

**The Quantification of the Concept of Engagement in Physical Education**

by

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## Abstract

The purpose of the first study was to develop and validate a new self-report survey used to determine the level of agentic, behavioral, cognitive, and emotional engagement of eighth and ninth grade boys and girls in physical education. Much of the development was driven by work completed by Reeve and Tseng (2011), and by Reeve (2013). Two hundred thirty-one surveys were administered to 231 eighth and ninth grade boys and girls, and 220 surveys were included in the analysis. Results from the confirmatory factor analysis (CFA) were used to determine the goodness of fit showed good factor structure and all of the fit indices ( $\chi^2/df$ , GFI, CFI, NFI, SRMR, & RMSEA) met a good to an acceptable level. Of the original 21 items in the scale, 18 items were part of the final model. The final model showed to have an expectedly high correlation between agentic and cognitive engagement which have an impact on the discriminant validity of the structure.

The purpose of the second study was to design a reliable observation instrument and validate that instrument. The expressed intent of this instrument was to measure student engagement levels in physical education and to create a dependent variable that could be used by teachers and researchers. Semi-Structured interviews with 20 experts in the field of physical education were conducted to create an operational definition of the term engagement. Experts were asked questions about targeted students in 11 physical education lesson video clips that lasted between 15 and 40 seconds and the descriptions given were analyzed for frequency of use. These descriptive words were then used as the basis for the observation instrument and the

criteria for proper coding of the behavior of the targeted students. Inter-rater reliability percentages were high for all of the attempts and the determination that the instrument could be used effectively in the field. A training manual with coding conventions was also created to allow new users the opportunity to become efficient and effective observers when using the observation tool in the field.

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## **Chapter I**

### **Examining the Concept of Engagement in Physical Education**

In 1965, the Elementary and Secondary Education Act was signed into law and was considered to be the cornerstone of President Lyndon B. Johnson's "War on Poverty" (McLaughlin, 1975). With its goal of providing equal access to quality education and establishing high standards and accountability (Profile ESEA, 1967), funds were authorized for professional development, instructional materials, and resources to support educational programs, and the promotion of parental involvement. The federal government reauthorized the act every five years since its enactment to the point where the reauthorization of ESEA by President George W. Bush was known as the No Child Left Behind (NCLB) Act of 2001. The NCLB Act was designed to increase the role of the federal government in holding schools responsible for student learning, and under this new law states were required to test students in reading and math in grades three through eight and again in high school.

The NCLB Act received considerable criticism from the states, school systems, schools, teachers, administrators, and the general public. One of the main criticisms was the reliance on standardized test scores to evaluate the teachers, schools, and students (Rebora, 2011). It is this reliance that some believe has led to the reduction in class time for subjects other than the core academic subjects which included math, reading, and science. Health and physical education were also excluded from the core academic subjects and consequently little if any federal funding was given to the subjects (SHAPE America, 2016).

In December 2015, a new reauthorization of the Elementary and Secondary Education Act was passed into law by President Obama as the Every Student Succeeds Act (ESSA). ESSA was different from the previous NCLB Act in several ways. First, the law defined health and physical education as part of a well-rounded education. Second, the ESSA saw a shift in power from the federal government to the state governments, the latter being given the authority to determine their indicators for accountability. The new law does not require states to set up teacher-evaluation systems based in significant part on students' test scores. States need to set up accountability systems with four indicators. Three of the indicators are required to be academic, while the fourth can be focused on areas such as student engagement, teacher engagement, or whatever the state deems is needed (Blad, 2016).

It is the purpose of this dissertation to focus on the concept of student engagement given that research has begun to highlight its critical role in student achievement and learning (Trowler & Trowler, 2010). Further, levels of school engagement seem to accurately predict school dropout and completion based on data from attendance, behavior, academic performance, and attachment to school. (Alexander, Entwisle, & Horsey, 1997). As a *process* variable, student engagement would seem critical for the achievement of the *product* variables that are so valued by physical educators and are reflected in SHAPE America's goals for the development of physically literate individuals (SHAPE America, 2014). That is, it is reasonable to expect that for an individual to achieve high levels of motor competence, accrue health-enhancing levels of moderate to vigorous physical activity, as well as knowledge related to fitness and movement performance, there would need to be a certain level of engagement in class activities. Engagement, in this case, follows the definition provided by, Skinner, Kindermann, and Furrer (2009) as active, effortful, goal-directed interaction with one's learning environment.

What needs to be said at this point, however, is that the conceptualization of engagement within classroom research in general, and in physical education research in particular, has been notably uneven. That is, while a search of the terms “physical education” and “engagement” provides more than 40 papers using these terms in their titles, the act of engagement is operationalized in a myriad of ways. What is missing is an all-inclusive inquiry into the concept of student engagement with the goal being the development of an operational definition that would allow researchers in sport pedagogy to connect from a common starting point.

To address the ad hoc manner in which engagement has been addressed within physical education discourse, this research is organized around five critical issues. These include: (a) examining the various conceptions of engagement, (b) describing those instruments that have been used to measure student engagement, (c) examining the conceptualization of engagement in physical education, (d) proposing tools that accurately measure student engagement in physical education, and (e) identifying possibilities for future research on engagement within physical education.

### **Conceptions of Engagement**

Engagement is similar to other constructs such as “happiness” in that it is not easily defined. In that way, it is similar to Supreme Court Justice Stewart’s comment that “I know it when I see it” when referring to the concept of obscenity (*Jacobellis v. Ohio*, 1964). Indeed, for more than 30 years, psychologists and researchers in education applied the term engagement to some different contexts to conceptualize engagement in hopes of defining the term. These include, but are not limited to, engagement, engagement in schoolwork, academic engagement, school engagement, student engagement in/with school, and participation identification. We

argue that this is due mostly to the context in which the definition is applied. As a result, there have been subtle differences in the manner in which “being engaged” is conceptualized.

Over time, however, concerning the construct of engagement, there has been a development of some consensus. Initially, some researchers viewed engagement as academic and social success as it related to dropping out of school. By consequence, research studies seemed to be more concerned with student experiences of the school on a macro level, and examples of engagement included participation in extracurricular activities or involvement in school-sponsored events. Over time, the focus began to shift to student behavior in the classroom, to where more recently, researchers have begun to examine student behavior in classroom tasks and participation in lesson content. Even so, the term “engagement” within research is still without a clear and consistent conceptual definition (Appleton et al., 2006).

Table 1.1 shows a historical progression of the conceptualization of engagement. Initially, engagement was first considered as having two components, behavioral (participation in activities in class and school) and affective (feeling of belonging; Finn, 1989). Fredricks et al. (2004) expanded these to add a cognitive component, which they referred to as a personal investment into three categories of engagement: behavioral - regarding participation in academic and social activities, emotional - referring to the positive or negative interactions with peers and teachers, and cognitive - personal investment and striving for mastery achievement. Reschly and Christenson (2006) proposed an additional subtype as “psychological” to represent the feeling of belonging to the school.

As a starting point for this paper, we adhere to the Appleton et al. (2008) notion that engagement is a multidimensional construct involving behavioral (effort and active involvement), cognitive (self-regulation and investment), and emotional (positive attitude and

interest) aspects. Notwithstanding, however, it is essential to acknowledge that Reeve and Tseng (2011) have noted that some students become so deeply involved in the lesson that they contribute to the evolution and growth of the lesson, a concept they labeled as “agentic engagement.” More specifically, student actions indicating agentic engagement include

Table 1.1

*Historical Progression of the Conceptions of Engagement*

1980's	1990's	2000's	2010's
Two dimensional – behavioral and emotional	Two dimensional – behavioral and emotional	Three dimensional – affective, behavioral, and cognitive. Four-dimensional - participation, belongingness, teacher relationships, and achievement	Four-dimensional - behavioral, emotional, cognitive, and agentic
No theoretical framework	Focused on drop-out rates	Focused on student engagement in the classroom	Students engagement in class activities and tasks
No means of measuring	Seen as how students interacted with the school	No focus on student engagement in the task	How students drive the lesson with the teacher
Focused on dropout rates		Seen as student participation in routine school activities	The distinction made between engagement in school and engagement in learning
Seen as participation in school		Attendance, following rules, extra-curricular activities	

expressing their preferences, asking questions, and letting the teacher know what they like, need, and want.



## **Motivation and engagement**

In following this idea of engagement as a dynamic, synergistic system of constructs (Lawson & Lawson, 2013), it is important *not* to equate engagement with motivation. This distinction is particularly the case when one considers an individual can be motivated and still not display engagement (Connell & Wellborn, 1991; Furrer & Skinner, 2003). Rather, students' motivation might better be seen as a precursor to engagement as motivation is not enough for one to be engaged (Appleton et al., 2008; Lawson & Lawson, 2013; Skinner et al., 2008).

Despite these assertions, many researchers in physical education have indeed used motivation and engagement interchangeably. For example, Maehr and Meyer (1997) identified different components of motivation that include direction, intensity, persistence, and quality which add up to outcomes. This approach connected motivation to psychological mediators that include autonomy, competence, and relatedness (Hagger & Chatzisarantis, 2007). This connection is in direct conflict with the belief that engagement implies how involved and active an individual is in a given task (Reeve, Jang, Carrell, Jeon, & Barch, 2004).

## **The Measurement of Engagement**

To date, three measures have been used as the predominant sources of data on student engagement within classroom settings. Those measures include teacher reports, student self-report questionnaires, and observational protocols.

### **Teacher reports**

Three main instruments rely on the teachers as informants in reporting student engagement. This theory is based on the idea that teachers understand their students and can subjectively identify when their students are engaged or not. For example, the Teacher Engagement Report Form-New (TERF-N) requires the teacher to answer 10 items for each

student using a 5-point Likert-type scale (Hart, Stewart, & Jimerson, 2011). This survey focuses on affective (seems interested in school), behavioral (participated in class discussions/activities), and cognitive (demonstrates appropriate effort for a task) engagement of students. Similarly, the Research Assessment Package for Schools (RAPS) is designed to measure student engagement by three populations: the students, parents, and teachers. The RAPS-T is focused explicitly on teacher-reported components of student engagement in their classroom (Connell & Wellborn, 1991). Teachers report on three items (students' attentiveness, coming to class prepared, and doing more than required) of each student based on a 4-point Likert scale to determine the extent to which students are engaged (Klem & Connell, 2004).

At a subject-specific level, the Reading Engagement Index (REI) is an instrument that measures student classroom engagement according to the perspective of the teacher. Given that an engaged reader should display behavior engagement (reads frequently), cognitive engagement (uses strategies in reading), and motivational engagement characteristics (likes to read) (Fredricks et al., 2011), teachers are asked to rate students on a scale of one to four (not true to very true) on a total of eight items. Sample items include (a) often reads independently, (b) reads favorite topics and authors, (c) distracts easily in self-selected reading, d) and works hard in reading.

### **Student self-report questionnaires**

While teacher reports provide global accounts of student's engagement (mainly behavioral engagement), a number of researchers have emphasized that cognitive and psychological engagement is less observable than the other types of student engagement, and that these indicators of engagement must come from the perspective of the student and not the teacher (Appleton et al., 2006). For example, a sense of belonging is considered to be a

psychological indicator of belonging, and as such, there is no visual way to determine if a child believes they belong in school or not without directly asking them.

Perhaps the most frequently cited (over 500) and primary self-report measurement of classroom engagement is the “engagement versus disaffection with learning” instrument (Skinner et al., 2008). This survey evaluates behavioral engagement components such as students’ efforts, attention, and persistence during learning activities. For example, “When I’m in class, I listen very carefully.” In comparison, behavioral disaffection is addressed by items concerning lack of effort and withdrawal from learning (e.g., “When I’m in class, I just act like I’m working”). Finally, emotional engagement and disaffection are assessed by items that tapped into students’ motivated participation and alienation during learning.

Building on Skinner et al.’s (2008) “engagement versus disaffection” instrument, Reeve and Tseng (2011) devised a self-report questionnaire that assesses cognitive, behavioral, and emotional engagement, but which also includes items relating to agentic engagement. While Reeve and Tseng used previously validated questionnaires to assess the original three components of engagement to measure agentic engagement, they conducted two studies (Jang, Reeve, & Deci, 2010; Reeve et al., 2004) to identify how middle and high school students contributed to the flow of classroom instruction. Five items were then constructed and included questions such as, “I offer suggestions about how to make class better.” Participants can answer each question with responses ranging from “strongly disagree” to “strongly agree.”

### **Observational protocols**

The Behavioral Observation of Students in Schools (BOSS; Shapiro, 2011) is perhaps the most widely used observational tool that assesses students’ on-task and off-task behavior during class work. The BOSS was initially developed by school psychologist Edward Shapiro to screen

children who were at risk for academic failure and to evaluate the effectiveness of drop-out interventions (Shapiro, 2011). Using the BOSS, examiners observe the classroom for 20 to 30 minute time segments over two to three days. Student engagement is observed and coded every 15 seconds using five categories: active and passive engagement, off-task verbal and motor, and off-task passive.

Although the BOSS appears to be very reliable in measuring students behavioral and academic engagement, it provides little to no information concerning the other components (cognitive and psychological) that determine engagement. Additionally, a limitation of the BOSS is that its goal is to assess the level of success/failure of instruction based on student behavior. The primary focus of BOSS is not to determine the level of an individual student's engagement in the lesson but rather the effectiveness of the lesson in keeping the students engaged.

### **The Conceptualization of Engagement in Physical Education**

It was mentioned in the introduction to this paper that the conceptualization of engagement within research on physical education has been particularly uneven. Support for this statement comes from an analysis of the 40 papers that have appeared in the research literature that includes both "physical education" and "engagement" in their titles. Of these, only 24 were data-based publications that used the term "engagement" as a basis for their research.

A more detailed analysis of these papers reinforces the unevenness in the application of the term and provides further evidence of the need for this essay. For example, only 50% of the papers provided an actual definition of engagement itself, and slightly over half (56%) used instruments to measure students' engagement. Of these, the most common instrument consisted of tools used in classroom research and modified these to measure engagement in the physical education instructional setting. For example, Skinner et al.'s (2008) engagement versus

disaffection tool has been adapted by Shen, McCaughtry, Martin, Fahlman, and Garn (2012) to measure both behavioral and emotional dimension in students and teachers in the physical education classroom setting. One example of a behavioral question for teachers was, “this student tries hard to do well in my class.” For the student, the equivalent question was “In physical education class, I work as hard as I can.” Most recently, Garn, Simonton, Dasingert, and Simonton (2017) used four modified items from Skinner et al.’s (2008) engagement versus disaffection tool to measure engagement toward class-related activities in physical education.

Another classroom-based tool that measures engagement that has been modified for the physical education classroom setting is Resnick et al.’s (1997) engagement questionnaire. Bevans, Fitzpatrick, Sanchez, and Forrest (2010) modified Resnick et al. (1997) in response to previous research that suggested students should make several attempts to master skills, display enjoyment, and show a preference for physical activity. With these aspects in mind, Bevans et al. (2010) created a physical education engagement scale composed of questions that addressed a students’ behavioral, cognitive, and affective engagement.

What is less frequent in physical education research is the use of observation instruments to measure student engagement, with only 2% of papers using some measure other than student self-report. Of these, the most robust was that of Aelterman et al. (2012), who conducted a study to objectively measure students’ physical activity levels and engagement as a function of between-class and between-student differences in motivation toward physical education. In lieu of the typical pen and paper questionnaire approach, these authors observed videotapes of physical education classes to measure engagement. Grounded in Reeve et al.’s (2004) agentic engagement scale, trained observers rated students’ overall engagement using five items and scored them from zero (never) to three (always). The five items included: “The students pay

attention during this physical education class,” “The students put effort in the activities and exercises,” “The student asks questions about the exercises,” “The students don’t give up easily during challenging tasks,” and “The students seem to enjoy this physical education class.”

Indeed, of the aforementioned instruments used to measure engagement in the physical education setting, this scale appears to be the most auspicious.

### **Proposed Measurement Tools for Quantifying Engagement in Physical Education**

It is at this point where we propose the need for researchers in physical education to have access to two forms of assessment of student engagement during lessons. We suggest that one of these be a student self-report survey designed to measure students’ perceptions of their level of engagement in the four domains (agentic, behavioral, cognitive, emotional), while the second is a behavioral observation tool that seeks to quantify the extent to which students are either on or off-task, and then the extent to which they demonstrate observably engaged effort. The section that follows provides a preliminary account of the development of those instruments.

#### **Development of a student self-report of engagement for physical education**

This genesis of this survey lies in that of Reeve and Tseng’s (2011) self-report questionnaire that assesses cognitive, behavioral, emotional, and agentic engagement. In that survey, the authors created 22 questions which each used the same 1-7 bipolar response scale that ranged from “strongly disagree” to “strongly agree” with “agree and disagree equally” serving as the midpoint (4). Reeve and Tseng (2011) borrowed or modified items from previously validated surveys of behavioral engagement (Miserandino’s 1996 task involvement questionnaire), emotional engagement (Wellborn’s 1991 conceptualization of students’ emotional engagement) and cognitive engagement (Wolters’ 2004 learning strategies questionnaire). Given that the agentic items were new, Reeve and Tseng (2011) translated

concepts from their “Hit-Steer Observation System” (Jang et al., 2010) into five items they believed to represent the most frequent ways that students proactively and constructively engage themselves within lessons. Two additional items from Reeve’s (2013) more recent conception of agentic engagement were included.

Using the Reeve and Tseng (2011) instrument, we conducted a confirmatory factor analysis with a sample of near 300 junior high school students in which our version substituted the string “physical education” in cases where the original referenced “in class,” “during class,” or “in school.” After completing a Confirmatory Factor Analysis, the original 21 item scale was reduced to 18 items (five agentic, four cognitive, five behavioral, four emotional), producing absolute fit indices showing a good fit for this model.

### **Development of an observational measure of behavioral engagement for physical education**

The observation system proposed for the measurement of student engagement in physical education is designed to quantify the extent to which students are either on or off-task and then the extent to which they demonstrate observably engaged effort. Based upon a 10-second “observe/record” protocol, the observer makes four decisions in a specific sequence. These relate to the (1) lesson context, (2) motor or non-motor behavior, (3) engagement, (4) and degree of engaged effort. Figure 1.1 shows the progressive decision tree. A different student is then randomly selected following five scoring cycles (i.e., every five minutes).

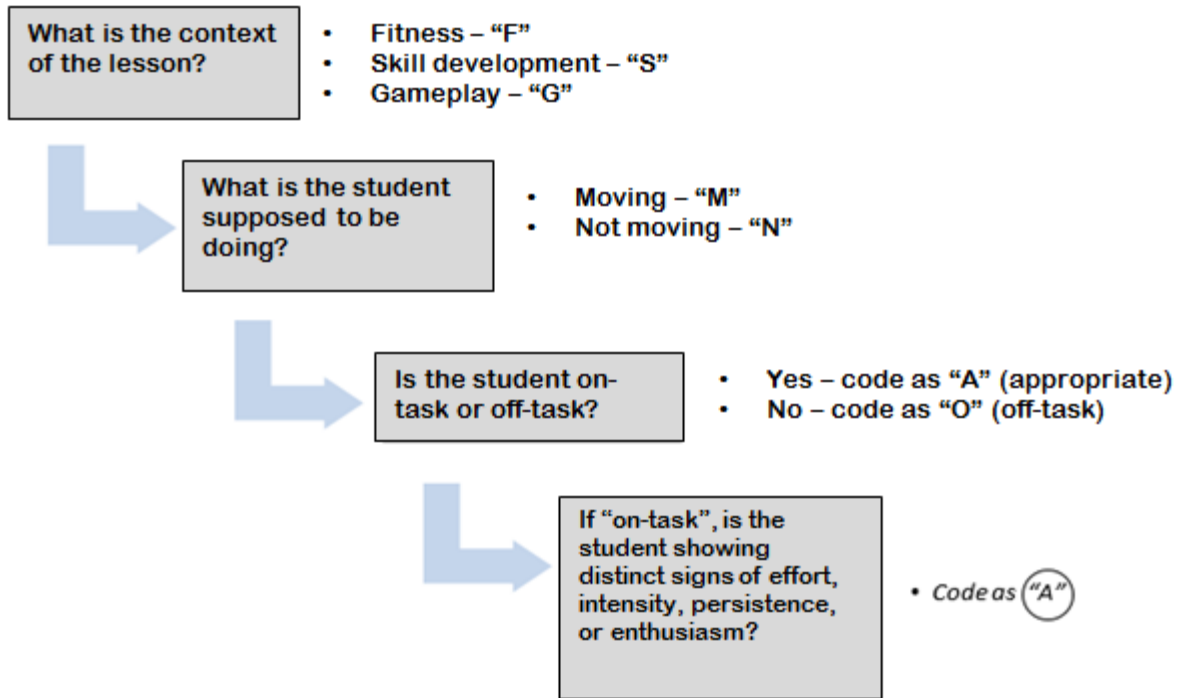


Figure 1.1. Progressive Decision Sequence Tree



## CHAPTER II

### REVIEW OF LITERATURE

#### **Theoretical Ideas for Engagement Conceptualization**

Engagement is similar to other constructs in that it is not easily defined. In a landmark Supreme Court ruling *Jacobellis v. Ohio* (1964), Justice Stewart used the phrase “I know it when I see it.” The justice was referring to the concept of obscenity. In that regard, defining the concept engagement is similar to defining the concept of obscenity. Most will say “I know it when I see it” but can’t describe the concept well enough for someone to understand and recognize engagement. Engagement is a topic of discussion and research, but few can articulate an operational definition that can be measured. More than 30 years ago psychologists and researchers in education had attempted to define the concept of engagement. These definitions have included but are not limited to “engagement, engagement in schoolwork, academic engagement, school engagement, student engagement, student engagement in academic work, student engagement in/ with school, and participation identification” (Smiley & Anderson, 2011, p. 18; Appleton, Christenson, & Furlong, 2008). Limited agreement exists on the definition due mostly to the context in which the definition is applied. To illustrate this, what one sees as engagement in math is not the same as what one would see in physical education. The purpose of this literature review is to describe the theoretical ideas behind how engagement has been conceptualized, provide samples of how engagement has been measured in the educational literature, and how the concept of engagement has been utilized in physical education research.

## **Timeline of the Evolution of the Concept of Engagement**

The following is a timeline to show how the concept of engagement has been defined over the last 33 years and the dimensions identified to conceptualize the construct of engagement. This timeline is but a snapshot of all of the research conducted, but it is an adequate representation.

1984 - Natriello described engagement in the context of student engagement as “student participation in the activities as part of the school program” (Appleton et al., 2008, p. 371; Natriello, 1984, p. 14). This research focused on the student’s academic and social success. He saw engagement with two dimensions, academic and behavioral. All of this led to the linking of the concept of engagement to drop-out rates as a result of disengagement. He believed engagement was influenced by academic, behavioral, and social evaluations by teachers and peers.

1985 - Mosher and MacGowan defined engagement in the context of student engagement in/with the school as “the attitude leading to, and the behavior of, participation in the secondary school's programs” (Appleton et al., 2008, p. 371; Mosher & MacGowan, 1985, p. 14). The researchers went on to explain engagement has multiple determinants, will impact the student and school-related outcomes and that engagement research should be longitudinal. This research concluded that engagement has no theoretical framework, and no means of measuring it existed. It appears that these researchers focused more on student behavior as it relates to being in school rather than behavior in the classroom.

1989 - Finn defined engagement in the context of participating in school and identifying with the school through a sense of belongingness and valuing what school offered. Finn understood dropping out of school as a process that begins in a student’s early elementary years rather

than a point-in-time event (Appleton et al., 2008; Finn, 1989). He saw engagement as two-dimensional, behavioral and emotional engagement. The main focus of this research was to explain the phenomenon of dropping out of school as a school impact on the student related issue.

1990 - Skinner, Wellborn, and Connell defined engagement in the context of general engagement as the “initiation of action, effort, and persistence on schoolwork, as well as their ambient emotional states during learning activities” (Appleton et al., 2008, p.371; Skinner, 1990, et al., p.24). The authors believe teacher behavior can have an impact on perceived control. Their study showed that teacher behavior did affect students’ perceived control. This study focused on the impact of teachers behaviors on students’ behaviors in the classroom.

1992 - Newmann, Wehlage, and Lamborn defined student engagement in the context of academic work as “the student’s psychological investment in and of effort directed toward learning, understanding, or mastering knowledge, skills, or crafts that academic work intends to promote” (Appleton et al., 2008, p. 371; Newmann et al., p. 12). The authors viewed engagement as a two-dimensional concept to include academic and psychological elements. Factors that influenced authentic work were the connection and identification with the school.

1993 - Finn defined engagement in the context of participation and identification in/with the school as “involvement in school as it relates to student achievement” (Finn, 1993, p. 6). Decreasing dropout rates and understanding why students choose to drop out of school was the basis of this chapter. A two-dimensional view of behavior with participation and achievement with overall school performance were the aspects he conceptualized as engagement.

