implemented the intervention with the entire class using the goal-setting lessons developed specifically for this study. The teacher was trained on the goal-setting lessons during one 60-min session with two follow-up question and answer sessions. During the training session, the first author provided the teacher with an overview of the project and an introduction to using the curricular materials. The researcher provided the teacher with a researcher-made notebook, which included an overview of the basic components of the study and all instructional materials needed for each instructional session. The training session focused on adhering to the components of quality instructional design and using the instructional materials. The teacher conducted the goal-setting lessons over 4 to 5 days across 1 week during the eighth-grade math/science block, seventh-grade math/science block, and seventh-grade intensive reading class. The length of the goal-setting lessons ranged from 28 to 45 min (M = 34 min). Review and practice sessions occurred over 4 to 5 weeks during post-intervention and lasted approximately 5 to 10 min.

Baseline. Prior to beginning the intervention, the research team collected baseline data on students’ active academic engagement. Data were collected on two students identified by the teacher as at risk for academic failure and exhibiting low rates of academic engagement in each class, in addition to a randomly selected peer for comparison. Classroom instruction during baseline was “business as usual” and included instruction related to academic content only (i.e., math, science, and reading).

Goal-setting lessons. Goal-setting lessons consisted of three mini-lessons taught over 1 week with 4 to 5 weeks of review and practice. The mini-lessons were designed to be integrated in the general education content (e.g., before, during, and
following academic instruction) and were taught to the whole class using whole-group instruction. All mini-lessons were scripted, followed a model-lead-test format (i.e., I do, we do, you do), and included the necessary materials to conduct each lesson. All lessons followed the same structural format and included the following components: (a) student objectives, (b) materials, (c) pre-planning considerations, (d) lesson script, (e) guided practice, (f) independent practice, and (g) evaluation. Lessons were intended to help students develop (a) SMART goals, (b) an action plan to achieve those goals, and (c) a GAS (Kiresuk et al., 1996) to evaluate progress toward goals to improve students' academic engagement. The instructional scripts were designed to guide the teacher through instruction and identify when a teacher was to say or do something, and when a student was to respond. Lessons also provided teachers with prompts and positive/corrective feedback for each response given by a student. Instructional scripts included prompts for the teacher (i.e., bold in brackets) to indicate when the teacher was to do something, such as point to the SMART goal card or give behavior-specific praise (see Figure 1 for sample lesson script).

The three goal-setting lessons were taught over approximately 5 days depending on the class. Each class progressed at a different pace based on student needs. The first goal-setting lesson focused on developing a SMART goal. During this lesson, students learned the guidelines for writing a SMART goal, analyzed goals to determine whether the goals met SMART goal criteria, and defined two SMART goals (i.e., one academic, one behavior) to help them achieve success. The second goal-setting lesson focused on outlining action steps needed to achieve the SMART goals set during the first lesson. During this lesson, students identified barriers (e.g., sitting close to friends in class, no support with homework) that would inhibit them from meeting the action steps and set deadlines for achieving the SMART goals. Finally, the third goal-setting lesson focused on developing a method for evaluating progress and determining if SMART goals were attained. During this lesson, students developed a GAS.
To support delivery of instruction, an instructional calendar was provided to the teacher, which included estimated timelines for intervention and data collection. The timeline also included estimated days and times for reviewing SMART goals and action plans with students. The teacher was expected to provide a review of SMART goals and action plans on a weekly basis for up to 5 weeks following the intervention. The teacher was given the option of determining the most appropriate time to deliver the instruction and infuse review and practice within the class periods. The timelines were adjusted based on the school’s academic calendar and other school-wide events (e.g., Alert, Lockdown, Inform, Counter, Evacuate training) that would inhibit delivery of the intervention by the teacher and data collection by researchers (i.e., not permitting non-district employees on the school campus).

**Treatment fidelity.** Treatment fidelity data were collected to assess teacher implementation of the goal-setting lessons. A treatment fidelity checklist was used for the goal-setting instructional procedures. Treatment fidelity was established by calculating the percentage of items on the treatment fidelity checklist presented correctly by the teacher during intervention. The first author observed 50% of intervention sessions distributed evenly across classes to assess treatment fidelity. Treatment fidelity was 100%. To assess inter-rater reliability for treatment fidelity, the second author observed 30% of the intervention session at the same time as the first author. Item-by-item scoring was used to determine fidelity for inter-rater reliability. An agreement was recorded if both observers identically scored the same items on the fidelity checklist. A disagreement was recorded if items were not scored identically. Percentage agreement for each fidelity checklist was calculated by dividing the number of agreements by the number of agreements plus disagreements multiplied by 100. Inter-rater reliability for treatment fidelity was 100%.