1993 - Skinner and Belmont defined engagement in the context of general engagement as

“sustained behavioral involvement in learning activities accompanied by positive emotional tone” (Appleton et al., 2008, p. 371; Skinner et al., 1993, p. 572). The goal of the study was to examine the relationship between teacher behavior and active engagement in class. The concept of student engagement was investigated as it pertained to what is happening in the classroom and included the dimensions of behavioral and emotional.

1997 - Finn and Rock defined engagement in the context of participation and identification with the school (Appleton et al., 2008; Finn & Rock, 1997). The purpose of this study was to understand how some low SES minority students were more academically successful than their peers. Three levels of engagement investigated are student’s compliance with rules, student initiative, and participation in school life make up the taxonomy of engagement. He identifies engagement in school and its relationship to reducing dropout rates. A two-dimensional concept presented included cognitive (e.g., learning activities) and behavioral (e.g., participation) components.

2000 - Marks defined engagement in the context of student engagement in academic work as the “psychological process involving the attention, interest, investment, and effort students expend in the work of learning” (Appleton et al., 2008, p. 371; Marks, 2000, p. 154). The purpose of this study was to determine how student background affect engagement if school initiatives hinder engagement due to student backgrounds, and how subject matter influences engagement. Marks indicated that research on engagement in the classroom has been scant. He saw two dimensions of engagement to include affective, behavioral participation. The focus of this study was on academic work in the classroom.

2001 - Audas and Willms defined engagement in the context of general engagement as “the extent to which young people identify with their school and derive a sense of well-being from their academic work” (Appleton et al., 2008; Audas & Willms, 2001, p. iii). They acknowledged that engagement is multidimensional and researchers have not developed a consensus on a definition. The authors identified a four-dimensional concept with the factors as participation, belongingness, teacher relationships, and the value of achievement in school. This chapter focused on the relationship between engagement and dropout rates.

2003 - Furlong, Whipple, St. Jean, Simental, Soliz, and Punthuna defined engagement in the context of school engagement through the student, the peer group, the classroom, and the school-wide contexts as they relate to the affective, behavioral, and cognitive subtypes (Appleton et al., 2008; Furlong et al., 2003). The purpose of the article was to address the concept of school engagement. The authors identified a three-dimensional model of engagement that included affective, behavioral, and cognitive as the components in four different contexts of peer, schoolwide, classroom and student. Part of this literature review focused on student engagement in the classroom.

2003 - Jimmerson, Campos, and Greif defined engagement in the context of school engagement as “a multifaceted construct that includes affective, behavioral, and cognitive dimensions” (Appleton et al., 2008, p. 371; Jimmerson et al., 2003, p. 11), which include: “a) academic performance, b) classroom behavior, c) extracurricular involvement, d) interpersonal relationships, and e) school community” (Jimmerson et al., 2003, p. 12). The authors adopted a three-dimensional concept of engagement that included affective, behavioral, and cognitive components

2003 - Chapman defined engagement in the context of student engagement as a “students’ willingness to participate in routine school activities, such as attending classes, submitting required work, and following teachers’ directions in class” (Appleton et al., 2008, p. 371; Chapman, 2003, p. 1). The purpose of this review was to outline engagement as the literature has presented it and to identify the means that were used to measure engagement. Chapman identified a three-dimensional model with the domains of affective, behavioral, and cognitive engagement. This article addresses some aspects of engagement that others have not, but does not address the concept of what it means to be engaged in a task or activity.

2004 - Fredericks, Blumenfeld, and Paris defined engagement in the context of school engagement as multifaceted meta-construct and included behavioral (participation in school activities and not dropping out), emotional (belongingness to the school and willingness to do work), and cognitive (exerting effort to master skills; Appleton et al., 2008; Fredricks et al., 2004). The authors provided a three-dimensional concept of engagement. The author's focus was on improving student engagement to improve student performance which in turn improves school performance, which only addressed engagement of the student in the school, not engagement in the classroom task.

2004 - Klem and Connell defined engagement in the context of student engagement in/with the school as ongoing engagement (aligned with behavioral, cognitive, and emotional engagement) and reaction to challenge which is how students cope with negative circumstances. The authors adopted a three-dimensional concept of engagement.

2006 - Appleton, Christenson, Kim, and Reschly defined engagement as a “multi-dimensional comprised of four subtypes: academic, behavioral, cognitive, and psychological” (Appleton et al., 2008, p. 371; Appleton et al., 2006, p. 429). The authors refer to engagement as a

‘burgeoning construct’ (Appleton et al., 2006, p. 431) that is hard to measure. The authors agreed on a four-dimensional concept of engagement. They believe that the student perspective, rather than the teacher, is a better indicator of the student experience. This study focused only on the cognitive and psychological aspects of engagement.

2007 - Yazzi-Minta defined engagement in the context of student engagement as being about the relationship that develops between “the student’s relationship with the school community: the people (adults and peers), the structures (rules, facilities, schedules), the curriculum and content, the pedagogy, and the opportunities (curricular, co-curricular, and extracurricular)” (Appleton et al., 2008; Yazzi-Minta, 2007, p. 1). This article was an analysis of the student responses to the High School Survey of Student Engagement (HSSSE) of 2006. He put forth a three component concept of engagement from analyzing the survey which was “cognitive/intellectual/academic, social behavioral/participatory, and emotional engagement” (Yazzi-Minta, 2007, p. 7). The focus of this was the student engagement in the school, the activities surrounding the school, and the students feeling about why they attend school. Along with this, there was also a focus on dropout rates, classroom boredom, time spent on homework, support from adults, school structure, and curriculum.

2009 - Archambault, Janosz, Fallu, and Pagani define engagement as a multidimensional construct that includes behavioral, affective, and cognitive engagement. The aim of the study was to examine these indices as predictors of dropout.

2011 - Reeve and Tseng introduced the concept of agentic engagement. They define agentic engagement as “students’ constructive contribution to the flow of the instruction they receive” (p. 258). This new aspect of engagement adds to the three component structure of behavioral, emotional, and cognitive to create a four-dimensional concept. The agentic

concept tries to measure how the student's intentional positive influence on the class and the teacher can change the flow of the lesson to make it more meaningful for the learner.

2011 - Harris believed that a distinction between engagement in schooling and engagement in learning is warranted. Engagement in schooling includes behavioral, academic and psychological while engagement in learning includes cognitive engagement. In the review for this study, the author recognizes a four-component structure of engagement to include behavioral, academic, psychological, and cognitive engagement.

For more than 33 years researchers have attempted to define engagement as a construct, and in time some consensus seems to have begun. In the past years, some researchers viewed engagement as academic and social success as it related to dropping out of school. Natriello (1984) conceptualized a continuum of engagement and disengagement. He aimed to address engagement as a means of curtailing the drop-rates in the country. Finn (1989) viewed engagement through participation in school and identifying with the school. He understood dropping out to be a process that was the result of a cycle caused by failures that began in elementary years. If ignored, the student's disengagement may eventually lead to the student dropping out of school. Finn (1993) revisited his prior work and aligned student behavior with participation and achievement. Again, he believed that an increase in participation and greater achievement would decrease dropout rates. Finn and Rock (1997) conducted a study on low SES minority students that were more successful than their peers when it came to academics. The researchers concluded that an improved student relationship with the school could reduce dropout rates. Audas and Willms (2001) thought that increased student participation, belongingness, improved teacher relationships, and students valuing of achievement would lessen dropout rates. Yazzi-Minta (2007) analyzed the HSSSE from 2006 and concluded student



disengagement could stem dropout rates. Archambault et al., (2009) examined how the indices of engagement can be predictors of dropout. The approach to engagement as a mitigating force to curtail dropout rates did not focus attention on the actions of the student. Instead, it focused on how schools could provide an environment allowing students the opportunity to engage in school activities through participation and identification with schools.

Others have investigated how engagement fits in the classroom but not engagement in classroom tasks. Skinner et al., (1990) focused on teacher behavior and how it impacted students' perceived control. Skinner and Belmont (1993) focused on teacher behavior as well and determined through path analysis that teacher behavior was critical to student engagement in the classroom. Marks (2000) recognized that research on engagement in the classroom was meager and attention to student academic work in the class was needed to assess engagement. Reeve and Tseng (2011) introduced the concept of agentic engagement which tries to measure how the student can positively influence the flow of classroom instruction.

Several researchers have sought to define engagement through literature reviews in hopes of finding common themes from past research. Mosher and McGowan (1985) investigated engagement by conducting a review that referenced more than 60 studies. The authors concluded that engagement has no unifying theoretical framework and no means of measuring it. Newmann et al., (1992) reviewed five different projects and the different components each offered the characteristics related to engagement. The authors determined that engagement be a psychological investment that stems from the effort put towards academic work. Furlong et al., (2003) attempted to define terms and classify research findings through a literature review of engagement. Three perspectives, "psychological, educational, and developmental" (p. 99) and four contexts "student, peer, classroom, and the school environment" (p. 99) of engagement

emerged. Jimmerson et al., (2003) review aimed to define terms related to engagement and identify engagement measurement techniques. The authors were able to establish that engagement consisted of cognitive, behavioral, and affective aspects. The means of measuring engagement the authors identified comprised measuring academic performance, classroom behaviors, extracurricular involvement, interpersonal relationships, and school community. Chapman (2003) wanted to clarify terms and explain the different ways to assess engagement. He labeled the terms cognitive, affective, and behavioral as criteria to be used for measurement. The types of measurements discovered included self-reported surveys, checklists and rating scales, direct observations, student work analysis, and case studies.

Three studies focused on teacher behavior and the impact it has on student engagement. Skinner and Belmont (1993) included 14 teachers and 144 children in a project to research how teacher behavior affected student's emotional and behavioral engagement. Data collected was based on teacher and student reports. The researchers concluded that the teacher-student relationship is critical in elevating student motivation. Skinner et al., (1990) completed a study that included 200 students and 12 teachers. This research aimed to test a model to assess how teacher behavior influenced student perceived control and how that impacted academic performance and its contribution to engagement in school. The researchers concluded that teacher behavior could enhance or hinder student engagement. Harris (2011) believed that engagement in school included behavioral, academic, and psychological engagement while engagement in learning related to the cognitive aspects. The analysis of data collected from 20 Australian teachers resulted in the conclusion that teacher focus on affect and participation can slow cognitive engagement.

Over time the concept of engagement evolved substantially. In the mid-eighties and early nineties, Natriello (1984) and Finn (1989, 1993) recognized a two-dimensional approach to engagement. Natriello saw engagement as academic and behavioral. In 1989, Finn developed the taxonomy of engagement that focused on involvement in school. He believed that participation in school led to behavioral and emotional engagement. In 1993, Finn stated that involvement in school was through participation and achievement in school. Marks (2000) developed a model based on three different frameworks. The first, by Bronfenbrenner (1979) focused on the ecological concept of support. The second by Newmann (1992) addressed engagement through authentic instructional work. Finn (1989, 1993) proposed a third, and it addressed engagement through orientation toward school work. All together Marks' model contained two dimensions of engagement to include affective and behavioral participation.

Finn and Rock (1997) used the taxonomy of behaviors and identified three levels of engagement. Level one was participatory behaviors in academic work, level two was taking the initiative, and level three was participation in extra-curricular activities and school life. Furlong et al., (2003) identified affective, behavioral, and cognitive as the components that make up engagement in the four different contexts of peer, schoolwide, classroom and student. Jimmerson et al., (2003), Chapman, (2003), and Archambault et al., (2009) all adopted a three-dimensional concept of engagement that included affective, behavioral, and cognitive components. Frederick et al., (2003), Yazzi-Minta (2007), and Klem and Connell (2003) also adopted a three-dimensional concept that included behavioral, emotional, and cognitive components. The terms affective and emotional are close in meaning in that the terms relate to one's feelings.

In 2001, Audas and Willms conceptualized a four-dimensional form of engagement that included participation, a sense of belonging, relatedness to teachers, and valuing success in

school. The authors of this review acknowledge that the research on engagement had not matured enough when writing the review. Appleton et al., (2006) defined engagement as having academic, behavioral, cognitive, and psychological components. Audas and Willms (2001) performed a survey validation study on the Student Engagement Instrument (SEI). They asked 1,931 ninth grades students to complete the instrument. They found that the instrument did have an adequate fit. Since the research approach to engagement was relatively new at this time, the researchers believe that the SEI could prove to be a valuable tool for future studies. Harris (2011) also adopted a four-component model that included two main categories. The category of engagement in school focused on behavioral, academic, and psychological engagement while the second category focused only on cognitive engagement. Reeve and Tseng (2011) conceptualized a four-component framework as well. This framework introduced the new dimension of agentic engagement. Harris described the concept of agentic engagement as how a student's involvement in the lesson and the interactions with the teacher can improve the lesson and alter the flow to make the learning more relevant to the student. Students that involve themselves in this type of behavior are thought to be agentially engaged.

The concept of engagement has evolved since researchers began to attempt to define the concept. Engagement moved through predicting dropout rates to understanding how students act and react to class lessons. Researchers moved from a two-dimensional framework to a four-dimensional framework. The definitions and the components of the multidimensional frameworks are still not unified. Attempts to develop observation tools and scales to measure have been somewhat successful, but they still need attention for improvement and revision.

## **How engagement has been measured in the educational literature**

There have many studies that have used engagement as a construct for investigation. Over the years the definition has evolved, and the means of measuring engagement have varied. Researchers have developed numerous observation tools and teacher rating scales, but the most common way of measuring engagement appears to be through a self-reported survey. Many times these surveys have been adapted from the original to put the questions or statements in the correct context for the classes being the researched. Additionally, when these questionnaires were modified and utilized, the researchers conducted validity and reliability tests to give their study greater relevance. Discussion of some of the different means of assessing engagement is in the following section. The research featured is a small sample of the whole body of research available. Highlighted is the purpose of the study, the definition of engagement, the description of the measure, and the primary results of the research.

Observation tools provide researchers with an opportunity to investigate a research question without interfering with the flow of the instruction. These tools give researchers an advantage because they can observe the class in a typical state. The disadvantage with observation tools is they require the observer to spend part of the time writing and part of the time observing. Additionally, to become effective at using an observation tool correctly, it requires practice and preparation. Another disadvantage is some of the observation tools are designed to observe and score the entire class and not individuals.

Reeve, Jang, Carrell, Jeon, and Barch (2004) defined engagement in the same way others have defined previously. “Engagement refers to the behavioral intensity and emotional quality of a person’s active involvement during a task” (Reeve, Jang, Carrell, Jeon, & Barch, 2004, p. 147; Connell, 1990; Connell & Wellborn, 1991; Fiedler, 1975; Koenigs, Fiedler, & deCharms, 1977).

The purpose of this study was to investigate if high school teachers could develop improved motivating styles following a workshop and if student engagement was responsive to those developments. The goal was to have teachers become more autonomously supportive and to increase student engagement. Student engagement needed to be determined to evaluate teacher behavior. Twenty teachers with an average class size of 24 students participated in the study. A bipolar observation tool based on the Hit Steer Observation System (Fiedler, 1975) to measure student engagement through task involvement and influence attempts was employed. The Hit Steer Observation System assesses how many times the teacher tries to affect students positively and how many times the students' attempt to positively affect the teacher. How actively involved the students were during a lesson was task involvement and how the students' take control of their learning experience was an influence attempt. Task involvement was the "attention, effort, verbal participation, and positive emotion" the students' showed (Furrer & Skinner, 2003; Wellborn, Connell, & Skinner, 1989, p. 157). Influence attempts were defined as a "students' active attempts to influence the flow of classroom events" (Fiedler, 1975; Koenigs, Fiedler, & deCharms, 1977, p. 157). The researchers observed the class three times and based the observations on class not individuals in the class. The results showed that as teachers employed more autonomously supportive behavior, the students' engagement improved (Reeve et al., 2004). Additionally, the researchers concluded that student engagement is susceptible to changes in teacher behavior.

A frequently used observation tool to measure engagement in the classroom is the Behavior Observation of Students in Schools (BOSS; Shapiro, 2004). Shapiro designed the BOSS with the expressed intent of observing children identified as potentially failing. Additionally, the tool investigated ways of preventing students from dropping out. The tool

allows the observer to code student engagement in five ways: active engagement, passive engagement, and off-task passive, off-task motor and off-task verbal. Observers visit the class several times of a few days and observe for 30 minutes each time. The researcher observes for 15 seconds and then has 15 seconds to record their observations. This process repeats until the session is over. A purposeful movement study of 24 third grade boys and girls, using BOSS to assess on-task behavior showed students displayed greater active, engaged time-on-task. Additionally, increased physical activity in math class does not prevent satisfactory learning (Snyder, Dinkel, Schaffer, Hiveley, and Colpitts (2017). The sample was relatively small; however, the results show the potential for BOSS in the classroom.

Teacher rating reports of student engagement is a less conventional means of assessing engagement. The level of student engagement is a result of teachers observing a class or a student. Skinner, Wellborn, and Connell (1990) carried out a study on 200 elementary students and 12 teachers to test the connection between self-perceived control and academic performance among children. Teacher input on student engagement and disaffection determined an engagement score for each child. The students were rated based on active participation and tone of expression. The teachers assessed the students using a 10-item scale. Results indicated that the destabilizing of engagement by feelings from outside influences caused an unfavorable outcome, attitudes towards perceived ability predicted engagement levels, and students believed effort was and strategy and capacity for experiencing higher levels of engagement.

The self-report survey or questionnaire seems to be the most common form of evaluating student engagement. Appleton, Christenson, Kim, and Reschley, (2006), validated the SEI to assess the psychometric properties of the instrument. The original SEI contained 30 items to measure cognitive engagement (importance of school) and 26 items to measure psychological

engagement (relationships with others). An example of the cognitive items is “What I’m learning in my classes will be important in my future” (p.436), and an example of a psychological item is “My teachers are there for me when I need them” (p.436). The researchers orally administered the 4-point Likert scale to 1,931 ninth grade students. The results led the researchers to settle on the six-factor model. The factors of cognitive engagement were control and relevance of school work, and future aspirations and goals, extrinsic motivation and the factors for psychological engagement were the teacher-student relationships, peer support for learning, and family support for learning (SEI, 2015). This instrument has been used many times by other researchers to measure psychological and cognitive engagement.

In the past researchers and educators defined engagement by how it impacted dropout rates. At the time, the belief was that dropout rates were a reflection of disengagement (Ensminger, Lamkin, & Jacobson, 1996; Finn, 1989). It was the intent of Archambault et al., (2009) to examine if behavioral, affective, and cognitive engagement could be predictors of dropout. An 18 item survey was completed by 11,827 students in the seventh, eighth, and ninth grade to assess the behavior, affective, and cognitive components of engagement. These three components represented academic success. The researchers believed a global construct of engagement would emerge. Behavior engagement was measured with a four-point Likert scale with one being never and four being quite often. A seven-point Likert scale measured affective and cognitive engagement with one as “strongly agree” and seven as “strongly disagree.” Examples of behavior, affective, and cognitive items are “been rude to your teacher”(p. 656), “I like school” (p. 656), and “How much effort are you willing to spend in mathematics” (p. 656) respectively. The results are congruent with Finn (1989) and indicated that engagement is connected to school dropout.



To investigate how the teaching styles of autonomy support and structure correlate and if these teaching styles can predict student engagement, Jang, Reeve, and Deci, (2010), gave 1,584 ninth to eleventh grades students Fredricks et al.'s, (2004) three-component questionnaire, which features behavioral, cognitive, and emotional aspects to assess engagement. The questionnaire had four items and used a 7-point Likert scale with one being “not at all true” and seven being “extremely true.” The stem of the statements was “During this class...” An example of a statement is “I paid attention” (p. 594). The results showed that both autonomy support and structure teaching styles had a strong correlation with classroom engagement Jang et al., (2010). Additionally, both class behavioral engagement and self-reported engagement could be predicted by autonomy support. However, the structure teaching style only predicted class behavioral engagement. The researchers concluded the when students are provided with more of a structured setting; one could expect students to show higher degrees of “attention, effort, and persistence (i.e., behavioral engagement)” (p. 597).

The concept of the fourth dimension of engagement was put forth by Reeve and Tseng (2011). The concept of agentic engagement is defined as “students’ constructive contribution to the flow of the instruction they receive” (p. 258). Put simply; a student is thought to be agentially engaged if the student attempts to change the direction of the lesson to create a more effective learning experience. The researchers intended to validate a measure for agentic engagement, determine if agency was a separate part of engagement, and to ascertain if agency was vital to education. To measure agentic engagement, five items based on the Hit-Steer Observation System were used (Fiedler, 1975; Koenigs, Fiedler, & deCharms, 1977). An example from the questionnaire is “During class, I ask questions” (p. 259). Behavioral engagement consisted of five items based on the Task Involvement Questionnaire which was

adopted from the first part of the Perceived Behavioral Engagement Questionnaire. An example is “I listen carefully in class” (p. 259). Emotional engagement contained four items for emotional engagement and cognitive engagement, eight items from The Learning Strategies Questionnaire (Wolters’, 2004) derived from the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1993). Examples are “I enjoy learning new things in class” (p. 259) and “Before I begin to study, I think about what I want to get done” (p. 259). A 22 item questionnaire to assess the four aspects of engagement was developed to evaluate the four components of engagement. Results indicated that agentic engagement linked with students’ motivation, engagement, achievement, agentic engagement was separate from the three other components engagement, and agentic engagement was able to predict student accomplishment (Reeve & Tseng, 2011). Furthermore, agentic engagement explained the variance in the achievement of students.

Harris (2011) had a phenomenography qualitative approach to answering how do teachers from Australia define engagement and what methods do they use to engage their students? This research consisted of structured interviews that lasted 45-60 minutes, had seven questions, and asked 20 secondary school teachers. The “*What*” and the “*How*” aspects emerged as themes. The “*What*” aspect had six categories which included the following: (1) behavior – following the rules; (2) enjoying – student interest in school; (3) motivated – student motivation to participate and capacity to succeed; (4) thinking – what occupies their thought; (5) seeing purpose – viewing school as needed reach goals; (6) owning learning – acknowledging the significance of school and taking responsibility for learning. The “*How*” aspect had three categories which included: (1) delivering – giving student assignments and using consequences for not finishing as a way to persuade them, (2) modifying – change the activity to make it more

attractive to the student, (3) collaborating – work together with students to create a program better matched to what students need. This study showed that behaving and delivering were related and this is congruent with previous research (Vibert & Shields, 2003).

The purpose of this study was to present agentic engagement as a way students can achieve greater success in school (Reeve, 2013). A 21 item survey modified from the Agentic Engagement Scale (AES; Reeve & Tseng, 2011) using a 7-point Likert scale was used for three studies. Study one asked 271 college students completed the survey to refine the instrument. Study two asked 248 college students completed the scale for validation and study three asked 315 middle-school students to complete the survey to assess perceived autonomy support. Agentic engagement was measured with seven items, five from the original AES 2 new candidate items. Behavioral and emotional were measured using five items for each factor from the Engagement Versus Disaffection with Learning Measure (Skinner, Kindermann, & Furrer, 2009). Cognitive engagement was measured using four items from the Metacognitive Strategies Questionnaire (Wolters, 2004). Study one showed the AES is psychometrically accurate. Study two indicated engagement predicts achievement and study three showed agenticly engaged students create a more autonomously supported environment for themselves (Reeve, 2013).

### **How the concept of engagement has been utilized in physical education**

The concept of engagement has studied physical education in many ways. Typically the concept has been applied to understand why students choose to or choose not to participate in an activity. The term “engagement” has been used in different ways as well. Some researchers conceptualize engagement as effort while others use it to describe parts of motivation. Appleton et al., (2008) posited that motivation is not enough for one to be engaged. The distinction between motivation to perform and engagement in the task is made clear in previous work.

(Newmann et al., 1992). This distinction means an individual could be motivated and still not display engagement (Connell & Wellborn, 1991; Furrer & Skinner, 2003). However, it is essential to recognize the importance of evaluating engagement while keeping motivation in mind. The following examples provide a picture of the different ways researchers in physical education have tried to understand engagement.

### **Engagement, Effort, and Motivation**

The purpose of the Yli-Piipari and Kokkonen (2014) research was to examine the role motivation plays in student engagement. Student effort in physical education was measured using three items from a subscale of the Intrinsic Motivation Inventory (IMI; McAuley, Duncan, & Tammen, 1989). An example of one of the items is “I try very hard in this physical education class” (p. 257). These statements were given to 763 sixth graders. The design was a 5-point Likert scale that ranged from one (strongly disagree) to five (strongly agree). The intent was to measure student effort in a physical education class. One of the apparent issues with this study was the conflation of engagement with motivation, effort, and persistence. Results showed student motivation could somewhat explain student performance and engagement. Also, girls’ and boys’ beliefs and values determined performance. Attainment value determined the girl's engagement, and intrinsic interest values determined the boy's engagement. As mentioned earlier, motivation and engagement are distinctly different. Effort and persistence seem to describe not define engagement or motivation.