**Results**

Results for each student are included in Figure 2. Based on visual analysis of graphed data, results indicated a functional relation between goal-setting lessons and students’ active academic engagement. Five participants (i.e., Kirk, Emiliano, Neil, Aubrey, and Zeb) maintained levels of academic engagement above baseline following intervention for an average of 16.2 sessions (range = 11–20 sessions). Baseline data for one participant (i.e., Frank) were collected; however, due to non-stable baseline and absence during intervention, no post-intervention data were

**Figure 2.** Percentage of intervals of active engagement time for participants.

Note. Break in axis indicates absences for students; dotted line in baseline phase indicates the 46.0% social comparison data collected on random sample of typical peers to identify the threshold for socially acceptable academic engagement. GSL = goal-setting lessons; GAS = Goal Attainment Scale.
collected. Data for Frank have been included because these data provide additional evidence of experimental control. When considering the results of this study, it is important to note that these are students who have high variability related to academic engagement as a hallmark to their daily classroom experiences.

Kirk
During baseline, Kirk’s level of academic engagement remained at a low level with zero trend and high variability ranging from 9.4% to 36.5% (M = 18.8%). Following the goal-setting lessons, Kirk’s level of academic engagement showed a change in level with zero trend and high variability ranging from 27.0% to 84.4% (M = 51.3%). However, Kirk’s level of academic engagement became stable after the second instructional review and remained above baseline and showed an increasing trend.

Emiliano
During baseline, Emiliano’s level of academic engagement remained at a low level with zero trend and variability ranging from 16.7% to 35.4% (M = 27.2%). After the goal-setting lessons, Emiliano’s level of academic engagement showed a change in level with zero trend and high variability ranging from 26.0% to 70.2% (M = 52.6%).

Neil
During baseline, Neil’s level of academic engagement remained at a low level with zero trend and variability ranging from 12.5% to 45.8% (M = 24.9%). After the goal-setting lessons, Neil’s level of academic engagement showed a change in level with a slightly upward trend and high variability ranging from 11.5% to 70.8% (M = 40.7%).

Aubrey
During baseline, Aubrey’s level of academic engagement remained at a low level with zero trend and high variability ranging from 3.4% to 41.7% (M = 20.7%). After the goal-setting lessons, Aubrey’s level of academic engagement showed a change in level with high variability and no trend ranging from 28.1% to 67.7% (M = 48.9%). Aubrey was absent 6 days during post-intervention and did not receive two instructional review sessions.

Zeb
During baseline, Zeb’s level of academic engagement remained at a low level with zero trend and low variability ranging from 1.0% to 36.5% (M = 17.7%). After the goal-setting lessons, Zeb’s level of academic engagement showed a change in level with zero trend and high variability ranging from 14.6% to 72.9% (M = 42.6%).

Frank
During baseline, Frank’s level of academic engagement showed an increasing trend and high variability ranging from 0.0% to 65.6% (M = 34.9%). Data collection for Frank was discontinued due to a non-stable baseline and absence during intervention. Data for Frank have been included because these data provide additional evidence of experimental control.

Social Validity
According to the teacher and IAs’ perceptions of the goal-setting intervention, each liked the instructional procedures to teach the intervention and indicated willingness to continue use of the intervention in the school setting. The teacher specifically indicated that it was easy to integrate the goal-setting lessons within the general academic content. The teacher and IAs also indicated they would suggest the intervention to other teachers. The teacher indicated the goal-setting intervention would be beneficial for students at risk for academic failure in middle school, but the two IAs responded as “not sure.” One of the IAs commented the intervention was beneficial for some students, but others may need to have a different structure. Furthermore, both teacher and IAs indicated they were not sure the intervention was effective for students to retain and generalize the goal-setting to other classes. The teacher and IAs felt students in the classroom would benefit from the opportunity to use goal-setting skills on a regular basis across all academic classes.