Garn and Sun (2009) defined engagement as effort through persistence in preparation for the PACER test. The purpose of this study was to apply approach-avoidance goal theory to more accurately explain the process that students’ ( $N = 214$ ; 111 boys, 103 girls 11 – 15 years of age) go through and the effort they put forth in preparing for the PACER test. A self-reported index to

gauge student engagement in preparing for the PACER was used. Guan et al.'s, (2006) Achievement Goal Questionnaire—Physical Education (AGQ–PE) provided four items for the questionnaire. The statements were modified to include the word PACER so the students would think about the fitness test while they completed the survey. An example is “I put a lot of effort into preparing for the PACER test” (p. 407). The researchers did not distinguish the difference between effort and engagement nor did they examine student engagement during the task of performing the PACER.

Garn, Ware, and Solmon (2011) conducted a study framed in contemporary goal theory with the purpose of investigating the relationships between achievement goals, social motivation orientations, and effort. Four items were used from the Achievement Goal Questionnaire-Physical Education (AGQ–PE; Guan et al. 2006) to measure effort. Goal orientations were a significant regulator of student self-reported effort ( $N = 105$ ; 57 girls, 48 boys;  $M_{age} = 15.8$ ;  $SD = .66$ ). Researchers concluded if students were able to gain physical and social competence, they would put forth more effort and that means the students are engaged. Effort can be substantial, and the student still may not be engaged in the task. The authors use effort and engagement interchangeably. There was no focus on engagement in a task or during a task.

Pearlman (2015) used an adapted version of the PE self-report engagement scale (Skinner, Furrer, Marchand and Kindermann, 2008) to assess how engagement and effort were impacted by multiple types or relatedness supportive settings in five high school physical education classes. It appears motivation, engagement, and effort showed significant improvement for those in a class with high relatedness-support compared with classes with low relatedness support. The authors used motivation, engagement, and effort together as a dependent variable to describe affective outcomes. The research was concerned with the effect

that social settings had on the engagement of the amotivated student. However, the authors never adequately defined the term engagement. Engagement and effort are associated with motivation (Subramaniam, 2009; Ferrer-Caja & Weiss, 2000). The focus of this research was in the atmosphere of the class and the level it supported the basic psychological needs of the students and the impact the support had on student engagement. The approach to engagement here is how and why the students are engaged or not. There was no discussion or acknowledgment of level student engagement in the task.

In physical education, when instructors speak about performance, they are typically referring to performing a skill correctly. A student can put forth a sizable amount of effort and still not perform the skill correctly. The objective means of assessing performance is for an instructor is to use norm or criterion based performance standards. The performance could be product or process driven. When instructors evaluate engagement, they use a more subjective means to decide if a student is engaged or not. A student can be engaged while they are not performing a skill. The student could be cognitively engaged while they are watching other perform. When the researchers conflated engagement with motivation, effort, and persistence, the construct of engagement seemed to get diluted.

### **Teacher Behavior**

Beavans, Fitzpatrick, Sanchez, and Forrest (2010) conducted a study to determine if instructional methods and student attributes could predict student engagement. The authors defined engagement as a significant element of students' activity in physical education class (Fairclough & Stratton, 2005; Ntoumanis, 2005; Standage, Duda & Ntoumanis, 2003). Three statements from Resnick et al.'s, (1997) PE Engagement Scale were modified for this study. The words "physical education" was added to the statements to make them relevant to the context of

PE. Results indicate perceive competence could predict activity levels, improved body image had a positive impact on engagement, and regardless of perceived competence, too much traditional gameplay had a negative impact on engagement. Other research has concluded perceived competence is critical to engagement (Ntoumanis, 2001; Sproule, Wang, Morgan, McNeill & McMorris, 2007). The authors do not adequately define engagement as a construct and view engagement with motivation as it relates to competence. It seems the authors were more concerned with why students disengage rather than why students engage. There was no focus on the level of engagement of the student during task involvement.

Teacher behavior is a critical aspect of student engagement and discovering why a student engages in physical education is just as critical. If students choose not to engage in physical education, it is an issue of participation. Participation is essential and cannot be ignored, but it does not address engagement in the sense of active learning involvement in physical education. Too often if it seems students are participating; one assumes they are engaged in physical education. The goal of a physical educator is to teach physical skills to students. Just because students are participating does not mean the students are learning skills in physical education. Engagement as a concept has the potential to provide researchers and physical education teachers more information about student learning in physical education based on student behavior and not just on how teacher behavior is influencing participation.

### **Relatedness to Teacher and Peers**

Barnes and Spray (2013) conducted a study to establish the reasons why children compare themselves to others in physical education. The authors' defined engagement as the opposite of disaffection as it relates to social constructs. Skinner et al.'s, (2009) Engagement and Disaffection Measure was adapted by adding "PE" at the end of the statement or in front of the

word “class.” Two examples are “I try hard to do well in PE” (p. 1065) and “I pay attention in my PE class” (p. 1065). Results indicate perceived related standing in class (PRSC) and perceived ability compared to another (PRSI) impact perceived self-concept (PSC), engagement, and disaffection. The researchers based the study on what are the children’s perceptions of other students’ judgments of their physical appearance, and performance. As mentioned previously, the focus of this study was on the reasons why a student chooses to or chooses not to engage based on what others think about the individual. There was no mention the level of engagement in a task.

Shen, McCaughtry, Martin, Fahlman, and Garn’s (2012) study address how peer and teacher relatedness could predict behavioral and emotional engagement in physical education. Behavioral engagement was defined as “students’ perception of their effort, attention, and persistence in PE” (p. 236). Emotional engagement was defined as how much the student was involved emotionally in class. Examples of emotional are “When I am in PE class, I feel good” and “PE class is fun.” (p. 236). The most influential predictor of engagement was relatedness to the teacher. Emotional and behavioral engagement could increase by a greater sense of relatedness. Girls’ were more likely to engage if the felt stronger relatedness to the teacher. The authors believed engagement in PE is contingent upon being recognized and accepted by their peers. No mention of the level of student engagement during a task, only reasons why or why not students are engaged

Barnes and Spray (2013) took the position that engagement was dependent on the student’s perception of acceptance and approval of their peers. Shen et al., (2012) took the position that higher degrees of relatedness to teachers and peers are a predictor of engagement.



The type of engagement these two studies are referring to sounds more like a student's initial participation in class activities and not the level of engagement in the activity itself.

### **Engagement and Movement**

Derri, Vasiliadou, and Kioumourtzoglou (2015) defined engagement as “the length of time at least 51% of the class is motor engaged in the teaching-learning process” (p. 240). The purpose of the study was teacher behavior focused and the impact on student behavior and engagement. The Time Management Form (Graham, 2001) was used to record student engagement. According to Darst, Zakrajsek, and Mancini (1982), motor engaged means to motor appropriate, motor inappropriate or motor support. “Motor appropriate” means a person performs an activity to be highly successful, while “motor inappropriate” means the task may be too easy or too difficult, but the person may still be engaged. “Motor supporting” means a person may not be in motion, but they are assisting another person in performing the activity. Defining engagement through motor engagement may have some degree of task engagement, but it does not address the level or degree of engagement. The author is defining engagement through motor behavior. Some elements of task engagement are present, but the degree of engagement in the task cannot be adequately evaluated using the ALT-PE criteria. ALT-PE only scratches the surface of task engagement because a student that is highly engaged and display enthusiasm about the task could be coded that same as a student that is just going through the motions of performing the task.

More research on the level of student engagement in tasks during physical education is warranted. It is essential to recognize the reasons why a student chooses to or chooses not to participate in physical education. Identifying and acting on these reasons can assist physical education instructors in getting more students involved in the lesson. This research approach is a

logical first step but more needs to take place. Beyond that, identifying differences in the levels of task engagement can provide physical education instructors with valuable information that can improve the quality of teaching and learning. Students should be allowed to make their learning experiences more fruitful, and understanding task engagement may be the mechanism to give the students that opportunity.

## **CHAPTER III**

### **METHOD**

This research project contains two studies. The first study, discussed in chapters three, four, and five, aimed to develop and validate a survey that measures the self-reported levels of engagement of students in physical education. The second study, discussed in chapters six, seven, and eight, aimed to develop an observation tool that can be used by researchers and teachers to determine the observed level of behavioral engagement of students in physical education.

The specific objectives of the first study were to develop, examine the psychometry, and validate a new scale designed to assist physical education teachers in determining the self-reported level of behavioral, cognitive, emotional, and agentic engagement of students during skill development tasks, gameplay, and fitness lessons in a physical education class.

The first study consists of three parts. The first part involved determining the items included in the scale and providing a justification for those items. In this case, the items contained in the scale were modifications of agentic, behavioral, cognitive, and emotional subscales from The Questionnaire to Assess Four Aspects of Engagement (Reeve & Tseng, 2011). This previously validated scale was used for determining student engagement in the classroom. These items required modification to be specific to physical education.

The second part of the study aimed to validate the structure of the scale. Validation of the survey was achieved by administering a 21 item scale to eighth and ninth grade students at two different schools in two different school districts.

The third part involved using confirmatory factor analysis to test the hypothesis of the associations of the variables with the factors. The model achieved from this analysis expressed the representations of the relationships with an acceptable fit of the collected data, as well as the structure of the model along with the relationship of the factors. Additionally, this third part examined the instrument's face, internal, convergent, and discriminant validity of student engagement on the constructs of agentic, cognitive, behavioral, and emotional engagement.

The second study also consists of three parts. The first part was to seek the opinions of various stakeholders in the field of physical education concerning selected student's lesson involvement during fitness, gameplay, and skill development lessons. Using these descriptions, a frequency analysis of terms was conducted to identify a shared vocabulary of lesson involvement.

The second part of the study involved the development of a master scorecard of the observation tool and a user guide for training and use of the observation tool. The user guide contains observer training procedures, methodology, coding conventions, and recording forms. The third part of the study consisted of an examination of the training protocol required to achieve reliable data collection by observers trained with the observation tool.

### **Study 1**

The objectives of this study were to develop a pool of modified items from previously validated engagement scales to be specific to physical education and to use confirmatory factor analysis to verify the instrument's 21-item and four-factor internal structure of the model.

## **Development of the Survey**

**Construction of the item pool.** To develop the “Engagement in Physical Education Scale,” items from previously validated scales were used with an added string relating to physical education lessons. The final draft scale consisted of 21 items with four subscales. The subscales included agentic, behavioral, cognitive, and emotional engagement. All of the items were scored using an ordinal five-point Likert scale that ranged from “strongly disagree” to “strongly agree” with an answer of “neutral” as the midpoint. This first draft is located in Appendix A.

**Agentic subscale.** Seven items from two different previously validated scales were adapted to provide items for the agentic subscale. Most items were taken from the Hit-Steer Observation System (Fielder, 1975; Koenings, Fielder, & deCharms, 1977) The Hit-Steer Observation system was used to assess classroom behavior by counting the number of times a student tries to impact the teacher (a “hit”) and if the student’s actions changed the teacher's behavior (a “steer”). Items two through four what were initially used by Reeve and Tseng (2011). Reeve and Tseng (2011) created this subscale to determine if agentic engagement had a positive correlation with behavioral, cognitive, and emotional engagement. These items showed moderate to high positive correlations with the other three aspects of engagement.

The construction of the scale by Reeve and Tseng (2011) was based largely on self-determination theory (SDT; Reeve, Deci, & Ryan, 2004) and all of the major theories of student motivation. Items one and five were new candidate items designed to assess the student’s contribution to the learning environment (Reeve, 2013). Items six and seven were also new candidate items designed to assess the student’s contribution to their learning. In the previous study, items one through five loaded on the agentic engagement factor with strong positive

correlations. Items six and seven did not load on the agentic factor. However, the items did load on cognitive engagement with strong negative correlations (Reeve, 2013). The present study included items six and seven for use in the engagement in physical education scale. The addition of the wording “in PE” to the items six and seven was the justification for using these items in the new scale with the hope that the addition of the context-specific wording would have an impact on the factor loading (see Table 3.1).

Table 3.1

*Original Statement, Source, and Modifications of Agentic Items*

	Original Statement	Source	Modified Statement
1	I let my teacher know what I need and want	Reeve (2013)	In PE, I let my teacher know what I need and want.
2	I let my teacher know what I am interested in	Reeve & Tseng (2011)	In PE, I let my teacher know what I am interested in.
3	During class, I express my preferences and opinions	Reeve & Tseng (2011)	During PE, I express my preferences and opinions.
4	During class, I ask questions	Reeve (2013)	During PE, I ask questions so I can learn.
5	When I need something in this class, I will ask the teacher for it.	Reeve (2013)	When I need something in PE, I will ask the teacher for it.
6	I adjust whatever we are learning so I can learn as much as possible.	Reeve (2013)	In PE, I change whatever we are learning so I can learn as much as possible.
7	I try to make whatever we are learning as interesting as possible.	Reeve (2013)	In PE, I try to make whatever we are learning as interesting as possible.

**Behavioral subscale.** To assess behavioral engagement, the statements from Reeve and Tseng’s (2011) Questionnaire to Assess Four Aspects of Engagement behavioral subscale was used in the survey on student engagement. The survey of Reeve and Tsang was itself developed using Miserandino’s (1996) task involvement questionnaire, which in turn was based on Wellborn’s (1991) doctoral dissertation on the conceptualization of behavioral engagement.

Miserandino’s (1996) questionnaire was specifically designed to measure the perceived behavioral engagement of students in the classroom. The items on Miserandino’s scale were adapted from the behavioral subscale in the Rochester Assessment of Intellectual and Social Engagement (RAISE). Four of the items loaded on attentiveness and one loaded on participating. Three items loaded with a questionable level of internal consistency. The current survey item 12 is the same as item one in Miserandino’s (1996) task involvement questionnaire which showed  $\alpha = .66$ , item 14 is reflective of item four in Miserandino’s (1996) task involvement questionnaire which showed  $\alpha = .61$ , and item 16 is the same as item 28 in Miserandino’s (1996) task involvement questionnaire which showed  $\alpha = .64$ .

Table 3.2

*Original Statement, Source, and Modification of Behavioral Items*

	Original Statement	Source	Modified Statement
12	I listen carefully in class.	Reeve & Tseng (2011)	When I’m in PE, I listen carefully.
13	I pay attention in class.	Reeve & Tseng (2011)	I pay attention in PE.
14	I try very hard in school.	Reeve & Tseng (2011)	I try hard to do well in PE.
15	I work hard when we start something new in class.	Reeve & Tseng (2011)	In PE, I work as hard as I can.
16	I participate in class discussions.	Reeve & Tseng (2011)	When I’m in PE, I participate in PE activities

Two of the items loaded with poor internal consistency. The current survey’s item 13 is the same as item five in Miserandino’s (1996) task involvement questionnaire which showed  $\alpha = .54$ , and item 15 reflect item four in Miserandino’s (1996) task involvement questionnaire which showed  $\alpha = .59$ . All five items presented by Reeve and Tseng (2011) were adapted by adding “in PE” to make the statements specific to the physical education context for the current survey.

These five items are represented in the present survey as items 12 through 16 (see Table 3.2). By

adding the context-specific wording, the statements can represent student self-perceptions of attentiveness, participation, and effort in a physical education class.

**Cognitive subscale.** To assess cognitive engagement, four statements from Reeve and Tseng’s (2011) cognitive subscale were used. These were adapted by adding the wording “in PE” to make the statements specific to physical education. The four items used are shown in Table 3.3 and are represented by items eight through 11 in the present survey.

Table 3.3

*Original Statement, Source, and Modifications of Cognitive Items*

	Original Statement	Source	Modified Statement
8	When I study, I try to connect what I am learning with my own experiences.	Reeve & Tseng (2011)	When I practice skills for PE, I try to connect what I am learning with my own experiences.
9	I try to make all the different ideas fit together and make sense when I study.	Reeve & Tseng (2011)	I try to understand why I practice skills for PE.
10	When doing schoolwork, I try to relate what I’m learning to what I already know.	Reeve & Tseng (2011)	When participating in PE, I try to relate what I’m learning to what I already know.
11	I make up my own examples to help me understand the important concepts I study.	Reeve & Tseng (2011)	I practice on my own to help me understand the important concepts taught in PE.

Reeve and Tseng based these items on Wolters’ (2004) Learning Strategies Questionnaire. Wolters’ (2004) questionnaire was based on the subscale for cognitive strategies of the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie (1993). Wolters’ objective was to explore the association between achievement goal theory (Nicholls, 1984; Nicholls, 1989; Dweck, 1986; Dweck & Legget, 1988) and student motivation, cognitive engagement, and academic achievement. The four items selected from the original



subscale were designed to assess sophisticated learning strategies of college students. In the scale by Pintrich et al. (1993), the learning strategies of elaboration which showed  $\alpha = .75$  and critical thinking which showed  $\alpha = .80$  showed acceptable internal consistency while rehearsal which showed  $\alpha = .69$  and organization which showed  $\alpha = .64$ , showed questionable internal consistency. By selecting these items for the newly developed scale and adding the wording “in PE,” the hope was that these items would show greater internal consistency because it is context specific.

**Emotional subscale.** To assess emotional engagement, the statements based on Reeve and Tseng’s (2011) the emotional subscale were used. This subscale was based on items from Wellborn’s (1991) dissertation on the conceptualization of student’s emotional engagement (Reeve & Tseng, 2011). The current survey contains five items. These items were adapted from Reeve and Tseng (2011) by adding the wording “in PE” to make the statements specific to physical education. These items showed an acceptable level of internal consistency in the previous study by Reeve and Tseng (2011;  $\alpha = .78$ ; see Table 3.4).

**Expert appraisal for content validity.** Six doctoral students at a major university were asked to inspect the first form of the EPES. These doctoral students were asked to review the EPES and give their opinion on whether or not the scale seems to be constructed in a way that can accurately measure the construct of engagement in physical education. By all accounts, the panel agreed that the scale could measure student engagement in physical education.

Table 3.4

*Original Statement, Source, and Modifications of Emotional Items*

	Original Statement	Source	Modified Statement
17	When we work on something in class, I feel interested	Reeve & Tseng (2011)	When we work on something in PE, I feel interested.
18	Class is fun	Reeve & Tseng (2011)	PE is fun.
19	I enjoy learning new things in class	Reeve & Tseng (2011)	I enjoy learning new things in PE.
20	When I'm in class, I feel good	Reeve & Tseng (2011)	When I'm in PE, I feel good.
21	When I am in class, I feel curious about what we are learning	Reeve & Tseng (2011)	When we work on something in PE, I get involved.

**Participants**

Criterion-based sampling was used to select the participants. Response rate was approximately 57.75 percent. Participants included 231 eighth and ninth grade students (108 boys 46.75%, 115 girls 49.78%, eight unreported 3.46) aged between 12 and 17 years ( $M_{age} = 14.55$ ,  $SD = 8.65$ ) enrolled in a mandatory physical education class. One hundred two eighth grade (44.16%) and 129 ninth grade students (55.84%) participated in the initial administering of the survey. The justification for the sample size for this research was based on the information provided by previous researchers in scale validation (Gorsuch, 1983; Worthington & Whittaker, 2006). Most of these recommendations state that a minimum ratio of 10 participants for every item on the scale is needed; however a higher ratio of participants to items is desirable however studies have been completed with a lesser ratio. The goal of the present study was to include a minimum of 10 participants per item.

## **Procedure**

After approval from the school boards and IRB were acquired, individual schools and physical education teachers were asked to allow the research to take place. Participants were then provided a parental/guardian consent/assent form that was completed and returned for them to be given access to the survey.

Completed during their regular physical education classes, the surveys were anonymous, and students were asked not to place any identifying marks on the survey. The teacher(s) of the classes did not have access to the names of the students who chose to participate or not. The teachers were also not given any access to the collected data.

## **Data Analysis**

The IBM SPSS v.24 was used for data screening for outliers. Eleven outliers were discovered and eliminated. This was accomplished by running a regression analysis to test Mahalanobis distance and then using the explore function to test outliers for Mahalanobis chi-square. This calculation generated a boxplot that clearly showed the outliers. The eliminated cases included 6, 16, 33, 35, 64, 67, 68, 86, 87, 134, and 177. Eliminating the outliers brought the sample size to 220 students (123 boys 55.91%, 92 girls 41.82%, five unreported 2.27%) aged between 12 and 17 years ( $M_{age} = 14.54$ ,  $SD = 8.85$ ). Ninety-nine eighth grade students (45.00%) and 121 from the ninth grade (55.00%) were included in the final analysis.

To establish internal validity, confirmatory factor analysis (CFA) was applied to the data to examine the structural features of the model using SPSS AMOS v.24. Analysis property outputs included standardized estimates, residual moments, and modification indices with a threshold for modification indices set at a value of four.

The absolute fit measures examined in this study included chi-square divided by the degrees of freedom (CMIN/DF). An obtained value of less than two implies a good fit (Myers, Gamst, & Guarino, 2017; Byrne, 1989) with an obtained value less than three being considered acceptable (Myers, Gamst, & Guarino, 2017; Marsh & Hocevar, 1985). A goodness of fit index (GFI) was also calculated. GFI is similar to  $R^2$  and produces values between zero and one with one being a perfect fit. Obtained values between .90 and .95 are acceptable however values  $\geq .95$  indicate a good fit (Myers, Gamst, & Guarino, 2017; Baumgartner & Hombur, 1996). Third, the root mean square error of approximation (RMSEA) was determined. In this case, the value should be  $\leq .07$ , with smaller values indicating a better fit (Myers, Gamst, & Guarino, 2017; Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999). Next is the standardized root mean square residual (SRMSR). To have a good fit, the value should be  $\leq .08$  (Myers, Gamst, & Guarino, 2017; Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999; Kline, 2010).

The relative fit indices examined for this study include the Comparative Fit Index (CFI) and the Normed Fit Index (NFI). These relative fit indices values represent where on a continuum from worst fit to a perfect fit the model lands with values  $\geq .95$  suggests a good fit and values between .90 and .95 as acceptable (Myers, Gamst, & Guarino, 2017; Hu & Bentler, 1999). The CFI is usually the fit statistic used for structural equation modeling (Myers, Gamst, & Guarino, 2017; Byrne 1998, 2016).

Based on the values of the fit indices produced, the table for the default model covariances was examined. The error variable with the most significant modification index (MI) value was identified, and a correlation path was drawn between the errors variables associated with that MI value. This process was repeated until no more MI values produced exceeded a value of 10 (Gaskin, 2011). These correlation paths were drawn one at a time beginning with the

most substantial value, and then the data were recalculated, and the fit indices were inspected again.

After all of the correlation paths were drawn, and the calculations were rerun, the fit indices were again examined for model fit. Based on the standardized residual co-variances table found in the estimates matrices, items that created excessive discrepancies between the proposed model and the estimated model were considered for deletion. The identified items with values that exceeded 2.58 in the table were deleted one at a time starting with the factor with the largest value. No items exceeded a value of 2.58, and this method did not yield any items that could be considered for deletion (Gaskin, 2011).

After all justified correlation paths were drawn and all items with a standardized residual co-variance absolute value of 2.58 were eliminated, not all of the fit indices reached an acceptable threshold. IBM SPSS v.24 was again used to produce a rotated component matrix. This matrix was inspected to determine if any factors cross-loaded onto more than one latent variable. Items that cross-loaded heavily on more than one latent variable were systematically removed one at a time. The calculations were rerun after each modification. The removed factor was added back into the model, and the next factor was removed, and the calculations were again rerun. This process repeated for all of the heavily cross-loaded factors until the fit indices reached an acceptable level. Since the factor loading was needed to determine the structural changes that needed to be made, the CFA utilized some of the processes in exploratory factor analysis (EFA).

To determine convergent and discriminant validity, the Stats Tool Package (Gaskin, 2011) was used. The table of estimates scalars correlations from the view text option of AMOS

output was copied and pasted into the Stats Tool Package (Gaskin, 2011) spreadsheet along with the estimates scalars standardized regression weights.

## CHAPTER IV

### Results

This study was designed to develop and validate a new survey for assessing the self-reported levels of student engagement in physical education (Engagement in Physical Education Survey, EPES). Items were selected by examining Questionnaire to Assess Four Aspects of Engagement (Reeve & Tseng, 2011). A 21 item model was initially created and through CFA and modifications to the original model, an 18 item survey resulted which showed to have met acceptable levels of fit based on generally accepted values outlined by Myers, Gamst, & Guarino (2017) and by Hu & Bentler (1999).

#### Initial Model Evaluation

Evaluation of the initial model did not contain any correlations between error values. The original model contained 21 items (see Figure 4.1). Results from the original model evaluation indicated fit indices that revealed a statistically significant chi-square test with a value of 547.965<sub>(183)</sub>,  $p < .001$ . Due to the large sample size, the chi-square statistic typically will show significance regardless of the other fit indices (Myers, Gamst, & Guarino, 2017; Hu & Bentler, 1999). Results from the initial model evaluation yielded pattern coefficients relating the factors with the items that were reasonably robust, ranging from .48 to .89. The CMIN/DF (2.994), GFI (.804), CFI (.884), NFI (.836), SRMR (.0658), and RMSEA (.094 CI (.086 - .105)) taken together indicates the proposed model was on the cusp of acceptable to a good model fit. Only the absolute fit index of SRMSR ( $\leq .10$ ) and CMIN/DF ( $\leq 3$ ) had met the target value.

## Modifications

The process used to improve the model consisted of drawing covariances between error variables that were associated with the same latent variable and had MI values that exceeded 10. After each covariance arrow was drawn the model was recalculated, and the fit indices were inspected again. New covariance arrows were drawn one at a time starting with the greatest MI value. One covariance was drawn within the behavioral engagement latent variable: e13 (associated with Q15 “In PE, I work as hard as I can”) and e14 (associated with Q14 “I try hard in PE”) were both on the behavioral variable. These items shared meaning and words that may have led to commonalities beyond shared variance, and it is reasonable to assume that these covariances would improve the model.

Three pairs of covariances were drawn within the agentic engagement latent variable: e5 (associated with Q3 “During PE, I express my preferences and opinions”) and e6 (associated with Q2 “In PE, I let my teacher know what I am interested in”); e6 (associated with Q2 “In PE, I let my teacher know what I am interested in”) and e7 (associated with Q1 “In PE, I let my teacher know what I need and want”); e3 (associated with Q3 “During PE, I express my preferences and opinions”) and e7 (associated with Q1 “In PE, I let my teacher know what I need and want”). These items shared had shared meanings of words like opinions, preferences, needs, and interests that may have led to commonalities beyond shared variance and it is reasonable to assume that these covariances would improve the model.

Two pairs of covariances were drawn within the latent variable of emotional engagement: e17 (associated with Q21 “When we work on something in PE, I get involved”) and e18 (associated with Q20 “When I’m in PE, I feel good”); e17 (associated with Q21 “When we work on something in PE, I get involved”) and e20 (associated with Q18 “PE is Fun”). The



commonalities of the feeling of having fun in PE, feeling good in PE and getting involved in PE seem to have warranted the covariances to help improve the model.

### **Item Deletion**

**Examining standardized residual covariances.** At this point, the decision was made to use a more invasive approach to respecification of the model by removing some of the factors that show standardized residual covariances that exceed an absolute value of 2.58. Estimates matrices standardized residual covariances table was examined to determine the variables that showed to have the most significant negative impact on the model. However, none of the items showed to have values that exceeded an absolute value of 2.58.

**Factor loadings.** The next approach to improving the model was to examine the factor loading for each of the items on the scale. By inspecting the rotated component matrix, it was determined that four of the items heavily cross-loaded on more than one latent variable (Q21, Q6, Q7, and Q4; see Table 4.1). These items were removed methodically one at a time, and the model was recalculated after the removals. Fit indices were then inspected to see if the thresholds had been met. Each item was added back to the model, and the next item was removed. This process continued until all four had been removed and added back in. The next step was to remove two items at a time and then three. After Q21, Q6, and Q7 had been removed together, all of the fit indices had met the acceptable threshold, and a final version was created. Table 4.2 shows the sequence of item removal.

The results of the convergent and discriminant validity testing show that behavioral, cognitive, and emotional variable measures met the thresholds for composite reliability (CR), average variance extracted (AVE), and maximum shared variance (MSV) except the agentic variable. Convergent validity for agentic engagement was below .50 (AVE = .0439) and

discriminant validity for agentic engagement was less than the MSV (MSV = 0.503; see Table 4.3).

Table 4.1

*Rotated Component Matrix.*

	Behavioral	Cognitive	Emotional	Agentic
Q16	0.796			
Q14	0.789			
Q15	0.772			
Q13	0.739			
<b>Q21</b>	<b>0.733</b>			
Q12	0.668			
<b>Q6</b>		<b>0.699</b>		
Q9		0.689		
Q8		0.675		
<b>Q7</b>		<b>0.668</b>		
Q11		0.613		
Q10		0.602		
<b>Q4</b>		<b>0.524</b>		
Q20			0.811	
Q18			0.79	
Q19			0.755	
Q17			0.716	
Q2				0.761
Q3				0.751
Q1				0.747
Q5				0.558

Table 4.2

*The Sequence of Item Removal Based on Cross Loadings.*

Iteration	Item(s) removed
1	21
2	6
3	7
4	4
5	21, 6
6	21, 7
7	21, 4
8	6, 7
9	6, 4
10	7, 4
11	21, 6, 4

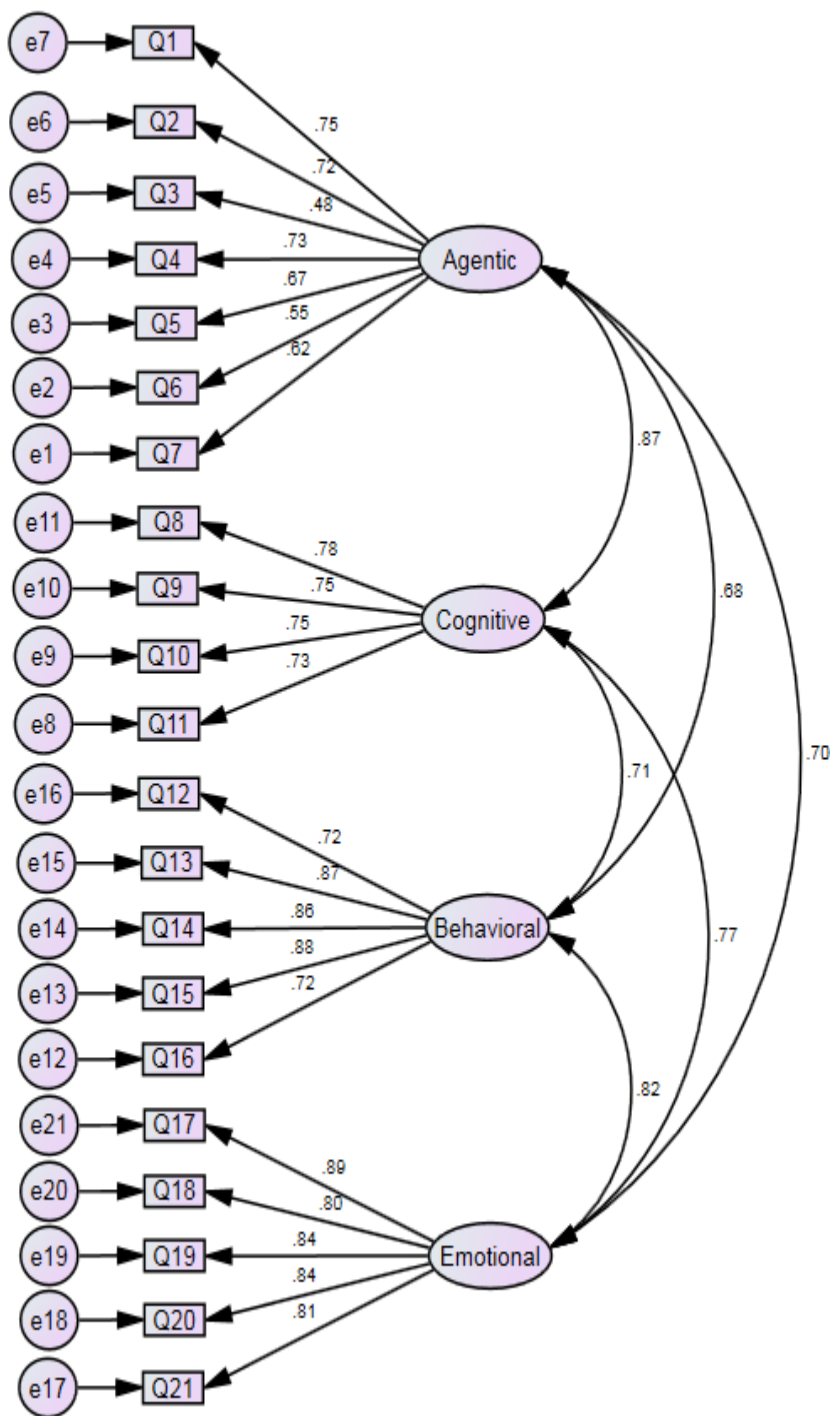


Figure 4.1. Original model with 21 items

Table 4.3

*Results of Validity Testing.*

	CR	AVE	MSV	MaxR(H)	Behavioral	Cognitive	Agentic	Emotional
Behavioral	0.898	0.640	0.613	0.916	<b>0.800</b>			
Cognitive	0.806	0.580	0.546	0.807	0.729	<b>0.762</b>		
Agentic	0.792	0.439	0.503	0.812	0.709			
Emotional	0.917	0.733	0.613	0.919	0.783	0.739	0.695	

Table 4.4

*Model Comparison.*

Fit Index	Four-factor correlated structure							
	$\chi^2$	<i>df</i>	$\chi^2/df$	<i>GFI</i>	<i>CFI</i>	<i>NFI</i>	<i>SRMR</i>	<i>RMSEA</i> (90% CI)
Original Model	547.97	183	2.994	.804	.884	.836	.0658	.095 (.086 - .105)
Final Model	226.01	125	1.808	.903	.962	.919	.0428	.061 (.048 - .073)

The standardized coefficients for the respecified model are presented in Figure 4.2.

Model fit was markedly improved. The Chi-square test was statistically significant however this can be expected with large sample sizes (Myers, Gamst, & Guarino, 2017; Hu & Bentler, 1999),  $\chi^2 = 226.011_{(125)}$ ,  $p < .001$ , and the CMIN/DF (1.808;  $< 2$ ), GFI (.903;  $> .9$ ), CFI (.962;  $\geq .9$ ), NFI (.919;  $\geq .95$ ), SRMR (.0428;  $\leq .08$ ), and RMSEA (.061;  $\leq .07$ ; CI (.048 - .073)) indicate values that show a good model fit. All of the pattern coefficients were acceptable, ranging from .44 to .91 and all were all statistically significant (all  $ps < .001$ ). These results indicate that the proposed four-factor structure of the EPES was supported using the data from this independent sample. Table 4.4 shows the original model comparison with proposed four-factor model fit indices.

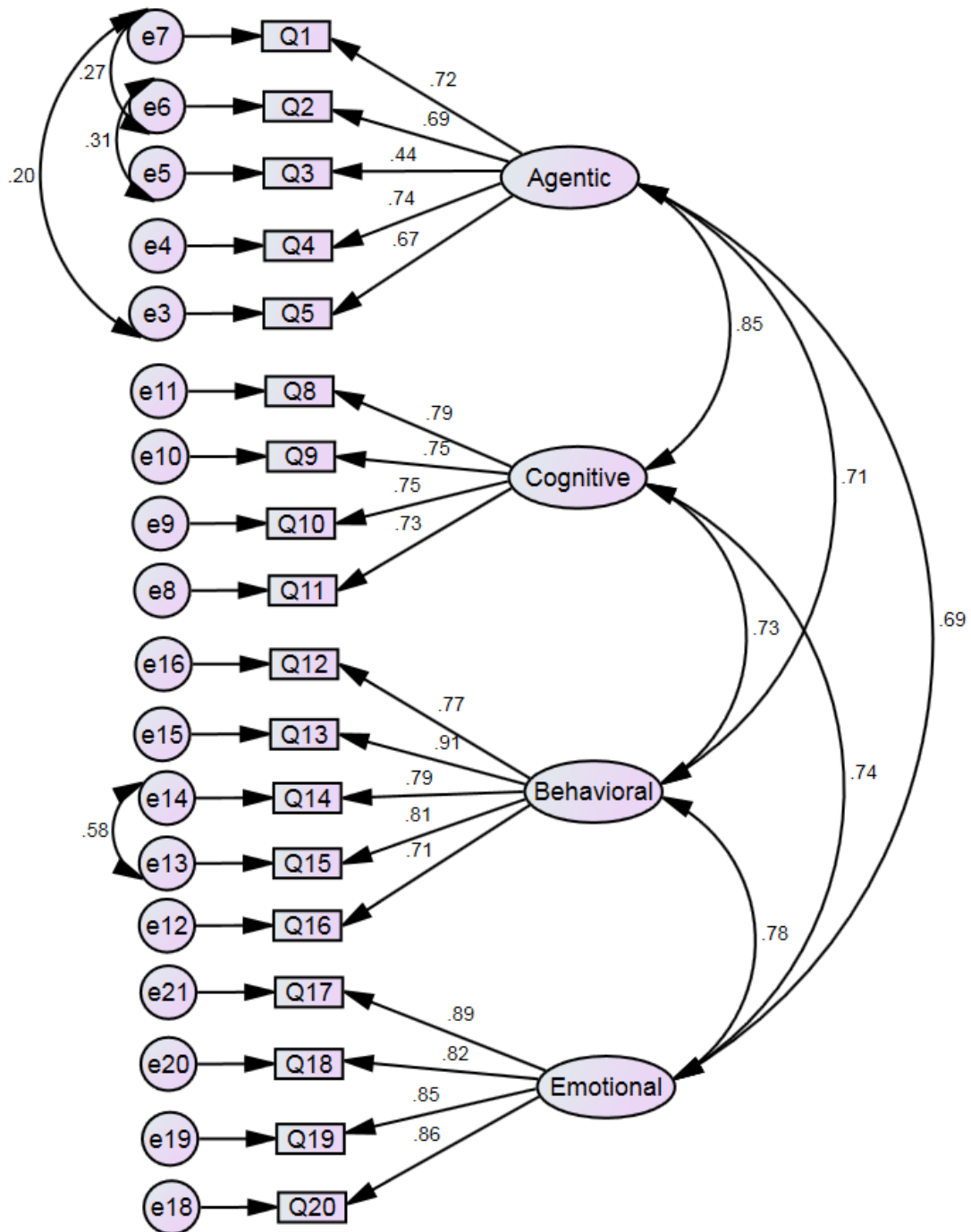


Figure 4.2. Standardized Coefficients for the Respecified Model

## **CHAPTER V**

### **Discussion**

Over time the concept of engagement has evolved from a two-dimensional model that was used to predict drop-out rates (Finn, 1999) to a four-dimensional model that focused on student behavioral, emotional, cognitive, and agentic engagement in the classroom (Reeve & Tseng, 2011). According to Jimerson et al. (2003), classroom behaviors of students can and should be measured. Newmann et al. (1992) posited that engagement is a psychological investment that emanates from the effort that students put into their academic work, while Chapman (2003) believed that student behavior is a criterion that should be measured and self-reported surveys and direct observations are to be included.

Self-report surveys seem to be one of the most commonly used methods for assessing the dimensions of engagement. Only recently have researchers begun to examine the concept of engagement in the classroom and as it relates to tasks the students are expected to perform. The stated goals of this study were: a) to develop a pool of modified items from previously validated engagement scales to be specific to physical education, and b) to use confirmatory factor analysis to verify the instrument's 21-item and four-factor internal structure of the model. The results from the CFA established the scales validity based on its internal structure. Except for the discriminant validity values for agentic AVE (0.439) and MSV (0.503), all other values were acceptable. With these values being as close as they are, a four-factor structure showed to have acceptable model fit indices.

A questionable yet acceptable level of discriminant validity is not unprecedented. Often researchers are faced with similar results, and occasionally the decision is made to leave the model in the final form or combine two or more of the latent variables if the values are not close enough. In a recent study, the latent variables of behavior and cognitive engagement were combined to create one construct (Pöysä, Vasalampi, Moutka, Lerkkanen, Poikkeus, & Nurmi, 2018). It seems that this was an a priori decision; however other studies have shown that the two constructs are distinctly different and can remain as a stand-alone variable (Reeve & Tseng, 2011).

In the current study, agentic engagement and cognitive engagement were highly correlated (standardized coefficient = .85). The correlation is not surprising because for an individual to experience agentic engagement, they must first be cognitively engaged (Reeve & Tseng, 2011, Reeve, 2013). To be cognitively engaged, one must display active self-regulation along with using complex learning strategies (Reeve & Tseng, 2011; Fredericks et al., 2004; Jimerson et al., 2003; National Research Council, 2004). Reeve and Tseng (2011) based their research on agentic engagement on the Hit-Steer Observation System (Fielder, 1975; Koenig, Fielder, & deCharms, 1977). One of the findings that came from this research was that students' influence attempts had a strong positive correlation with academic achievement (Fielder, 1974; Koenigs et al., 1977; Reeve et al., 2004; Reeve & Tseng, 2013). Moreover, self-regulation, use of complex learning strategies, and academic achievement fall into the realm of cognitive engagement. Students that actively display this type of behavior can be considered agenticly engaged (Reeve & Tseng, 2011). By consequence, the lack of discriminant validity between these two latent variables is not surprising.



In conclusion, the final model contained 18 of the original 21 items. Each of the four a priori latent variables were kept in the validation of the four-factor hypothesized model. Moderate to strong  $R^2$  between the latent variables and the items associated with the constructs. These findings indicate that the final 18 item model can be used to determine the self-reported levels of student agentic, cognitive, behavioral, and emotional engagement in physical education.

Some of the limitations of this research include the purposeful sampling. Since only eighth and ninth graders were used, it may be difficult to generalize the results to other grade levels. Moreover, the wording of the survey may need to be altered for use in research with younger students. Additionally, only 231 participants from two schools were included. A larger sample from more schools may have provided results that could have shown greater discriminant validity between agentic engagement and cognitive engagement.

Another limitation was the reduced number of items chosen for the cognitive subscale. Reeve and Tseng (2011) included eight items in the cognitive subscale. The new EPES only included four items in the subscale. If all of the original eight items had been modified and included, the results might have shown improved discriminant validity between the cognitive and agentic engagement latent variables.

Considering the decades of research on student engagement and the new focus of student engagement in classroom tasks, the EPES can be used to complement many different kinds of interventions in physical education to add different and meaningful aspects to a study. For example, a pre and post design for different curriculum models could be used to determine if student engagement changes due to the curriculum models chose. Another example is how self-reported student engagement is impacted due to the teacher and student demographics.

Additionally, future research could also pair individuals' self-reported results with the observation of the individual throughout an instructional unit in physical education.

## CHAPTER VI

### Study 2

#### Method

##### Part 1

The purpose of the study was to develop an observation tool that can assist teachers and researchers in assessing the degree of behavioral engagement of students in physical education. The development includes creating an operational definition of the term engagement. The definition was driven by the words and phrases provided through semi-structured interview questions answered by experts in the field of physical education.

##### Development of the BEPE Observation Tool

##### Participants

Four groups of stakeholders in physical education were the participants in this study ( $M_{age} = 36.4$ ;  $SD = 11.85$ ;  $M_{years\ experience} = 7.4$ ;  $SD = 6.48$ ; Men = 12; Women = 8). The first group consisted of five professors of physical education pedagogy ( $M_{age} = 51$ ;  $SD = 10.05$ ;  $M_{years\ experience} = 15.8$ ;  $SD = 10.14$ ; Men = 1; Women = 4). In the second group were five doctoral students in physical education pedagogy ( $M_{age} = 27$ ;  $SD = 1.92$ ;  $M_{years\ experience} = 3.6$ ;  $SD = 2.77$ ; Men = 2; Women = 3). The third group included five public education physical education teachers ( $M_{age} = 32.6$ ;  $SD = 6.88$ ;  $M_{years\ experience} = 9$ ;  $SD = 6.83$ ; Men = 4; Women = 1). The fourth group was comprised of five undergraduates in a physical education teacher education program at a major university ( $M_{age} = 25$ ;  $SD = 6.41$ ;  $M_{years\ experience} = 1.2$ ;  $SD = .77$ ; Men = 5; Women = 0). All participants provided completed consent forms that informed them of the

purpose and scope of the study (see Appendix F), which was approved by the institutional review board for human subjects

### **Video selection**

Phase one of the study has four parts. The first part involved the researcher selecting 11 videos of students as they participated in physical education lessons. The lessons consisted of fitness, skill practice, and gameplay. These lessons were chosen based on the researcher being able to identify students who were off-task, on-task but not highly lesson involved, or highly lesson involved. All participants viewed the same videos, but in a different sequence, which was designed to avoid fatigue.

The second part involved a semi-structured interview that lasted approximately 20 minutes where the participants were asked to comment on what they observed in the videos. The researcher gave specific instructions to the participants on which student to watch and asked them to comment on what they saw. The questions were as follows:

- (1) I want you to watch \_\_\_\_\_ (e.g. girl in the red shirt) and give me your thoughts about his or her “lesson involvement.”
- (2) Can you give me a description of what the term engagement means to you?
- (3) Now watch again and describe whether the student is engaged using your terms.
- (4) Now watch another video, and you select two students who, in your opinion, display either not engaged at all or highly engaged. As you identify these students, please and give the rationale for your opinion.

Question two was asked once at the beginning of the session and again at the end of the session.

All of the interactions between the participants and the researcher were recorded and transcribed.

The third part saw the development of word banks based on the transcriptions. The information from the transcription was analyzed for frequency of words and displayed in a horizontal histogram for each group of experts. Additionally, the combined results of the frequencies for each type of lesson were also displayed in a chart, one for skill, fitness, and gameplay based on the results from each group. The fourth part involved using the word bank and the descriptions provided by the participants to create discriminating cues that could be used to develop a working version of the observation tool.

## **Part 2**

The second part of the study involved a re-writing of the SOFIT Description and Procedure Manual (McKenzie, 2002) to match the new BEPE Data Collection Form (see Appendix G). Additionally, a set of coding conventions similar to those provided in the SOFIT manual was created.

### **Design of the BEPE Observation Tool**

The development of the Behavioral Engagement in Physical Education (BEPE) observation tool was based on the format designed for the SOFIT (McKenzie, Sallis, & Nader 1992). Unlike SOFIT the BEPE instrument:

1. Requires the observation of individual students during a physical education lesson.
2. The number of observed students is low.
3. Requires the observer to determine if the student's behavior is motor or non-motor.
4. Requires the observer to determine if the target student is on-task or off-task
5. If on-task, the observer must make an inference on the level of student engagement (e.g., appropriate engaged, appropriate and highly engaged)

Similar to SOFIT the BEPE instrument:

1. Fitness (F), skill development (S), and gameplay (G) codes were retained for use on the second line.
2. Students are to be observed for a specified period, and then the observer determines the code to apply based on what the student's behavior and context of the lesson.

The utilization of a previously validated instrument that has shown to be reliable helps to establish content validity. Content validity, also called logical validity, is how well a measure expresses all of the aspects of a construct (Lawshe, 1975).

After part one of the development was completed and the frequencies of the descriptive words provided during the interview were analyzed, the terms that were used most often were included in the descriptions of the context options on the observation tool. Context options for the observation tool are gameplay, fitness, and skill practice. These contexts are representative of most of the lessons taught in physical education, and the code is to be entered on the first row.

A determination was made that it would be necessary to include an option to describe the behavior of the student when they were involved in non-motor behavior. The second line of the data recording table was to be used for recording the motor or non-motor behavior of the student. This additional coding line was included to accommodate for times when the teacher is demonstrating, and the student does not have the opportunity to be engaged in motor activities. The third line of the BEPE Data Recording Table is used to code the engagement options. These options include on-task or engaged, off-task, and highly engaged. For a student to be considered highly engaged, they must demonstrate the engaged behaviors at an exceptional level. For example, if a student showed that they were "into it" by executing more movements than required but were still on-task, then the code would be recorded as highly engaged.

Additional information on the BEPE Data Recording Form includes a space for the observer to indicate if they are the reliability observer or not. Also, the observer should indicate if they are inside or outside and if the observation was conducted in a live setting or not. Each block on the recording table has a space provided for the observer to write a brief description of the target student. Before they begin the two observers should communicate who are the target students. More specifics on this organizational information can be seen in the BEPE Description and Training Manual (see Appendix H).

**Content validity.** Content validity for the BEPE instrument was achieved by five doctoral level graduate students in Kinesiology giving their opinion in an open forum discussion of the proposed instrument. The students ( $N = 5$ ) were asked to evaluate the degree to which they believed the instrument would measure what it was intended to measure. Overall the responses were favorable. Some of the comments by the students indicated that the observation tool training manual would need more information in the coding conventions to provide more clarity for raters.

### **Part 3**

Part three involved examining previously collected video data and the use of the BEPE Data Collection Form (see Appendix G) for purposes of establishing inter-rater reliability. Inter-rater reliability is the concordance among raters or the degree to which homogeneity or agreement among the raters exist (Thomas, Nelson, Silverman, 2011). Reliability coefficients for the two raters were computed using a simple calculation that is applied to the collected data. The calculation is  $\text{Percent Agree} = (\text{Total \#Agree}) / (\text{Total \# Observations}) \times 100$ . When Percent Agree meets or exceeds 0.81 then one can assume that a high degree of agreement, between 0.61 and 0.80 indicates a substantial agreement is present, between 0.41 and 0.60 indicates a moderate

agreement, 0.21 to 0.40 indicates a fair agreement, 0.01 to 0.20 shows a slight agreement, and < 0 indicates a weak agreement (Landis & Koch, 1977). Each line of the instrument records a different code based on the observation. A reliability score of  $\geq .81$  is needed for context, motor, and engagement codes. Moreover, three different reliability scores were calculated, and all three had to meet or exceed a score of .81. The criterion for reliability was met during the initial attempt of the two observers. Failure to achieve an acceptable level of reliability will require the researchers to revisit the training manual and retrain in the areas that require it.

Inter-rater reliability is achieved when the two observers watched the same video and coded what was seen. This process was repeated three times with three different videos representative of the three contexts allowed in the observation instrument. The three contexts are gameplay, fitness, and skill development.