Social Comparison Data
During baseline, social comparison data collected on a random sample of typical peers, ranged from 4.2% to 87.5% with a mean of 46.0%. The mean baseline percentage (i.e., 46.0%) was used to identify the threshold for socially acceptable academic engagement across the three classes prior to intervention. Three students (i.e., Kirk, Emiliano, and Aubrey) academic engagement increased to a socially acceptable range following intervention. While academic engagement increased following intervention for Neil and Zeb, academic engagement only approached a socially acceptable range, not quite reaching the threshold. Again, it is important to note that these are students who have high variability related to academic engagement as a hallmark to their daily classroom experiences. It is important to note that overall social comparison data collected post-intervention on typical peers showed a 9.6% increase over baseline (i.e., range = 12.5–95.8; M = 55.6%).
Table 1. Cost Analysis of Intervention.

<table>
<thead>
<tr>
<th>Task</th>
<th>Hours</th>
<th>Hourly rate</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional materials</td>
<td>NA</td>
<td>NA</td>
<td>US$97.00 (one-time expense)</td>
</tr>
<tr>
<td>Copying student materials</td>
<td>0.5</td>
<td>US$10.00</td>
<td>US$5.00 (one-time expense)</td>
</tr>
<tr>
<td>Training and scripted lessons</td>
<td>1.0</td>
<td>US$26.25 (wage + benefits)</td>
<td>US$26.25 (one-time expense)</td>
</tr>
<tr>
<td>Instructional time for students to increase academic engagement</td>
<td>12.6</td>
<td>US$26.25 (wage + benefits)</td>
<td>US$330.75</td>
</tr>
</tbody>
</table>

Note. Rate for copying is based on using a paraprofessional; other rates are based on using a certified teacher.

Discussion

The purpose of this study was to investigate the effects of goal-setting instruction on active academic engagement for middle school students at risk for academic failure. Visual analysis of graphed data indicated a functional relation between the goal-setting lessons and students’ active academic engagement (i.e., five demonstrations of basic effect at three different points in time). Five participants maintained levels of academic engagement above baseline during the post-intervention phase for 16 to 20 sessions.

Overall, results of this study support previous research, indicating goal-setting instruction is effective in improving academic performance of students (e.g., Bruhn et al., 2016). It also supports the notion that non-cognitive skills act as a critical lever for improving students’ academic engagement and performance in middle school settings (Brown et al., 2008; Farrington et al., 2012). First, this study provided evidence that incorporating goal-setting instruction into the academic curriculum may be an effective method to improve students’ non-cognitive skill development and academic engagement (Farrington et al., 2012; Garcia, 2014; OECD, 2015). Specifically, this study demonstrated evidence that goal-setting instruction can be seamlessly embedded into academic subject areas (e.g., moving from academic content [math, science, reading] to goal-setting instruction and vice versa). Typically, the teacher embedded goal-setting instruction between warm-up and review, and then, transitioned into the academic content for the day.

Second, findings from this study lend additional support for embedding goal-setting instruction into academic content. Goal-setting theory suggests that when a student self-sets specific goals, he or she is more likely to work toward those goals, which ultimately improves performance (Schunk, 2003; Tollefson, Tracy, Johnsen, & Chatman, 1986). As with studies included in Bruhn et al. (2016), results of this study demonstrated that when students set goals, whether academic or behavioral, academic engagement improves and can be maintained at socially acceptable levels. Based on results of this study, findings support goal-setting theory and provide additional evidence that embedding goal-setting within the general curriculum can be an effective strategy for improving and promoting students’ active academic engagement (Schunk, 2003; Wehmeyer et al., 2000).

Finally, a study is enhanced when the (a) dependent variable is considered socially important, (b) magnitude of change in the dependent variable resulting from the intervention is measured as socially important, (c) implementation of the independent variable is described by the author(s) as practical and cost-effective, and (d) the independent variable is implemented by typical intervention agents, in typical physical and social context (Horner et al., 2005). In this study, data were collected by the teacher and IAs to determine the importance of learning how to set goals. Similar to previous findings (Education Week Research Center, 2014; Stang et al., 2009), both the teacher and IAs felt the goal-setting skill development was very useful and important to school success. Although the teacher and IAs felt the goal-setting lessons were good, they did indicate there may be a need to differentiate instruction for certain students. According to the results of the intervention acceptability survey, the methods used in this intervention were practical and appropriate for middle school students at risk for academic failure.