The only communication during the observation was before the videos began so the target students could be identified. Target students were identified before the video began. Following an interval recording format, raters observed the first student for 10 seconds then recorded for 10 seconds. This process was repeated for five minutes for each of the target students. After five minutes, 15 intervals will have been observed and coded on the instrument. The next five minutes were used to observe the second identified student and so on to student three, four, and five. The instrument allows for 25 minutes of observation and provides 75 recording intervals.

During the video observations, the researchers also wrote some issues and questions that they encountered or thought of concerning the use of the instrument. These issues and questions were added to the BEPE Description and Training Manual as frequently asked questions and were also used to establish meaningful and accurate coding conventions (see Appendix H).



Once the observation is complete, the primary researcher transfers the information collected to the BEPE Summary Form (see Appendix I). The BEPE Summary form is used to calculate percents, ratio, frequencies, or time for reporting purposes.

## CHAPTER VII

### Results

After the interviews were completed and the transcriptions were created, analysis of the frequencies of the descriptive words was conducted. The first set of analysis came from the professors of kinesiology (see Figure 7.1). Thirty-one different words or phrases were generated by the college professors' descriptions of the observed students' level of lesson involvement and level of engagement. The next set of analysis came from the first-year doctoral students of Kinesiology (see Figure 7.2). Twenty-seven different words or phrases were generated by the graduate student's descriptions of the observed students' level of lesson involvement and level of engagement. The third set of analysis came from the physical education public school teachers (see Figure 7.3). Twenty-two different words or phrases were generated by the graduate students' descriptions of the observed students' level of lesson involvement and level of engagement. The last set of analysis came from the Kinesiology teacher candidates (see Figure 7.4). Eighteen different words or phrases were generated by the graduate student's descriptions of the observed students' level of lesson involvement and level of engagement.

Some of the frequencies of words were combined with others due to similar meanings in the context of skill practice, fitness, and gameplay lessons. Examples include the combining of the frequencies of the word "active" with the word "moving" and "prepared" with the word "ready." Each set of words (Skill development, Fitness, and Gameplay) were analyzed separately and reduced before the combining of the sets were conducted. Each frequency list from all four

groups of participants from each context was combined to create three charts, one for each context (see Figures 7.5, 7.6, & 7.7).

The total number of words and phrases for combined skill descriptions was 19. The top five most used words were “Following Directions,” “Active,” “Focused,” “Involved,” and “Effort” (see Figure 7.5). The total number of words and phrases for combined fitness descriptions was 21. The top five most used words were “Into-it,” “Active,” “Focused,” “Following Directions,” and “Effort”(see Figure 7.6). The total number of words and phrases for combined gameplay descriptions was 12. The top five most used words were “Active,” “Focused,” “Into-it” “Involved” and “ Effort,” (see Figure 7.7). Once the combining of the words was completed, and the separate charts for skill practice, fitness, and gameplay from all four groups of experts was generated, the results were then used in the BEPE training manual (see Appendix H) and on the BEPE Data Collection Form (see Appendix G).

After a prototype version of the BEPE Observation Instrument had been created, the primary researcher and another researcher selected three different videos to code using the BEPE Observation instrument simultaneously. To avoid misunderstandings and for clarity, before the video was played, the primary researcher discussed with the other researcher exactly how to use the instrument and what the responsibilities were during the playing of the videos. Both the primary researcher and the other researchers had previously been trained using SOFIT and in the use of the BEPE Observation Instrument.

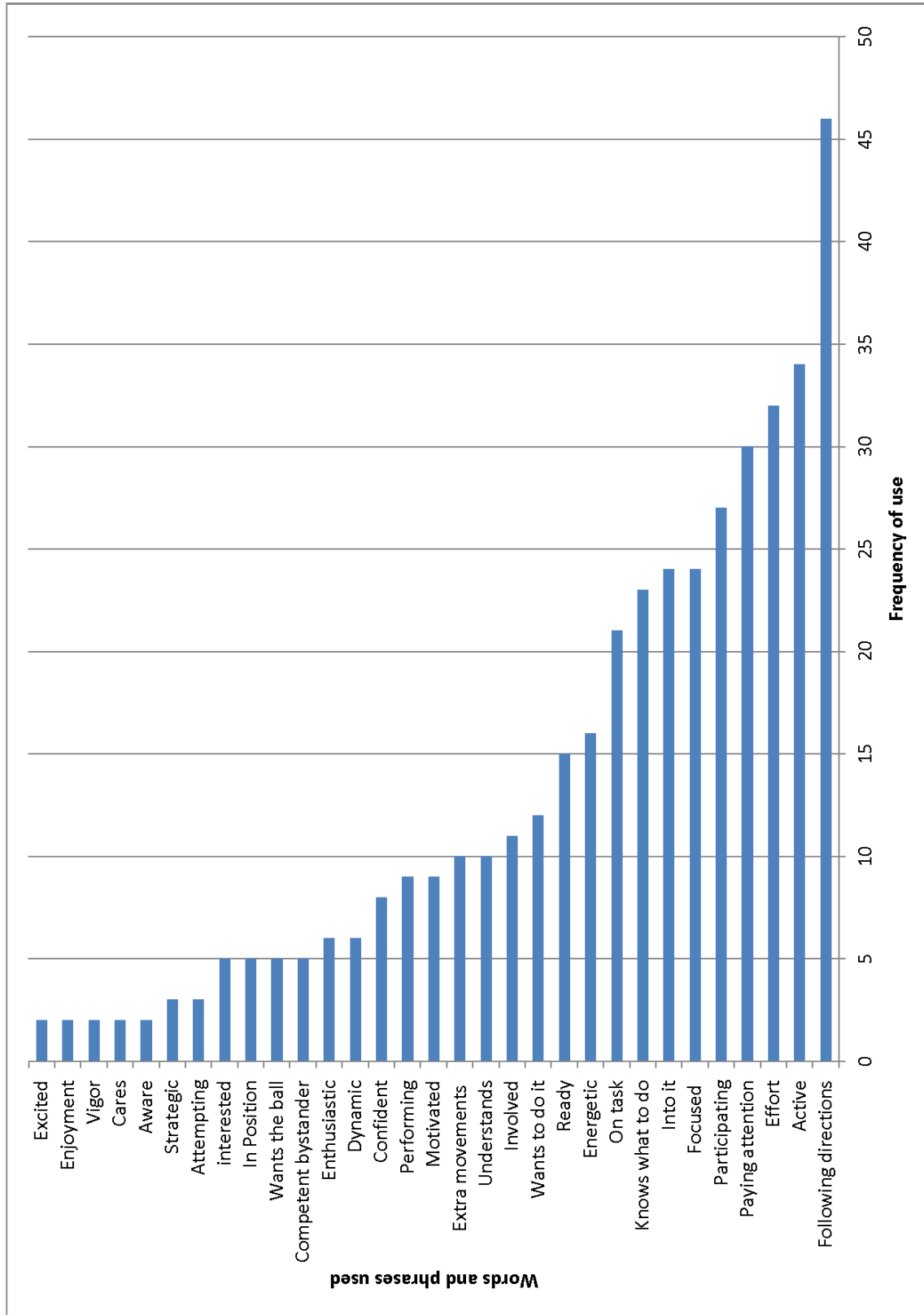


Figure 7.1. Frequencies of descriptive words and phrases expressed by professors.

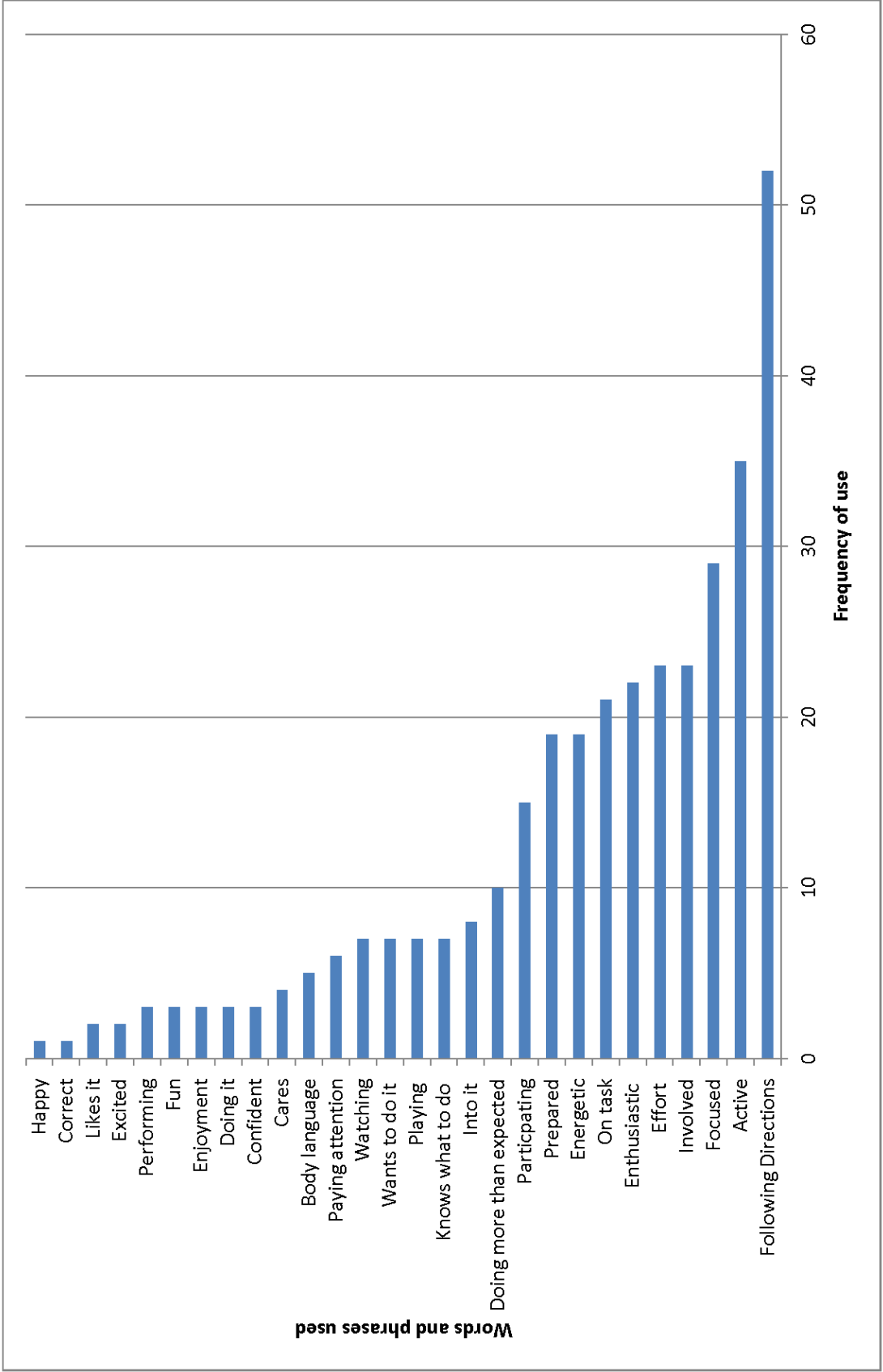


Figure 7.2. Frequencies of descriptive words and phrases expressed by graduate students

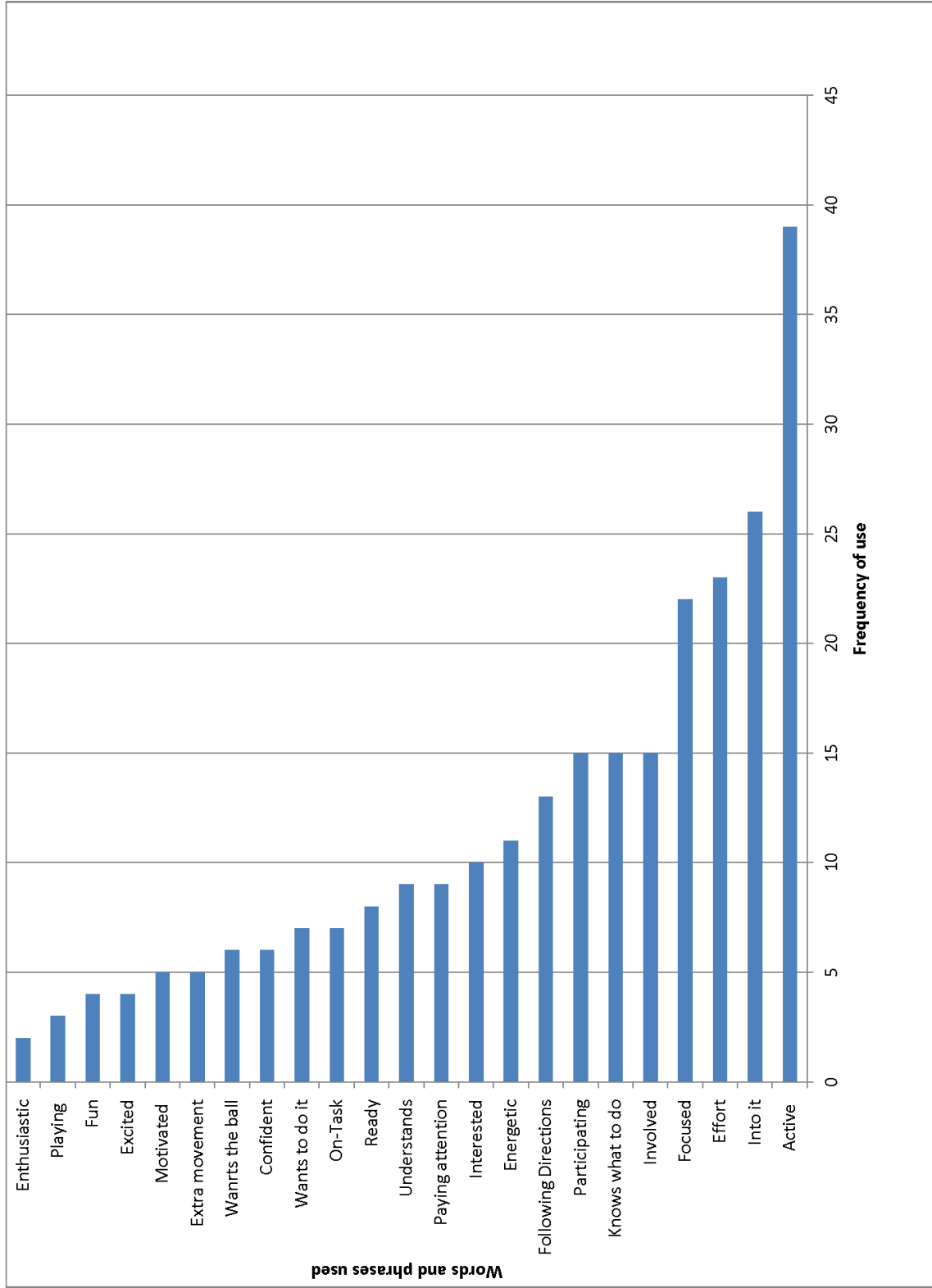


Figure 7.3. Frequencies of descriptive words and phrases expressed by public school teachers

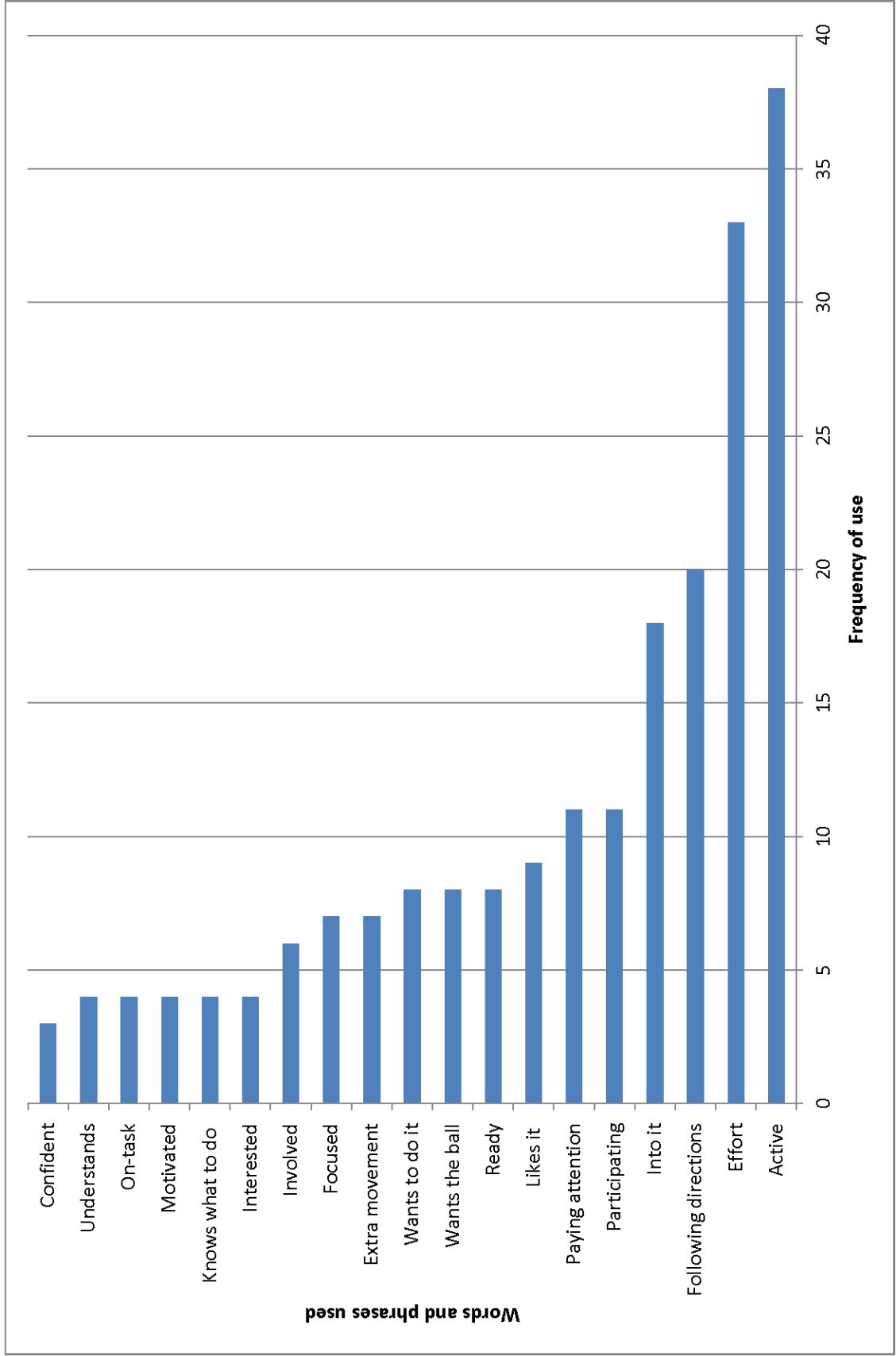


Figure 7.4. Frequencies of descriptive words and phrases expressed by teacher candidates

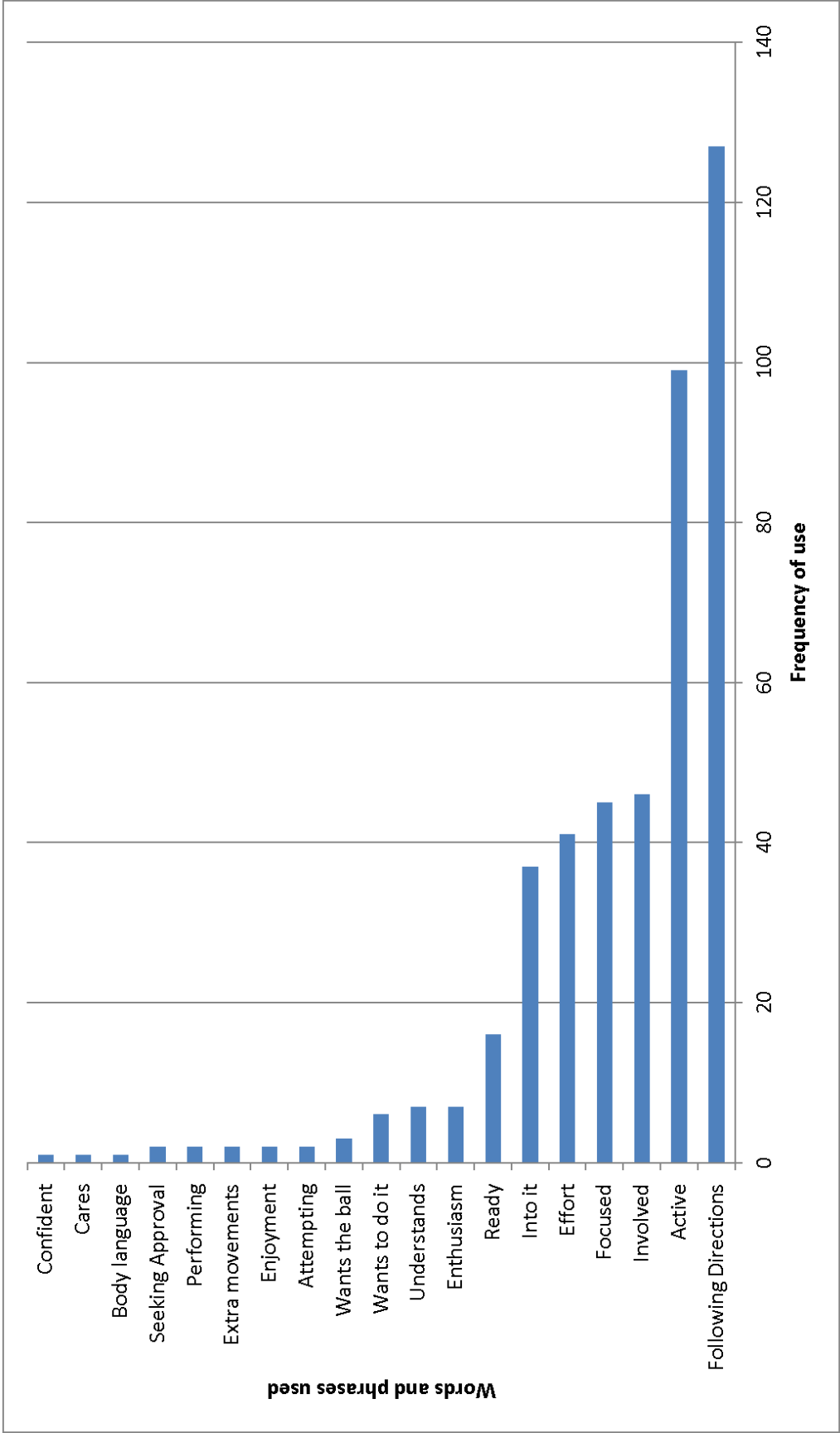


Figure 7.5. Combined frequencies of all participants for skill development context



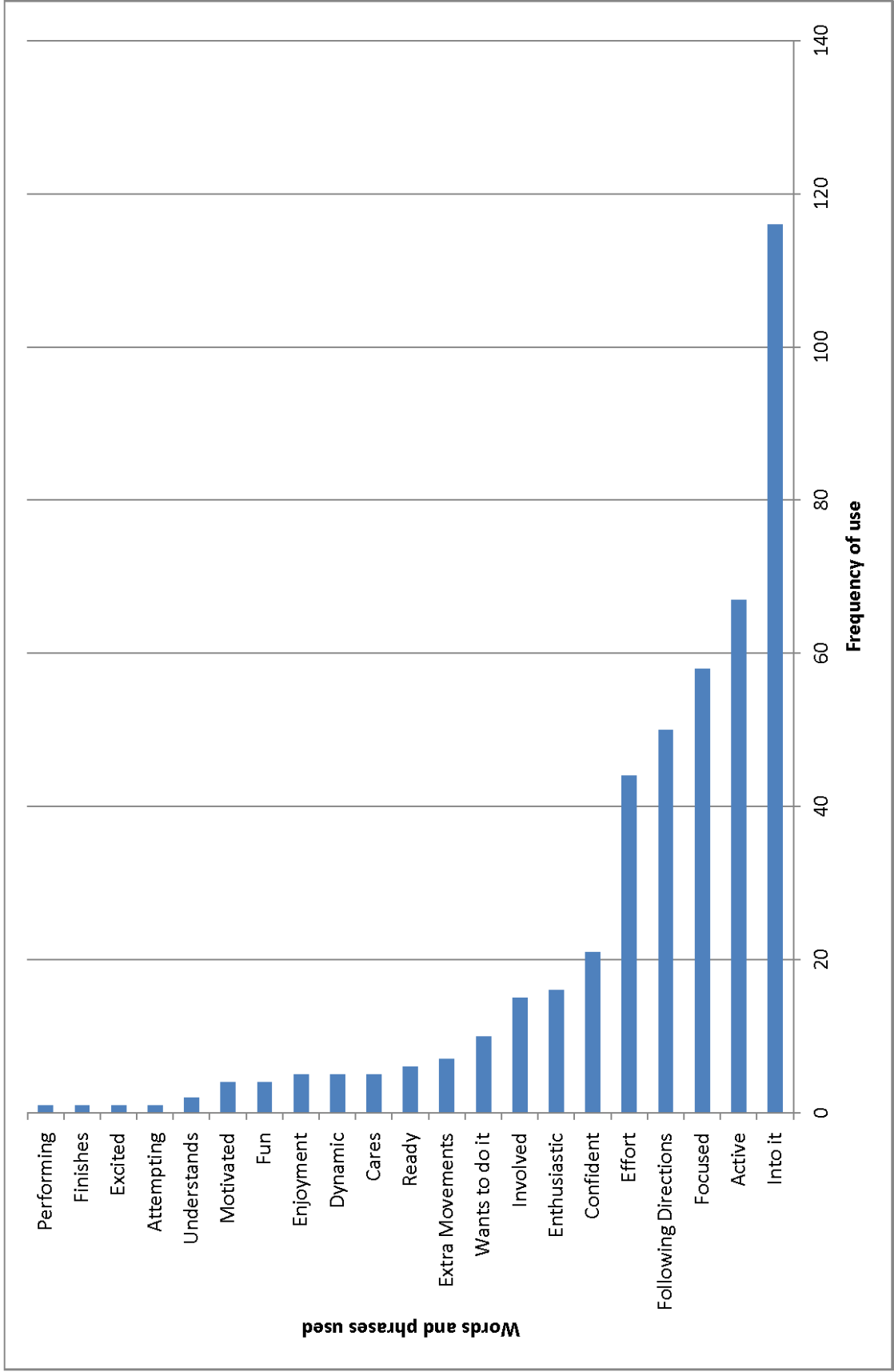


Figure 7.6. Combined frequencies of all participants for fitness context

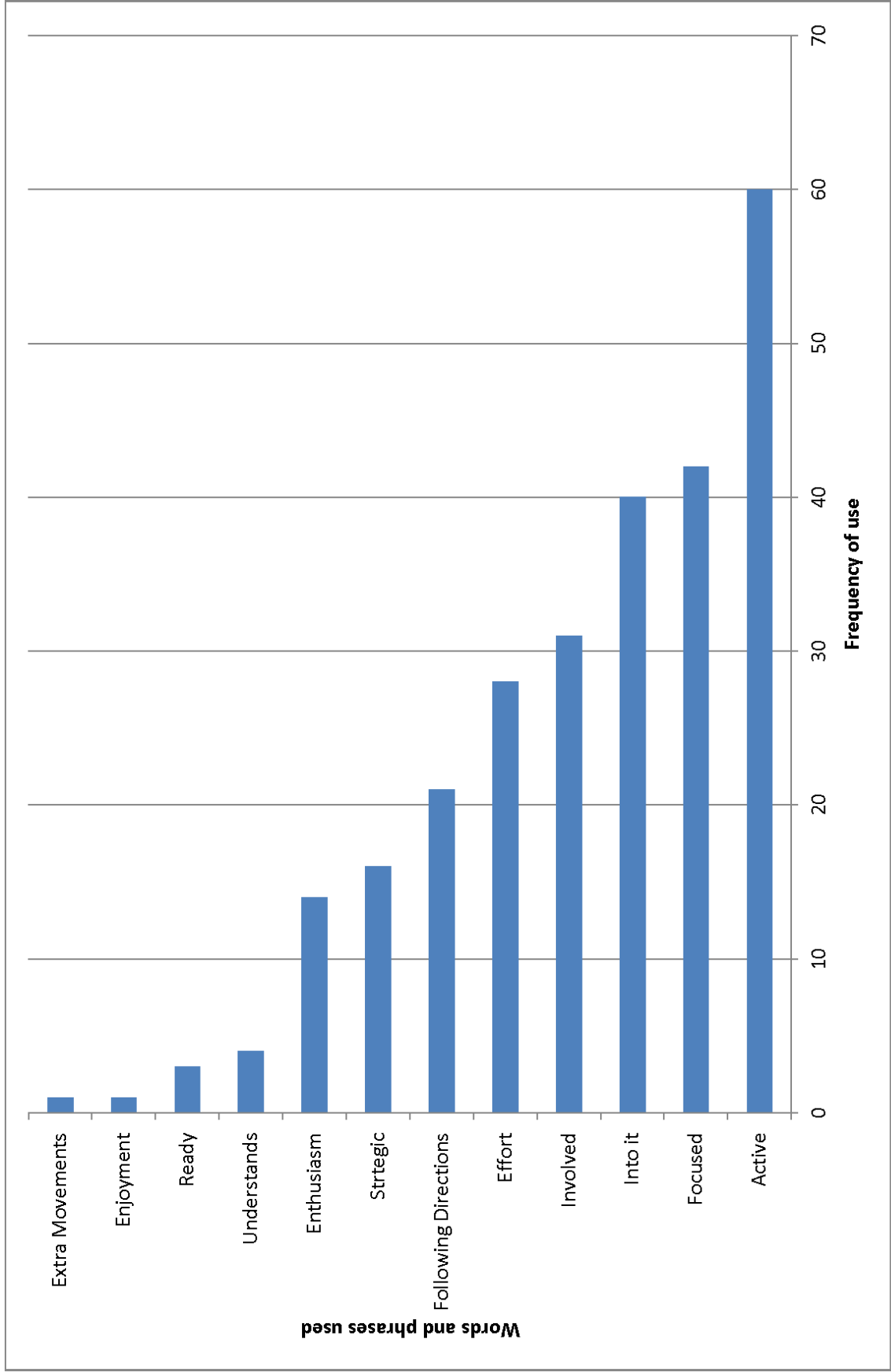


Figure 7.7. Combined frequencies of all participants for gameplay context

The first video was 13.3 minutes long, and the lesson context was skill practice. Before the video began, the researchers identified the target students by writing on the line provided a brief description of the color shirt and pants the student was wearing. Each researcher observed for 10 seconds then recorded their observation on the lines provided. The first line was the context of the lesson (S, F, or G), the second line was the motor options (N or M), and the third line was the engagement options (O, A, or a circled A; See Appendix G).

A total of 40 intervals were recorded during the 13.3-minute skill development video. The researchers did not communicate during the video except to remind each other to observe or record. Of the 40 intervals and three coding options, 100 percent reliability for the lesson context was achieved. Motor coding reliability was 92.5 percent, and engagement reliability was 85 percent (see Table 7.1; See Appendix J & K).

Table 7.1

*Reliability Scores for Skill Practice Video*

	INTERVALS	AGREEMENTS	DISAGREEMENTS	%
Lesson Context	40	40	0	100 %
Motor	40	37	3	92.5%
Degree of Engagement	40	34	6	85.0%

Once the data were transferred to the BEPE Summary Form (see Appendix K), this observation showed the target students were involved in skill practice for 100 percent of the lesson. Twenty-nine of the forty intervals (72.5 %) of the target students were non-motor engaged. Thirty-five of the forty intervals (87.5 %) the target students were appropriately engaged, and six of the 40 intervals (15 %) the target students were highly engaged. The total time of the lesson was 00:13:20 with all of the time in skill practice. Only 27.5% (00:01:50) of

the observed intervals (00:06:40 or 50% of the time for the observed intervals) showed the target students to be motor engaged, and 87.5% (00:05:50) appropriately engaged. Only 15.0 % (00:01:00) of the observed intervals did the target students display highly engaged behavior.

A total of 45 intervals were recorded during the 15.0-minute fitness video. The researchers did not communicate during the video except to remind each other to observe or record. Of the 45 intervals and three coding options, 100 percent reliability for the lesson context was achieved. Motor coding reliability was 97.7 percent, and engagement reliability was 93.3 percent (see Table 7.2; See Appendix L & M )

Table 7.2

*Reliability Scores for Fitness Video*

	INTERVALS	AGREEMENTS	DISAGREEMENTS	%
Lesson Context	45	45	0	100 %
Motor	45	44	1	97.7%
Degree of Engagement	45	42	3	93.3%

Once the data were transferred to the BEPE Summary Form (see Appendix M), this observation showed the target students were involved in fitness for 100 percent of the lesson. Forty-one of the forty-five intervals (91.1 %) of the target students were motor engaged. Thirty-three of the forty-five intervals (87.5 %) the target students were appropriately engaged, and 17 of the 45 intervals (37.8 %) the target students were highly engaged. The total time of the lesson was 00:15:00 with all of the time in fitness. Ninety-one point one percent (00:06:50) of the observed intervals (00:07:30 or 50% of the observed intervals) showed the target students to be motor engaged and 73.3 % (00:05:30) of the observed time were students appropriately engaged.

Thirty-seven point eight percent of the time (00:02:50) of the observed intervals did the target students display highly engaged behavior.

A total of 45 intervals were recorded during A 15-minute gameplay video. The researchers did not communicate during the video except to remind each other to observe or record. Of the 45 intervals and three coding options, 100 percent reliability for the lesson context was achieved. Motor coding reliability was 95.5 percent, and engagement reliability was 93.3 percent (see Table 7.3; see Appendix N & O)

Table 7.3

*Reliability Scores for Gameplay Video*

	INTERVALS	AGREEMENTS	DISAGREEMENTS	%
Lesson Context	45	45	0	100 %
Motor	45	42	3	95.5%
Degree of Engagement	45	43	2	93.3%

Once the data were transferred to the BEPE Summary Form (see Appendix O), this observation showed the target students were involved in skill practice for 100 percent of the lesson. Thirty-three of the forty-five intervals (73.3 %) of the target students were motor engaged. All of the forty intervals (100 %) the target students were appropriately engaged, and 20 of the 40 intervals (50 %) the target students were highly engaged. The total time of the lesson was 00:15:00 with all of the time in gameplay practice. Seventy-three point three percent (00:05:30) of the observed intervals (half of the total lesson time 00:07:30 are the observed intervals) showed the target students to be motor engaged, and 100 % (00:15:00) appropriately engaged. Forty-four point four percent (00:03:20) of the observed intervals saw the target students displaying highly engaged behavior.

## **CHAPTER VIII**

### **Discussion**

Of the three different contexts, skill practice showed to have 27.5 % of the observed interval time in which the target students displayed motor engagement. This low percentage could be due to the selected video of a pre-service teacher that spent most of the time talking and demonstrating the skill. Fitness showed 91.1 % of the observed interval time in which the target students displayed motor engagement. It is possible that this is due to the nature of a fitness unit which requires students to be motor engaged for more extended periods of time and unlike skill development a good lesson can be designed so that few if any students have to wait a turn or stand in line. Gameplay showed 73.3 % of the observed interval time in which the target students displayed motor engagement. Again, the nature of a game requires students to be on the move for long periods of time. The video analyzed was a four-on-four floor hockey game. The design of this modified version keeps the students moving for more extended periods of time and allows more opportunities to be engaged. For this study, it is clear that students may have more opportunities to be motor engaged in gameplay and fitness than during skill practice. Part of these results is supported by previous research where fitness lessons resulted in more energy expenditure than other contexts. However, this same study resulted in less energy expenditure during gameplay than during skill practice (Mckenzie et al., 1995).

These data revealed that the target students were appropriately engaged for 100 % of the time during gameplay, 87.5 % of the time during skill development, 73.3 % of the time during fitness. The time target students were appropriately engaged may be misleading since target

students were motor engaged for 27.5 % of the time. The reason for this is due to the teacher spending a substantial amount of the lesson time demonstrating and talking rather than letting the students have an opportunity to be moving. However, while the teacher was demonstrating and talking, if the students were focused on what the teacher was doing then the target students were displaying appropriate behavior. Gameplay revealed that target students were appropriately engaged for the full time of the lesson. This high percentage is most likely due to the nature of the game and the small size of the teams.

Gameplay seems to have given the target students the most opportunities to be highly engaged as 50% of the target students displayed highly engaged behavior during the observed intervals. Skill development only allowed target students to display highly engaged behavior for 15 % of the observed intervals while fitness allowed for 37.8 %. The reason the target students were not able to display highly engaged behavior at a higher rate was that the teacher did not allow for enough opportunities for the students. Even though the target students showed a high rate of appropriate behavior, most of this time was spent in non-motor activities. During non-motor activities, it is difficult for an observer to determine the degree of behavioral engagement since the appropriate behavior is being still and listening.

The primary goal of this study was to develop an observation tool that can be used by researchers and educators to evaluate the degree of behavioral engagement students display during physical education. The development included the consulting with experts in the physical education field and using the words and phrases they provided through semi-structured interviews to drive the definition of engagement. The observation instrument showed acceptable levels of reliability in all three of the categories of lesson context, motor options, and engagement levels. Additionally, the analyzing of the data collected through the use of this

instrument proved to be straightforward and may provide teachers and researchers with valuable information that can be used to improve the overall experience of students of all ages in physical education.

A few of the limitations include all of the videos used had only one type of context used during the lesson, hence the 100% reliability for lesson context in the observations. Sometimes a teacher may change or alter a lesson during class or finish one part of the lesson and move on to the next. When this happens, the lesson context may change. The videos used in this study did not have this occurrence.

During a lesson, when the teacher is talking or demonstrating, and the target student is non-motor engaged, it may be difficult to determine if a target student is appropriately behaviorally engaged. In this case, if the target student is paying attention to what the teacher is doing and saying they must be coded as appropriately engaged even though they are in a non-motor state. Some of the percentages that the tool yields can be misleading due to the nature of the lesson and the amount of time the teacher allows students to move and practice.

### **Possibilities for Future Research**

The development of these holistic tools that measure the different components of engagement will allow us to examine some pertinent and valuable questions regarding young people's participation in physical education. To conceptualize these possibilities, we turn to Dunkin and Biddle's (1974) model for the study of classroom teaching which proposed four sets of variables which directly and indirectly influence student achievement.

Using this model as a heuristic for research on engagement, we suggest that engagement could be considered as a process variable in some cases, but also as a product variable in others (see Figure 8.1). The following section will present some questions that if answered, might



provide significant insight into the practice and eventual improvement of physical education in schools. Each section also references some studies that we suggest could have been either strengthened or extended by the inclusion of engagement measures.

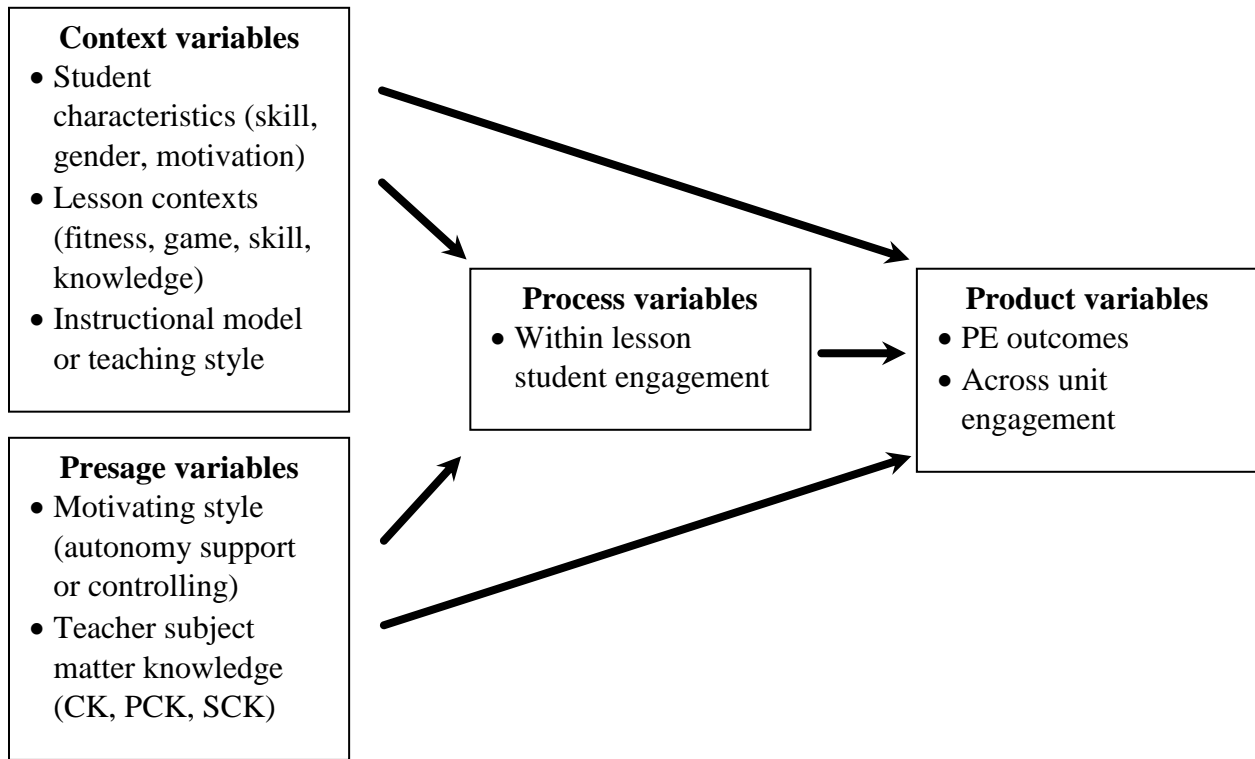


Figure 8.1. Teaching Variable Connections to Student Engagement and Outcomes

### Context Variables and their Impact on Engagement

One of the hallmarks of the discourse on physical education is that it should be an inclusive subject so that all young people can experience the joy of movement and develop into physically literate individuals. However, evidence from some studies makes it clear that certain groups of students do not find physical education to be particularly inviting. Most commonly, those students are more likely to be girls who have low perceptions of competence and little experience with sporting experiences outside of school, with different or mixed gender groups, and previous experience with organized sport (Prochaska, Sallis, Slymen, & McKenzie, 2003). What is less known is whether students with different characteristics entering physical education

(motivation, skill, gender, to name a few) engage at different levels. A foundational question concerning the contextual variables might ask “do students with different characteristics entering physical education (motivation, skill, gender, and goal orientation) engage at different levels?” Further, given that students have shown a preference for game-based physical education over a more fitness-focused program, we might ask “does the context of the lesson have an impact on student engagement?” Finally, given the advent of a number of instructional models in which students are expected to be active learners and are given the authority to make a number of decisions within lessons (Dyson, Griffin, & Hastie, 2004), we may be well served to ask “how do students engage in lessons when teachers adopt different instructional strategies?”

**Impact of student characteristics.** Metzler (2017, p. 34) comments that any physical education class will contain “students with different characteristics, needs, and abilities, all trying to learn at the same time.” Metzler continues with perhaps a more pertinent statement concerning the topic of engagement when he notes that “by addressing the needs of one or more groups of students in the class, they may reduce the opportunity for other groups of students to learn the content” (2017, p. 34). While we are not suggesting that studies attempt to generalize whether engagement levels in physical education differ by ethnicity, skill levels, previous experience, or gender, it may well be interesting to know whether we could predict the potential of young people to be engaged by understanding if there are consistencies across these context variables.

Take for example the paper of Silverman (1985), which examined student characteristics mediating engagement-outcome relationships during swimming instruction. Using ALT-PE as his measure of motor engagement, Silverman found that when all students were grouped, no engagement variable was a significant predictor of residualized achievement. However, when the

analysis was performed for students divided by gender, previous experience, and three levels of initial skill, significant relationships were found.

**Impact of lesson context.** Data on student activities levels during physical education show significant variability across lesson contexts. As a case in point, McKenzie et al. (1995; 2000) report that the highest levels of energy expenditure are achieved during fitness activities and lowest in free play (of the motor tasks), while management and knowledge contexts result in even lower levels of MVPA. While these data provide insight into the impact of teachers' class management and instructional skills on physical activity and student learning, we suggest that having a concurrent measure of engagement during these types of studies would allow for a more comprehensive understanding of how different instructional settings impact student behavior. For example, while we know that fitness lessons (or lesson segments) generate the highest level of MVPA, they are also seen by students as a less attractive part of their physical education experience than participation in skill/game contexts in both elementary (McKenzie, Alcaraz & Sallis, 1994) and secondary (Rickard & Banville, 2006) settings. The multidimensional analysis provided in this paper may well provide more specific details of the extent to which cognitive, emotional, agentic or behavioral engagement are predictors of physical activity levels across contexts.

**Impact of the format of instruction.** At the time of the Duncan and Biddle model, the examination of teaching styles was particularly nascent, while the idea of model-based practice was not part of the sport pedagogy lexicon. Teaching style here is used about the spectrum of teaching styles first introduced by Mosston and Ashworth (1990), and not to the motivational style of the teacher (a presage variable).

From the research on teaching styles we know there are differential outcomes regarding motivation (e.g., Morgan, Kingston & Sproule, 2005) and changes in goal orientation (e.g., Salvara, Jess, Abbott, & Bognár, 2006). There is also a significant amount of descriptive research that reports various student outcomes from different pedagogical models. From this research we know there are differential outcomes regarding motivation (Wallhead & Ntoumanis, 2004), tactical learning (Hastie & Curtner-Smith, 2006), or game performance Zhang, Ward, Li, Sutherland, & Goodway, 2012). Nonetheless, it may well be interesting also to investigate differences in student engagement from a multidimensional approach (not simply behavioral) as these students experience these different instructional approaches.

### **Presage variables and their impact on engagement**

According to Dunkin and Biddle (1974, p. 39), presage variables “concern the characteristics of teachers that may be examined for their effects on the teaching process.” As it relates to the contemporary research focus on physical education instruction, we suggest two key questions would benefit the physical education pedagogy community as they relate to engagement. These include “do students engage differently when participating in lessons involving different motivational climates?” and “do students engage differently during lessons where teachers have different levels of content knowledge?”

**Impact of motivational climate.** In terms of motivational climate, there have been a plethora of studies that have compared students’ experiences within physical education, with the basic theoretical concept that an individual’s goal orientations (predispositions to be task/mastery or ego focused) in combination with how he or she perceived the teacher behaviors, has a significant impact on his or her perceptions of the motivational climate. The width of this field of study is evident when Harwood, Keegan, Smith, and Raine (2015), who in a systematic

review of the intrapersonal correlates of motivational climate perceptions in physical education ( $n = 34$ ) identified dependent measures to include perceived competence (overall and self-referenced), confidence/self-esteem, feelings of autonomy and relatedness, more intrinsic forms of motivational regulation, positive affect, as well as attitudes and intentions for future participation.

What is missing from nearly all of these studies, however, are measures of student engagement within the physical education settings being explored. As a case in point, only four of the studies in the Harwood et al. (2015) review used behavioral measures, and none of these were in-class measures. For example, the studies of Barkoukis and Hagger (2013), and Chatzisarantis and Hagger (2009) used self-reported leisure-time physical activity participation as one of their dependent measures, while Kalaja, Jaakkola, Watt, Liukkonen, and Ommundsen (2009: balance, leap, and basketball dribbling) and Xiang, McBride, and Bruene (2004: 1-mile run) used fitness or skills tests.

One of the first studies in physical education that manipulated motivational climate was that of Solmon (1996) who organized classes to be either task or ego involved. While this study did use a behavioral measure (practice trials), it may have benefitted from a more comprehensive account of student engagement using the instruments proposed in this paper. More recent measures within physical education examining motivational climate also have correlated engagement with accumulated physical activity but have used either pedometers (Bryan & Solmon, 2012), or accelerometers (Rupprich, Lunger, Raue, Jäger, & Knisel, 2016). While none of these have contrasted their first-hand measures with self-reports of behavioral engagement, they have also not considered the emotional, cognitive or agentic dimensions that are integral to a complete understanding of engagement.

**Impact of teacher content knowledge.** At the turn of the last century, the National Research Council (2000) identified subject-matter knowledge, pedagogical knowledge, and pedagogical content knowledge as presage variables important effective classroom instruction. Regarding these variables within physical education, Ward and his colleagues have shown that both content knowledge and pedagogical content knowledge are important attributes that teachers bring to their lessons (e.g., Ayvazo & Ward, 2011; Ward, 2013; Ward, Kim, Ko, & Li, 2015). In essence, these authors conclude that student learning is significantly determined by the quality of tasks they receive at both the individual and class level, both individually and collectively. It is also important to note that individual teachers have significant variability within their content knowledge across subject areas so that they are less able to appropriately modify instruction for students in their weaker units (Ayvazo & Ward, 2011). Nonetheless, there have been demonstrated positive effects regarding student learning following specific professional development efforts (Ward et al., 2015).

What is relevant within this discussion is the suggestion from Ward (2013, p. 436) that “if you introduce high-level content and also improve teacher knowledge and skill without changing student engagement, little change in student learning occurs.” That is, quality measures of student engagement may well provide valuable insight into the students’ relationship to the content.

### **Engagement as a process to predict physical education outcomes**

While the previous sections have examined how differences in presage and context variables might influence student engagement, this next section places engagement first and asks whether students’ levels of engagement have an impact on student outcomes within physical education. Specifically, the question can be stated as “what is the relationship between students’

engagement (including all four dimensions) and their development as physically educated/literate young people?” The justification for this examination lies in the findings from Hastie’s (2017) review of the research literature in physical education that examined what is currently known about the extent to which the national outcome goals have been achieved. Specifically, Hastie’s (2017, p. 3) conclusion was that “there is a dearth of results that directly accounts for the accomplishment of the standards” and that the expectations of performance outlined in those standards as being achieved by less than half of all students participating in physical education.