In addition to the intervention being appropriate for the middle school classes included in this study, the cost involved in creating the instructional materials, including providing instructional content, was minimal (Horner et al., 2005). Table 1 provides a cost analysis of the intervention. Finally, Horner et al. (2005) stated social validity of a study is strengthened by implementation of the independent variable by typical intervention agents, in a typical social and physical context. To address this, this study used a middle school teacher, as the interventionist, to deliver the instruction, and integrated the intervention into existing classroom general academic content and procedures.

Limitations and Implications for Future Research

Although the results of this study were positive, there were limitations. First, this study included four White students and two Hispanic/Latino students in a metropolitan area; therefore, generalization to other populations of students or settings is limited. Future studies should include students from a variety of cultural backgrounds across multiple
settings (e.g., rural, suburban). Second, data collection was limited to direct observation of active academic engagement, and passive engagement data were only collected anecdotally. Anecdotal records collected during behavior observations suggested students were passively engaged during some of the observation sessions during which students were marked as not engaged. For example, during one observation session researchers noted students were watching a video. However, this could not be counted as active engagement, it was considered passive engagement (e.g., listening to a lecture, listening to a video). If students were watching a video during the observation, students were only marked as actively engaged if students were also taking notes on what was being shown on the video. The same applied if students were reading silently; students would only be marked actively engaged if they were taking notes on what they were reading. Therefore, future research should collect direct observation data on both active and passive academic engagement to gain a clearer picture of total classroom academic engagement. Understanding the amount of time students are passively and actively engaged can assist researchers in developing interventions that target both active and passive engagement.

In addition, researchers should consider other contextual factors when collecting data on active academic engagement (Steinbrenner & Watson, 2015). Throughout this study, a number of contextual factors affected students’ level of active academic engagement. Based on anecdotal notes collected across observation sessions, a number of factors (e.g., visitors coming in and out the classroom, room temperature, seating arrangement, teacher proximity, student-directed practices) seemed to influence students’ levels of engagement. For example, anecdotal notes collected during observations of Emiliano indicated that academic engagement increased when the teacher was within 2 ft of his desk; as she moved further away, Emiliano demonstrated off-task behavior or passive engagement. When teacher’s attention moved away from the target student and focused on other students or instructed IAs, students either (a) worked quietly on the given task, during which they would have been marked as actively engaged; (b) talked to peers about topics other than the lesson, which was considered not engaged; or (c) passed time by silently reading, which was counted as not engaged. Future research should focus on identifying key contextual factors that influence academic engagement and identification of methods and strategies to control for these factors.

**Implications for Practice**

The results of this study have several implications for practice. First, in this time of standards-based education, teachers struggle to find opportunities to teach students at risk for, or with disabilities, both academic and non-cognitive skills to assist students with persisting in secondary school and ultimately in life (Morningstar et al., 2015; Stang et al., 2009). Teachers are often required to document how instructional lessons relate to academic content standards (e.g., CCSS). This study provided one method to integrate goal-setting instruction within the CCSS. For example, CCSS. ELA-LITERACY.SL.8.1.B focuses on developing decision-making skills and tracking progress toward specific goals and deadlines. The goal-setting lessons used in this study support students in developing (a) academic and behavioral goals, (b) action plans to achieve those goals, and (c) a monitoring system to evaluate progress through the development of a GAS.

Furthermore, understanding specific contextual factors and collecting student engagement data can inform instructional design. For example, if teachers have documented high levels of student non-engagement due to numerous classroom interruptions, clear expectations and instructional activities (e.g., guided notes for silent reading) could be developed to ensure students remain engaged to minimize off-task behavior. Although teachers cannot control all contextual factors, teachers should be mindful of these potential contextual factors during lesson planning and instruction to minimize the impact on engagement and student learning.

Finally, resources are readily available to assist in developing all students’ goal-setting skills, but typically modifications are needed to integrate goal-setting skill instruction into the general curriculum. This study included scripted lessons that included reinforcement and error correction procedures that were easily integrated into existing classroom procedures. Based on teacher feedback, the lessons proved to be easy to follow and were an effective structure for the teacher to help ensure students could (a) set SMART goals, (b) make action plans to achieve goals, and (c) develop a GAS to monitor progress toward goals. Considering the findings from social validity results, the teacher and two IAs liked the instructional procedures of the intervention, but were unsure of the effectiveness of the intervention for students for which direct observation data were not collected. Therefore, it will be critical to collect formative assessment data throughout the lessons to identify what components of the instructional procedures worked well for what specific students to plan for differentiation of instruction.

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