While it is acknowledged that the standards themselves (i.e., the “has,” “is,” “does,” “knows,” and “values” goals) are not measurable items, there are grade-level outcomes associated with them that represent the measurable criteria that are to be assessed. While there is perhaps some lack of consensus as to the extent to which developmentally valid measures of these outcomes, there is certainly a place within physical education research for predictive modeling studies involving large samples of students. The dependent variables are these grade level outcomes, and the independent variables include the various dimensions of engagement.

### **Engagement as a dependent measure in intervention research**

One notable feature of research on physical education since the turn of the century has been the ascendancy of interventions designed to change student behaviors within classes (see Musard & Poggi, 2015; Silverman & Manson, 2003). Of these, the most common (at least in the Anglophone literature) have focused on either the promotion of moderate-to-vigorous physical activity (see Lonsdale et al., 2013 for a review), or in outcomes related to sport/game-based physical education. As examples of the latter, reviews by Hastie and Wallhead (2016) focusing on Sport Education, and Harvey and Jarrett (2014) which center on game-centered approaches have shown significant differences in a number of outcomes (e.g., game performance, game

knowledge, tactical understanding) following participation in units designed along more authentic forms of sport/game participation that what students would experience in the more traditional, teacher-directed lower autonomy forms of classes. Although not as substantive, intervention research focusing on adventure-based learning (Sutherland & Legge, 2016) and responsibility-based program (Wright & Burton, 2008) have also been part of the landscape in research on physical education.

Given the conception of engagement presented in this paper as a clearly defined and reliably measured construct, we suggest that a guiding question for future interventions may well include the question which asks whether “students do indeed change their levels of engagement as a result of participation in a new form of physical education?” This suggestion is particularly the case in studies that foreground the term “engagement” in their titles. As cases in point, the studies of Casey and Jones (2011) as well as Mitchell, Gray, and Inchley (2015) have repeated references to engagement, while never providing an operational definition of the term, nor expanding upon the various dimensions engagement central to the key points being made here. This observation is not to diminish the findings of both papers, as they make valuable contributions to the literature on physical education pedagogy. It is our belief; however, that had these papers had access to a clearer and more expansive set of data collection tools for their study, their findings may have been more substantive and illuminating. This instrument can be used as a predictor of physical education outcomes, compare different formats of instruction, examine the relationship between student self-perceptions and observed behavior, and use the concept of engagement as a dependent variable in research.



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APPENDIX A

THE ENGAGEMENT IN PHYSICAL EDUCATION SCALE (EPES)

## Self-reported Level of Engagement

The purpose of this survey is to determine the level of engagement in physical education. It should take approximately 20 minutes to complete the survey. However, if you need more time feel free to take the extra time. All answers will remain confidential, and no attempt will be made to link a specific survey with an individual. You do not have to take the survey if you choose not to. If you choose to take the survey, please give the Auburn University student that distributed the survey your signed letter of permission from your parent(s) or legal guardian(s). At the conclusion of the study, the final results will be made available to you and your teacher.

Please fill out the following information:

What is your sex?

- Boy
- Girl
- Do not wish to say

What is your current age in years?

- Under 12
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- Older than 18

In what month were you born?

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Please indicate your race.

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Asian/Pacific Islander
- Other

The following statements are designed to rate your feelings about your personal level of engagement in physical education. Your answers should only apply to you and your personal feelings. Please color in the circle under the heading that ranges from 'strongly disagree' to 'strongly agree' with the statement on the left. Remember, there is no right or wrong answer.

		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
1	In PE, I let my teacher know what I need and want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	In PE, I let my teacher know what I am interested in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	During PE, I express my preferences and opinions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	During PE, I ask questions so I can learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	When I need something in PE, I'll ask the teacher for it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	In PE, I change whatever we are learning so I can learn as much as possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	In PE, I try to make whatever we are learning as interesting as possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	When I practice skills for PE, I try to connect what I am learning with my own experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I try to understand why I practice skills for PE.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	When participating in PE, I try to relate what I'm learning to what I already know.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	I practice on my own to help me understand the important concepts taught in PE.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	When I'm in PE, I listen very carefully	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13	I pay attention in PE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	I try hard in PE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	In PE, I work as hard as I can	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	When I'm in PE, I participate in the activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	When we work on something in PE, I feel interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	PE is fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	I enjoy learning new things in PE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	When I'm in PE, I feel good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21	When we work on something in PE, I get involved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you for your participation

APPENDIX B  
IRB PROTOCOL FOR SURVEY

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS  
RESEARCH PROTOCOL REVIEW FORM  
FULL BOARD or EXPEDITED**

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**, 115 Ramsay Hall, Auburn University  
Phone: 334-844-5966 e-mail: IRBAdmin@auburn.edu Web Address: <http://www.auburn.edu/research/vpr/ohs/index.htm>

Revised 2.1.2014 **Submit completed form to [IRBsubmit@auburn.edu](mailto:IRBsubmit@auburn.edu) or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. PROPOSED START DATE of STUDY: December 1, 2017

PROPOSED REVIEW CATEGORY (Check one):  FULL BOARD  EXPEDITED

SUBMISSION STATUS (Check one):  NEW  REVISIONS (to address IRB Review Comments)

2. PROJECT TITLE: Psychometric Analysis of the Self-reported Behavioral Engagement in Physical Education

3 Andy Stringfellow GTA Kinesiology afs0018@auburn.edu  
 PRINCIPAL INVESTIGATOR TITLE DEPT AU E-MAIL  
301 Wire Rd Auburn AL 36849 706-662-2116 andyjr71@gmail.com  
 MAILING ADDRESS PHONE ALTERNATE E-MAIL

4. FUNDING SUPPORT:  N/A  Internal  External Agency: \_\_\_\_\_  Pending  Received

For federal funding, list agency and grant number (if available). none

5a. List any contractors, sub-contractors, other entities associated with this project:

none

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):

none

**PROTOCOL PACKET CHECKLIST**

All protocols must include the following items:

- Research Protocol Review Form** (All signatures included and all sections completed)  
(Examples of appended documents are found on the OHSR website: <http://www.auburn.edu/research/vpr/ohs/sample.htm>)
- CITI Training Certificates** for all Key Personnel.
- Consent Form or Information Letter** and any Releases (audio, video or photo) that the participant will sign.
- Appendix A, "Reference List"**
- Appendix B** if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.
- Appendix C** if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.
- Appendix D** if you will be using a debriefing form or include emergency plans/procedures and medical referral lists  
(A referral list may be attached to the consent document).
- Appendix E** if research is being conducted at sites other than Auburn University or in cooperation with other entities. A **permission letter** from the site / program director must be included indicating their cooperation or involvement in the project.  
NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of **IRB approval** from each entity is required prior to initiating the project.
- Appendix F** - Written evidence of acceptance by the host country if research is conducted outside the United States.

**FOR ORC OFFICE USE ONLY**

DATE RECEIVED IN ORC: \_\_\_\_\_ by \_\_\_\_\_ PROTOCOL # \_\_\_\_\_  
 DATE OF IRB REVIEW: \_\_\_\_\_ by \_\_\_\_\_ APPROVAL CATEGORY \_\_\_\_\_  
 DATE OF IRB APPROVAL: \_\_\_\_\_ by \_\_\_\_\_ INTERVAL FOR REVIEW \_\_\_\_\_  
 COMMENTS: \_\_\_\_\_

The Auburn University Institutional  
 Review Board has approved this  
 Document for use from  
11/01/2017 to 10/31/2018  
 Protocol # 17-447 EP 1710

6. GENERAL RESEARCH PROJECT CHARACTERISTICS

6 A. Research Methodology	
Please check all descriptors that best apply to the research methodology.	
Data Source(s): <input checked="" type="checkbox"/> New Data <input type="checkbox"/> Existing Data	Will recorded data directly or indirectly identify participants? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Data collection will involve the use of:	
Educational Tests (cognitive diagnostic, aptitude, etc.) Interview Observation Location or Tracking Measures Physical / Physiological Measures or Specimens (see Section 6E.) <input checked="" type="checkbox"/> Surveys / Questionnaires Other: _____	Internet / Electronic Audio Video Photos Digital images Private records or files
6 B. Participant Information	6 C. Risks to Participants
Please check all descriptors that apply to the target population. <input checked="" type="checkbox"/> Males <input checked="" type="checkbox"/> Females <input type="checkbox"/> AU students  Vulnerable Populations <input type="checkbox"/> Pregnant Women/Fetuses <input type="checkbox"/> Prisoners <input type="checkbox"/> Institutionalized <input checked="" type="checkbox"/> Children and/or Adolescents (under age 19 in AL)  Persons with: <input type="checkbox"/> Economic Disadvantages <input type="checkbox"/> Physical Disabilities <input type="checkbox"/> Educational Disadvantages <input type="checkbox"/> Intellectual Disabilities  Do you plan to compensate your participants? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Please identify all risks that participants might encounter in this research.  <input type="checkbox"/> Breach of Confidentiality* <input checked="" type="checkbox"/> Coercion <input type="checkbox"/> Deception <input type="checkbox"/> Physical <input type="checkbox"/> Psychological <input type="checkbox"/> Social <input type="checkbox"/> None <input type="checkbox"/> Other: _____  <small>*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.</small>
6 D. Corresponding Approval/Oversight	
<ul style="list-style-type: none"> <li>• Do you need IBC Approval for this study?  <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No                      If yes, BUA # _____ Expiration date _____</li> <li>• Do you need IACUC Approval for this study?  <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No                      If yes, PRN # _____ Expiration date _____</li> <li>• Does this study involve the Auburn University MRI Center?  <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No                      Which MRI(s) will be used for this project? (Check all that apply)  <input type="checkbox"/> 3T    <input checked="" type="checkbox"/> 7T                      Does any portion of this project require review by the MRI Safety Advisory Council?  <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No                       Signature of MRI Center Representative: _____  <u>Required for all projects involving the AU MRI Center</u>                       Appropriate MRI Center Representatives:                      Dr. Thomas S. Denney, Director AU MRI Center                      Dr. Ron Beyers, MR Safety Officer                 </li> </ul>	



7. PROJECT ASSURANCES Psychometric Analysis of the Self-reported Behavioral Engagement in Physical Education

**A. PRINCIPAL INVESTIGATOR'S ASSURANCES**

1. I certify that all information provided in this application is complete and correct.
2. I understand that, as Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance this project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the Auburn University IRB.
3. I certify that all individuals involved with the conduct of this project are qualified to carry out their specified roles and responsibilities and are in compliance with Auburn University policies regarding the collection and analysis of the research data.
4. I agree to comply with all Auburn policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects, including, but not limited to the following:
  - a. Conducting the project by qualified personnel according to the approved protocol
  - b. Implementing no changes in the approved protocol or consent form without prior approval from the Office of Research Compliance
  - c. Obtaining the legally effective informed consent from each participant or their legally responsible representative prior to their participation in this project using only the currently approved, stamped consent form
  - d. Promptly reporting significant adverse events and/or effects to the Office of Research Compliance in writing within 5 working days of the occurrence.
5. If I will be unavailable to direct this research personally, I will arrange for a co-investigator to assume direct responsibility in my absence. This person has been named as co-investigator in this application, or I will advise ORC, by letter, in advance of such arrangements.
6. I agree to conduct this study only during the period approved by the Auburn University IRB.
7. I will prepare and submit a renewal request and supply all supporting documents to the Office of Research Compliance before the approval period has expired if it is necessary to continue the research project beyond the time period approved by the Auburn University IRB.
8. I will prepare and submit a final report upon completion of this research project.

My signature indicates that I have read, understand and agree to conduct this research project in accordance with the assurances listed above.

Andy Stringfellow

Printed name of Principal Investigator

AndyStringfellow

Digitally signed by Andy Stringfellow  
Date: 2017.10.16 11:12:18 -0500

Principal Investigator's Signature

October 16, 2017

Date

**B. FACULTY ADVISOR / SPONSOR'S ASSURANCES**

1. I have read the protocol submitted for this project for content, clarity, and methodology.
2. By my signature as faculty advisor/sponsor on this research application, I certify that the student or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol.
3. I agree to meet with the investigator on a regular basis to monitor study progress. Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
4. I assure that the investigator will promptly report significant incidents and/or adverse events and/or effects to the ORC in writing within 5 working days of the occurrence.
5. If I will be unavailable, I will arrange for an alternate faculty sponsor to assume responsibility during my absence, and I will advise the ORC by letter of such arrangements. If the investigator is unable to fulfill requirements for submission of renewals, modifications or the final report, I will assume that responsibility.

Peter Hastie

Printed name of Faculty Advisor / Sponsor

Peter Hastie

Digitally signed by Peter Hastie  
Date: 2017.10.16 13:14:43 -0500

Faculty Advisor's Signature

October 16, 2017

Date

**C. DEPARTMENT HEAD'S ASSURANCE**

By my signature as department head, I certify that I will cooperate with the administration in the application and enforcement of all Auburn University policies and procedures, as well as all applicable federal, state, and local laws regarding the protection and ethical treatment of human participants by researchers in my department.

Mary E. Rudisill

Printed name of Department Head

Mary Rudisill

Digitally signed by Mary Rudisill  
Date: 2017.10.18 09:31:05 -0500

Department Head's Signature

October 18, 2017

Date

**8. PROJECT OVERVIEW: Prepare an abstract that includes: (350 word maximum, in language understandable to someone who is not familiar with your area of study):**

**a) A summary of relevant research findings leading to this research proposal:**

*(Cite sources; include a "Reference List" as Appendix A.)*

**b) A brief description of the methodology, including design, population, and variables of interest**

a)

Doyle (1977), states that if you want to know what is happening in the classroom, observe the student not the teacher. The importance of student engagement has been shown in its ability predict school dropout and completion fairly accurately based on data from attendance, behavior, academic performance, and attachment to school. (Alexander, Entwisle, & Horsey, 1997; Barrington & Hendricks, 1989; Ensminger & Slusarcick, 1992). Engagement is a construct within education that consists of four specific areas that include academic, behavioral, cognitive and psychological (Appleton, Christen, & Furlong, 2008; Appleton, Christenson, Kim, & Reschley, 2006). Students that demonstrate the desired behavior in physical education are physically active. There is more to engagement in physical education than just being physical. Growing research on student engagement has begun to highlight its critical role in student achievement and learning (Trowler & Trowler, 2010).

b)

1. Students in 8th or 9th grade classes will be asked to complete a survey that measures their perceptions of engagement during physical education. This should take no longer than 10 minutes.
2. Responses will be anonymous. Students will not be asked to place any identifying information on the survey.
3. The data from these surveys will be subject to factor analysis to determine the validity of each item. That is, some items may be deleted in the final form of the survey.

A 21 question survey using a five point Likert scale was developed by modifying items from two other previously validated surveys, one by Reeve and Tseng (2011) and the other by Reeve (2013), that were designed to measure engagement in the classroom.

**9. PURPOSE.**

**a. Clearly state the purpose of this project and all research questions, or aims.**

The purpose of this project is to validate a newly developed scale to measure student's perception of their engagement in physical education. The scale will subsequently be used to answer the question, What is the self-reported level of cognitive, agentic, behavioral, and emotional engagement of eighth and ninth graders in physical education?

**b. How will the results of this project be used? (e.g., Presentation? Publication? Thesis? Dissertation?)**

The results of this project will be used as part of a doctoral dissertation and publications following the completion of the dissertation. In the future these results may also be included in presentations at professional conferences.

10. **KEY PERSONNEL.** Describe responsibilities. Include information on research training or certifications related to this project. **CITI is required. Be as specific as possible.** (Include additional personnel in an attachment.) *All key personnel must attach CITI certificates of completion.*

Principle Investigator Andy Stringfellow Title: GTA E-mail address afs0018@auburn.edu  
 Dept / Affiliation: Kinesiology

**Roles / Responsibilities:**

Sole researcher, preparing the letters of consent/assent, distributing/collecting the letters of consent/assent, administering the survey, collecting the surveys, securing the data, and analyzing the data.

Individual: Dr. Peter Hastie Title: Professor E-mail address hastiep@auburn.edu  
 Dept / Affiliation: Kinesiology

**Roles / Responsibilities:**

Advising and overseeing the sole researcher, research process, and writing of the dissertation.

Individual: Dr. Chih-hsuan Wang Title: Asst. Professor E-mail address wangchi@auburn.edu  
 Dept / Affiliation: Educational Research Methods & Analysis

**Roles / Responsibilities:**

Advising and overseeing the sole researcher, research process, and writing of the dissertation.

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
 Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
 Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
 Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

11. **LOCATION OF RESEARCH.** List all locations where data collection will take place. (School systems, organizations, businesses, buildings and room numbers, servers for web surveys, etc.) **Be as specific as possible. Attach permission letters in Appendix E.** (See sample letters at <http://www.auburn.edu/research/vpr/ohs/sample.htm>)

Data collection will take place at Auburn Jr. High School. Specifically data collection will be indoors in the gymnasium of the schools and will occur within the parameters of the physical education class.

12. PARTICIPANTS.

a. Describe the participant population you have chosen for this project including inclusion or exclusion criteria for participant selection.

Check here if using existing data, describe the population from whom data was collected, & include the # of data files.

The population of interest that has been selected for this project are eighth and ninth grade boys and girls that are enrolled in physical education. Only students who provide assent and consent will be a research participant.

b. Describe, step-by-step, in layman's terms, all procedures you will use to recruit participants. Include in [Appendix B](#) a copy of all e-mails, flyers, advertisements, recruiting scripts, invitations, etc., that will be used to invite people to participate. (See sample documents at <http://www.auburn.edu/research/vpr/ohs/sample.htm>.)

A participant packet will be provided to the eighth and ninth grade students who are enrolled in physical education.

1. A recruitment script to give an invitation to participate to the students and their custodians. Script attached in Appendix B.

2. A "Parental permission and minor assent" forms. This is a consent form for the custodians to sign, and also an assent form for the minor participants to sign. Form is in Appendix B.

c. What is the minimum number of participants you need to validate the study? 300

How many participants do you expect to recruit? 400

Is there a limit on the number of participants you will include in the study?  No  Yes - the # is \_\_\_\_\_

d. Describe the type, amount and method of compensation and/or incentives for participants.

(If no compensation will be given, check here: )

Select the type of compensation:  Monetary  Incentives

Raffle or Drawing incentive (Include the chances of winning.)

Extra Credit (State the value)

Other

Description:

13. PROJECT DESIGN & METHODS.

- a. Describe, step-by-step, all procedures and methods that will be used to consent participants. If a waiver is being requested, check each waiver you are requesting, describe how the project meets the criteria for the waiver.

- Waiver of Consent (including using existing data)
- Waiver of Documentation of Consent (use of Information Letter)
- Waiver of Parental Permission (for college students)

Students will be visited during their physical education classes. Here the lead researcher will use the script (see attached) to explain his interest in learning about how students think about their engagement in physical education. He will also explain the method of data collection. Students who show interest will be given a copy of the informed consent documents.

- b. Describe the research design and methods you will use to address your purpose. Include a clear description of when, where and how you will collect all data for this project. Include specific information about the participants' time and effort commitment. (NOTE: Use language that would be understandable to someone who is not familiar with your area of study. Without a complete description of all procedures, the Auburn University IRB will not be able to review this protocol. *If additional space is needed for this section, save the information as a .PDF file and insert after page 7 of this form.*)

The research will be conducted within the time and place constraints of the physical education classes. Only those students that return a completed consent/assent form will be asked to complete the survey. The survey should take no longer than 10 minutes to complete. Responses will be anonymous.

Students that return a completed consent/assent form will be given a survey to complete. The researcher will distribute the surveys, reaffirming to the students that completion or non-completion of the surveys will not affect their grades. Students will also be told that there are no wrong or right answers, and that each individual may have different answers. The researcher will then collect the completed surveys. The researcher will then take them to Auburn University Campus to be secured in a locked drawer in room 106 of the Kinesiology building.

13. PROJECT DESIGN & METHODS. *Continued*

- c. List all data collection instruments used in this project, in the order they appear in [Appendix C](#).  
(e.g., surveys and questionnaires in the format that will be presented to participants, educational tests, data collection sheets, interview questions, audio/video taping methods etc.)

Engagement in Physical Education Survey

- d. Data analysis: Explain how the data will be analyzed.

Data will be analyzed using SPSS version 23. The first set of data will be analyzed using exploratory factor analysis to extract the factors based on observed variables, to demonstrate constituent items load on the same factor and to drop items that cross-load on more than one factor. The second phase will be analyzed using confirmatory factor analysis in SPSS AMOS to reach a good fit.

14. RISKS & DISCOMFORTS: List and describe all of the risks that participants might encounter in this research. *If you are using deception in this study, please justify the use of deception and be sure to attach a copy of the debriefing form you plan to use in Appendix D. (Examples of possible risks are in section #6D on page 2)*

The only risk to the participants in this study is the potential for coercion to be a participant.

15. **PRECAUTIONS.** Identify and describe all precautions you have taken to eliminate or reduce risks as listed in #14. If the participants can be classified as a "vulnerable" population, please describe additional safeguards that you will use to assure the ethical treatment of these individuals. Provide a copy of any emergency plans/procedures and medical referral lists in Appendix D. (Samples can be found online at <http://www.auburn.edu/research/vpr/ohs/sample.htm#precautions>)

Students that return completed consent and assent forms will complete the survey. The researcher will make it clear that a decision not to complete the survey will not affect the students grade or standing in the class. Thus, the risk of coercion is removed.

**If using the Internet or other electronic means to collect data, what confidentiality or security precautions are in place to protect (or not collect) identifiable data? Include protections used during both the collection and transfer of data.**

No data will be collected digitally, but will be store digitally. The computer used to store data is password protected. All data will be collected and coded on paper. The coded data, which is unidentifiable, will be transferred to the computer. The computer will be used to record and analyze data.

16. **BENEFITS.**

- a. **List all realistic direct benefits participants can expect by participating in this specific study.**

(Do not include "compensation" listed in #12d.) Check here if there are no direct benefits to participants.

- b. **List all realistic benefits for the general population that may be generated from this study.**

The general public may benefit from the analysis only if the data is shared with the research community and used to design better lessons that promote more engagement of students.

17. PROTECTION OF DATA.

a. Data are collected:

- Anonymously with no direct or indirect coding, link, or awareness of who participated in the study (Skip to e)
- Confidentially, but without a link of participant's data to any identifying information (collected as "confidential" but recorded and analyzed as "anonymous") (Skip to e)
- Confidentially with collection and protection of linkages to identifiable information

b. If data are collected with identifiers or as coded or linked to identifying information, describe the identifiers collected and how they are linked to the participant's data.

c. Justify your need to code participants' data or link the data with identifying information.

d. Describe how and where identifying data and/or code lists will be stored. (Building, room number?) Describe how the location where data is stored will be secured in your absence. For electronic data, describe security. If applicable, state specifically where any IRB-approved and participant-signed consent documents will be kept on campus for 3 years after the study ends.

e. Describe how and where the data will be stored (e.g., hard copy, audio cassette, electronic data, etc.), and how the location where data is stored is separated from identifying data and will be secured in your absence. For electronic data, describe security

Paper data will be stored in a locked file in room 106 of the Kinesiology Building on Auburn University campus. Electronic data will be stored on a password protected laptop computer kept by the PI, Andy Stringfellow.

f. Who will have access to participants' data?

*(The faculty advisor should have full access and be able to produce the data in the case of a federal or institutional audit.)*

Only the researcher and Dr. Peter Hastie and Dr. Chih-hsuan Wang will have access to the completed surveys.

g. When is the latest date that identifying information or links will be retained and how will that information or links be destroyed? (Check here if only anonymous data will be retained )



APPENDIX C  
MODIFICATION REQUEST

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS  
REQUE ST for MODIFICATION**

For help, contact: THE OFFICE OF RESEARCH COMPLIANCE (ORC), 115 Ramsay Hall, Auburn University  
Phone: 334-844-5966 e-mail: [IRBAdmin@auburn.edu](mailto:IRBAdmin@auburn.edu) Web Address: <http://www.auburn.edu/research/vprfohs>

**Revised 2.1.2014** Submit completed form to [IRBsubmit@auburn.edu](mailto:IRBsubmit@auburn.edu) or 115 Ramsay Hall, Auburn University 36849.

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. Protocol Number: #17-447 EP 1710
2. Current IRB Approval Dates: From: November 1, 2017 To: October 31, 2018
3. Project Title: Psychometric Analysis of the Self-reported Behavioral Engagement in Physical Education

<u>Andy Stringfellow</u>	<u>GTA</u>	<u>Kinesiology</u>	<u>7066622116</u>	<u>afs0018@auburn.edu</u>
<b>Principal Investigator</b>	<b>Title</b>	<b>Department</b>	<b>Phone</b>	<b>AU E-Mail (primary)</b>
<small>Andy Stringfellow Digitally signed by Andy Stringfellow Date: 2017.11.26 13:43:26 -0500</small>	<u>301 Wire Road Auburn Al</u>	<u>36849</u>	<u>andyjr71@gmail.com</u>	<u>andyjr71@gmail.com</u>
<b>PI Signature</b>	<b>Mailing Address</b>		<b>Alternate E-Mail</b>	
<u>Peter Hastie</u>	<u>Peter Hastie</u>	<u>Kinesiology</u>	<u>3348441469</u>	<u>hastipe@auburn.edu</u>
<small>Digitally signed by Peter Hastie Date: 2017.11.26 14:04:29 -0500</small>	<b>Faculty Advisor</b>	<b>FA Signature</b>	<b>Department</b>	<b>Phone</b>
<b>Name of Current Department Head:</b> <u>Dr. Mary Rudisill</u>	<b>AU E-Mail:</b> <u>rudisme@auburn.edu</u>			

5. Current External Funding Agency and Grant number: none

6. a. List any contractors, sub-contractors, other entities associated with this project:  
none

b. List any other IRBs associated with this project: none

7. Nature of change in protocol: (Mark all that apply)
- Change in Key Personnel ([attach](#) CITI forms for new personnel)
  - Change in Sites ([attach](#) permission forms for new sites)
  - Change in methods for data storage/protection or location of data/consent documents
  - Change in project purpose or questions
  - Change in population or recruitment ([attach](#) new or revised recruitment materials as needed)
  - Change in consent procedures ([attach](#) new or revised consent documents as needed)
  - Change in data collection methods or procedures ([attach](#) new data collection forms as needed)
  - Other (explain): \_\_\_\_\_

FOR ORC OFFICE USE ONLY	
DATE RECEIVED IN ORC: _____ by _____	MODIFICATION # _____
COMMENTS:	INTERVAL FOR _____
<p>The Auburn University Institutional Review Board has approved this Document for use from <u>12/29/2017</u> to <u>10/31/2018</u> Protocol # <u>17-447 EP 1710</u></p>	

**8. Briefly list (numbered or bulleted) the activities that have occurred up to this point, particularly those that involved participants.**

- read the recruitment script to two classes at Auburn junior High School
- distributed the consent forms to all students in each class
- those that returned the completed consent form have also complete the survey

**9. For each item marked in Question #7, describe the requested changes to your research protocol, with an explanation and/or rationale for each. (Additional pages may be attached if needed to provide a complete response.)**

The requested change in site is actually an addition to the school(s) listed as off site locations to conduct the research. In order to generalize the results, it is necessary to include students from multiple locations. Superintendent Neighbors of Opelika City Schools has granted permission to contact Opelika High School and Opelika Middle School to seek their participation.

Because additional schools are needed, changes to the existing parental consent/assent form are necessary. One for Opelika High School and one for Opelika Middle school.

**10. Identify any changes in the anticipated risks and / or benefits to the participants.**

No changes

**11. Identify any changes in the safeguards or precautions that will be used to address anticipated risks.**

no Changes

**12. Attach a copy of all "stamped" IRB-approved documents you are currently using. (information letters, consents, flyers, etc.)**



AUBURN UNIVERSITY  
SCHOOL OF KINESIOLOGY

The Auburn University Institutional  
Review Board has approved this  
Document for use from  
11/01/2017 to 10/31/2018  
Protocol # 17-447 EP 1710

*(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN APPROVAL STAMP WITH  
CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)*

PARENTAL PERMISSION/CHILD ASSENT

For a Research Study entitled

“Psychometric analysis of the Self-reported Behavioral Engagement in Physical Education”

Your son or daughter is invited to participate in a research study to validate a newly developed survey that measures student’s perception of their engagement in physical education. The scale will subsequently be used to answer the question, what is the self-reported level of how eighth and ninth graders think, how involved they are, how they act, and how they feel about physical education? The study is being conducted by Andy Stringfellow, under the direction of Dr. Peter Hastie in the Auburn University Department of Kinesiology. Your son or daughter is invited to participate because he or she is an eighth or ninth grade student at Auburn Junior High School. Since he/she is age 19 or younger, we must have your permission to include him/her in the study.

What will be involved if your son/daughter participates? If you decide to allow him/her to participate in this research study, he/she will be asked to complete a survey entitled Behavioral Engagement in Physical Education. The research will be conducted within the time and place constraints of the physical education classes. Only those students that return a completed consent/assent form will be asked to complete the survey. Responses will be anonymous. Your son/daughter’s total time commitment will be approximately 10 minutes.

Are there any risks or discomforts? Some individuals may experience mild coercion to be a part of the study. Mr. Stringfellow is not the students’ teacher and none of the data collected will be made available to the teacher of the physical education class. To minimize these risks, we will inform the participants that they can choose to participate or not and their decision will not affect their grade in physical education in any way. Additionally, there are no wrong or right answers, and that each individual may have different answers.

Are there benefits to your son/daughter or others? If your child participates in this study, they can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We cannot promise you that your son/daughter will receive the benefit described.

Will there be compensation for participating? Your son or daughter will not be paid for participating in this study.

Parent/Guardian Initials \_\_\_\_\_

Participant Initials \_\_\_\_\_

Page 1 of 2





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What will be involved if your son/daughter participates? If you decide to allow him/her to participate in this research study, he/she will be asked to complete a survey entitled Behavioral Engagement in Physical Education. The research will be conducted within the time and place constraints of the physical education classes. Only those students that return a completed consent/assent form will be asked to complete the survey. Responses will be anonymous. Your son/daughter’s total time commitment will be approximately 10 minutes.

Are there any risks or discomforts? Some individuals may experience mild coercion to be a part of the study. Mr. Stringfellow is not the students’ teacher and none of the data collected will be made available to the teacher of the physical education class. To minimize these risks, we will inform the participants that they can choose to participate or not and their decision will not affect their grade in physical education in any way. Additionally, there are no wrong or right answers, and that each individual may have different answers.

Are there benefits to your son/daughter or others? If your child participates in this study, they can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We cannot promise you that your son/daughter will receive the benefit described.

Will there be compensation for participating? Your son or daughter will not be paid for participating in this study.

Parent/Guardian Initials \_\_\_\_\_  
Participant Initials \_\_\_\_\_



AUBURN UNIVERSITY  
SCHOOL OF KINESIOLOGY

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If you or your child changes your mind about his/her participation, he/she can be withdrawn from the study at any time. His/her participation is completely voluntary. Since the survey will have no identifying marks, withdrawing from the study after the survey is complete will be difficult because there is no way to select your son/daughter's survey. Your decision about whether or not to allow your son/daughter to participate or to not participating will not jeopardize you or his/her future relations with Auburn University, the Department of Kinesiology, or Opelika High School.

Your son's daughter's privacy will be protected. Any information obtained in connection with this study will remain confidential. The data collected will be protected by not using any identifiable material. Information obtained through his/her participation will be used for a doctoral dissertation and may be published in a professional journal and presented at professional conferences.

If you (or your son/daughter) have questions about this study, please contact Andy Stringfellow at afs0018@auburn.edu or Dr. Peter Hastie at hastipe@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your child's rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or IRBCChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH FOR YOUR SON OR DAUGHTER TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO ALLOW HIM OR HER TO PARTICIPATE. YOUR SON'S/DAUGHTER'S SIGNATURE INDICATES HIS/HER WILLINGNESS TO PARTICIPATE. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

Participant's signature Date \_\_\_\_\_ Investigator obtaining consent Date \_\_\_\_\_  
Printed Name \_\_\_\_\_ Andy Stringfellow \_\_\_\_\_  
Printed Name \_\_\_\_\_

Parent/Guardian Signature \_\_\_\_\_ Date \_\_\_\_\_  
Printed Name \_\_\_\_\_

Parent/Guardian Initials \_\_\_\_\_  
Participant Initials \_\_\_\_\_



AUBURN UNIVERSITY  
SCHOOL OF KINESIOLOGY

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For a Research Study entitled

“Psychometric analysis of the Self-reported Behavioral Engagement in Physical Education”

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What will be involved if your son/daughter participates? If you decide to allow him/her to participate in this research study, he/she will be asked to complete a survey entitled Behavioral Engagement in Physical Education. The research will be conducted within the time and place constraints of the physical education classes. Only those students that return a completed consent/assent form will be asked to complete the survey. Responses will be anonymous. Your son/daughter’s total time commitment will be approximately 10 minutes.

Are there any risks or discomforts? Some individuals may experience mild coercion to be a part of the study. Mr. Stringfellow is not the students’ teacher and none of the data collected will be made available to the teacher of the physical education class. To minimize these risks, we will inform the participants that they can choose to participate or not and their decision will not affect their grade in physical education in any way. Additionally, there are no wrong or right answers, and that each individual may have different answers.

Are there benefits to your son/daughter or others? If your child participates in this study, they can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We cannot promise you that your son/daughter will receive the benefit described.

Will there be compensation for participating? Your son or daughter will not be paid for participating in this study.

Parent/Guardian Initials \_\_\_\_\_  
Participant Initials \_\_\_\_\_

Page 1 of 2





The Auburn University Institutional Review Board has approved this Document for use from 12/29/2017 to 10/31/2018 Protocol # 17-447 EP 1710

If you or your child changes your mind about his/her participation, he/she can be withdrawn from the study at any time. His/her participation is completely voluntary. Since the survey will have no identifying marks, withdrawing from the study after the survey is complete will be difficult because there is no way to select your son/daughter's survey. Your decision about whether or not to allow your son/daughter to participate or to not participating will not jeopardize you or his/her future relations with Auburn University, the Department of Kinesiology, or Opelika Middle School.

Your son's daughter's privacy will be protected. Any information obtained in connection with this study will remain confidential. The data collected will be protected by not using any identifiable material. Information obtained through his/her participation will be used for a doctoral dissertation and may be published in a professional journal and presented at professional conferences.

If you (or your son/daughter) have questions about this study, please contact Andy Stringfellow at [afs0018@auburn.edu](mailto:afs0018@auburn.edu) or Dr. Peter Hastie at [hastipe@auburn.edu](mailto:hastipe@auburn.edu). A copy of this document will be given to you to keep.

If you have questions about your child's rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at [IRBadmin@auburn.edu](mailto:IRBadmin@auburn.edu) or [IRBChair@auburn.edu](mailto:IRBChair@auburn.edu).

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH FOR YOUR SON OR DAUGHTER TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO ALLOW HIM OR HER TO PARTICIPATE. YOUR SON'S/DAUGHTER'S SIGNATURE INDICATES HIS/HER WILLINGNESS TO PARTICIPATE. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

Participant's signature _____	Investigator obtaining consent Date _____
Printed Name _____	Andy Strinifellow _____
Parent/Guardian Signature _____	Date _____
Printed Name _____	
Parent/Guardian Initials _____	
Participant Initials _____	

APPENDIX D  
INFORMED CONSENT FORMS

Auburn Junior High School

Opelika High School

*(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)*

PARENTAL PERMISSION/CHILD ASSENT

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“Psychometric analysis of the Self-reported Behavioral Engagement in Physical Education.”

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Are there any risks or discomforts? Some individuals may experience mild coercion to be a part of the study. To minimize these risks, we will inform the participants that they can choose to participate or not and their decision will not affect their grade in physical education in any way. Additionally, there are no wrong or right answers, and that each individual may have different answers.

Are there benefits to your son/daughter or others? If your child participates in this study, they can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We cannot promise you that your son/daughter will receive the benefit described.

Will there be compensation for participating? Your son or daughter will not be compensated for participating in this study.

Parent/Guardian Initials \_\_\_\_\_

Participant Initials \_\_\_\_\_

Page 1 of 2

If you or your child changes your mind about his/her participation, he/she can be withdrawn from the study at any time. His/her participation is entirely voluntary. Since the survey will have no identifying marks, withdrawing from the study after the survey is complete will be difficult because there is no way to select your son/daughter's survey. Your decision about whether or not to allow your son/daughter to participate or to not participating will not jeopardize you or his/her future relations with Auburn University, the Department of Kinesiology, or Pick Elementary.

Your son's daughter's privacy will be protected. Any information obtained in connection with this study will remain confidential. The data collected will be protected by not using any identifiable material. Information obtained through his/her participation will be used for a doctoral dissertation and may be published in a professional journal and presented at professional conferences.

If you (or your son/daughter) have questions about this study, please contact Andy Stringfellow at afs0018@auburn.edu or Dr. Peter Hastie at hastipe@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your child's rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or [IRBChair@auburn.edu](mailto:IRBChair@auburn.edu).

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH FOR YOUR SON OR DAUGHTER TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO ALLOW HIM OR HER TO PARTICIPATE. YOUR SON'S/DAUGHTER'S SIGNATURE INDICATES HIS/HER WILLINGNESS TO PARTICIPATE. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

\_\_\_\_\_

Participant's signature                      Date      Investigator obtaining consent      Date

\_\_\_\_\_                      \_\_\_Andy Stringfellow\_\_\_\_\_

Printed Name    Printed Name

\_\_\_\_\_

Parent/Guardian Signature      Date

\_\_\_\_\_

Printed Name

Parent/Guardian Initials \_\_\_\_\_

Participant Initials \_\_\_\_\_

*(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS AN APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)*

## PARENTAL PERMISSION/CHILD ASSENT

For a Research Study entitled

“Psychometric analysis of the Self-reported Behavioral Engagement in Physical Education.”

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Are there any risks or discomforts? Some individuals may experience mild coercion to be a part of the study. To minimize these risks, we will inform the participants that they can choose to participate or not and their decision will not affect their grade in physical education in any way. Additionally, there are no wrong or right answers, and that each individual may have different answers.

Are there benefits to your son/daughter or others? If your child participates in this study, they can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We cannot promise you that your son/daughter will receive the benefit described.

Will there be compensation for participating? Your son or daughter will not be compensated for participating in this study.

Parent/Guardian Initials \_\_\_\_\_

Participant Initials \_\_\_\_\_

Page 1 of 2



APPENDIX E  
IRB PROTOCOL FOR EXPERT INTERVIEWS

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS  
RESEARCH PROTOCOL REVIEW FORM  
FULL BOARD or EXPEDITED**

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**, 115 Ramsay Hall, Auburn University  
Phone: 334-844-5966 e-mail: IRBAdmin@auburn.edu Web Address: <http://www.auburn.edu/research/vpr/ohs/index.htm>

**Revised 2.1.2014** Submit completed form to [IRBsubmit@auburn.edu](mailto:IRBsubmit@auburn.edu) or 115 Ramsay Hall, Auburn University 36849.

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. PROPOSED START DATE of STUDY: February 20, 2017

PROPOSED REVIEW CATEGORY (Check one):  FULL BOARD  EXPEDITED

SUBMISSION STATUS (Check one):  NEW  REVISIONS (to address IRB Review Comments)

2. PROJECT TITLE: Expert Perceptions of Student Lesson Involvement in Physical Education

3. Andy Stringfellow GTA Kinesiology afs0018@auburn.edu  
 PRINCIPAL INVESTIGATOR TITLE DEPT AU E-MAIL  
301 Wire Road Auburn AL 36849 706-662-2116 andyjr71@gmail.com  
 MAILING ADDRESS PHONE ALTERNATE E-MAIL

4. FUNDING SUPPORT:  N/A  Internal  External Agency: \_\_\_\_\_  Pending  Received

For federal funding, list agency and grant number (if available). \_\_\_\_\_

5a. List any contractors, sub-contractors, other entities associated with this project:

none

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):

none

**PROTOCOL PACKET CHECKLIST**

All protocols must include the following items:

- Research Protocol Review Form (All signatures included and all sections completed)  
(Examples of appended documents are found on the OHSR website: <http://www.auburn.edu/research/vpr/ohs/sample.htm>)
- CITI Training Certificates for all Key Personnel.
- Consent Form or Information Letter and any Releases (audio, video or photo) that the participant will sign.
- Appendix A, "Reference List"
- Appendix B if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.
- Appendix C if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.
- Appendix D if you will be using a debriefing form or include emergency plans/procedures and medical referral lists  
(A referral list may be attached to the consent document).
- Appendix E if research is being conducted at sites other than Auburn University or in cooperation with other entities. A permission letter from the site / program director must be included indicating their cooperation or involvement in the project.  
NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of IRB approval from each entity is required prior to initiating the project.
- Appendix F - Written evidence of acceptance by the host country if research is conducted outside the United States.

**FOR ORC OFFICE USE**

DATE RECEIVED IN ORC: \_\_\_\_\_ by \_\_\_\_\_ PROTOCOL # \_\_\_\_\_  
 DATE OF IRB REVIEW: \_\_\_\_\_ by \_\_\_\_\_ APPROVAL CATEGORY \_\_\_\_\_  
 DATE OF IRB APPROVAL: \_\_\_\_\_ by \_\_\_\_\_ INTERVAL FOR REVIEW \_\_\_\_\_  
 COMMENTS: \_\_\_\_\_

The Auburn University Institutional  
 Review Board has approved this  
 Document for use from  
01/24/2018 to 01/23/2019  
 Protocol # 18-020 EP 1801



6. **GENERAL RESEARCH PROJECT CHARACTERISTICS**

**6 A. Research Methodology**

Please check all descriptors that best apply to the research methodology.

Data Source(s):  New Data  Existing Data

Will recorded data directly or indirectly identify participants?  
 Yes  No

Data collection will involve the use of:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Interview   | Internet / Electronic                     |
| <input type="checkbox"/> Educational Tests (cognitive diagnostic, aptitude, etc.)         | Audio                                     |
| <input type="checkbox"/> Observation  | <input checked="" type="checkbox"/> Video |
| <input type="checkbox"/> Location or Tracking Measures                                    | Photos                                    |
| <input type="checkbox"/> Physical / Physiological Measures or Specimens (see Section 6E.) | Digital images                            |
| <input type="checkbox"/> Surveys / Questionnaires   | Private records or files                  |
| Other: _____  |   |

**6 B. Participant Information**

Please check all descriptors that apply to the target population.

Males  Females  AU students

Vulnerable Populations

Pregnant Women/Fetuses  Prisoners  Institutionalized  
 Children and/or Adolescents (under age 19 in AL)

Persons with:

Economic Disadvantages  Physical Disabilities  
 Educational Disadvantages  Intellectual Disabilities

Do you plan to compensate your participants?  Yes  No

**6 C. Risks to Participants**

Please identify all risks that participants might encounter in this research.

Breach of Confidentiality\*  Coercion  
 Deception  Physical  
 Psychological  Social  
 None  
 Other:

\*Note that if the investigator is using or accessing confidential or identifiable data, breach of confidentiality is always a risk.

**6 D. Corresponding Approval/Oversight**

- Do you need IBC Approval for this study?  
 Yes  No  
 If yes, BUA # \_\_\_\_\_ Expiration date \_\_\_\_\_
- Do you need IACUC Approval for this study?  
 Yes  No  
 If yes, PRN # \_\_\_\_\_ Expiration date \_\_\_\_\_
- Does this study involve the Auburn University MRI Center?  
 Yes  No  
 Which MRI(s) will be used for this project? (Check all that apply)  
 3T  7T  
 Does any portion of this project require review by the MRI Safety Advisory Council?  
 Yes  No

Signature of MRI Center Representative: \_\_\_\_\_  
Required for all projects involving the AU MRI Center

Appropriate MRI Center Representatives:  
 Dr. Thomas S. Denney, Director AU MRI Center  
 Dr. Ron Beyers, MR Safety Officer

7. PROJECT ASSURANCES Expert Perceptions of Student Lesson Involvement in Physical Education

**A. PRINCIPAL INVESTIGATOR'S ASSURANCES**

1. I certify that all information provided in this application is complete and correct.
2. I understand that, as Principal Investigator, I have ultimate responsibility for the conduct of this study, the ethical performance this project, the protection of the rights and welfare of human subjects, and strict adherence to any stipulations imposed by the Auburn University IRB.
3. I certify that all individuals involved with the conduct of this project are qualified to carry out their specified roles and responsibilities and are in compliance with Auburn University policies regarding the collection and analysis of the research data.
4. I agree to comply with all Auburn policies and procedures, as well as with all applicable federal, state, and local laws regarding the protection of human subjects, including, but not limited to the following:
  - a. Conducting the project by qualified personnel according to the approved protocol
  - b. Implementing no changes in the approved protocol or consent form without prior approval from the Office of Research Compliance
  - c. Obtaining the legally effective informed consent from each participant or their legally responsible representative prior to their participation in this project using only the currently approved, stamped consent form
  - d. Promptly reporting significant adverse events and/or effects to the Office of Research Compliance in writing within 5 working days of the occurrence.
5. If I will be unavailable to direct this research personally, I will arrange for a co-investigator to assume direct responsibility in my absence. This person has been named as co-investigator in this application, or I will advise ORC, by letter, in advance of such arrangements.
6. I agree to conduct this study only during the period approved by the Auburn University IRB.
7. I will prepare and submit a renewal request and supply all supporting documents to the Office of Research Compliance before the approval period has expired if it is necessary to continue the research project beyond the time period approved by the Auburn University IRB.
8. I will prepare and submit a final report upon completion of this research project.

My signature indicates that I have read, understand and agree to conduct this research project in accordance with the assurances listed above.

Andy Stringfellow

Printed name of Principal Investigator

AndyStringfellow

Principal Investigator's Signature

Digitally signed by Andy Stringfellow  
Date: 2018.01.18 16:27:29 -0600

1/18/2018

Date

**B. FACULTY ADVISOR / SPONSOR'S ASSURANCES**

1. I have read the protocol submitted for this project for content, clarity, and methodology.
2. By my signature as faculty advisor/sponsor on this research application, I certify that the student or guest investigator is knowledgeable about the regulations and policies governing research with human subjects and has sufficient training and experience to conduct this particular study in accord with the approved protocol.
3. I agree to meet with the investigator on a regular basis to monitor study progress. Should problems arise during the course of the study, I agree to be available, personally, to supervise the investigator in solving them.
4. I assure that the investigator will promptly report significant incidents and/or adverse events and/or effects to the ORC in writing within 5 working days of the occurrence.
5. If I will be unavailable, I will arrange for an alternate faculty sponsor to assume responsibility during my absence, and I will advise the ORC by letter of such arrangements. If the investigator is unable to fulfill requirements for submission of renewals, modifications or the final report, I will assume that responsibility.

Dr. Peter Hastie

Printed name of Faculty Advisor / Sponsor

Peter Hastie

Faculty Advisor's Signature

Digitally signed by Peter Hastie  
Date: 2018.01.18 15:51:36 -0600

1/18/2017

Date

**C. DEPARTMENT HEAD'S ASSURANCE**

By my signature as department head, I certify that I will cooperate with the administration in the application and enforcement of all Auburn University policies and procedures, as well as all applicable federal, state, and local laws regarding the protection and ethical treatment of human participants by researchers in my department.

Dr. Mary E. Rudisill

Printed name of Department Head

Mary Rudisill

Department Head's Signature

Digitally signed by Mary Rudisill  
DN: cn=Mary Rudisill, o=AU,  
email=mrudisill@auburn.edu, ou=US  
Date: 2018.01.18 15:30:15 -0600

1/18/2018

Date

**8. PROJECT OVERVIEW: Prepare an abstract that includes:**  
(350 word maximum, in language understandable to someone who is not familiar with your area of study):

**a) A summary of relevant research findings leading to this research proposal:**

(Cite sources; include a "Reference List" as **Appendix A.**)

**b) A brief description of the methodology, including design, population, and variables of interest**

a)

Doyle (1977), states that if you want to know what is happening in the classroom, observe the student not the teacher. The importance of student engagement has been shown in its ability predict school dropout and completion fairly accurately based on data from attendance, behavior, academic performance, and attachment to school. (Alexander, Entwisle, & Horsey, 1997; Barrington & Hendricks, 1989; Ensminger & Slusarcick, 1992). Engagement is a construct within education that consists of four specific areas that include academic, behavioral, cognitive and psychological (Appleton, Christen, & Furlong, 2008; Appleton, Christenson, Kim, & Reschley, 2006). Students that demonstrate the desired behavior in physical education are physically active. There is more to engagement in physical education than just being physical. Growing research on student engagement has begun to highlight its critical role in student achievement and learning (Trowler & Trowler, 2010).

b) Four groups of 5 experts in physical education (college professors, graduate students, undergraduate students, and public school physical education teachers) will be asked to watch several short video clips of students in a physical education setting. Each participant will be asked to describe the degree of lesson involvement of specific students in the video. The responses will be recorded and transcribed. The researcher will then analyze the descriptive words used by the participants for frequencies. The words used the most often will then be used to develop an operational definition of behavioral engagement. Once the concept of engagement has been defined, an observation tool will be developed that can be used by researchers to apply behavioral engagement as a dependent variable for research purposes.

**9. PURPOSE.**

**a. Clearly state the purpose of this project and all research questions, or aims.**

The purpose of this research was to develop and assess the content validity of an instrument that enables observers to determine the level of student behavioral engagement in physical education.

Can an observation tool be developed that allows researchers to observe and determine the levels of student behavioral engagement in physical education?

Can the concept of student engagement in physical education be observed in order to use engagement as a dependent variable?

**b. How will the results of this project be used? (e.g., Presentation? Publication? Thesis? Dissertation?)**

The results of this project will be used in as part of a doctoral dissertation and publications following the completion of the dissertation. In the future these results may also be included in presentations at professional conferences.

10. **KEY PERSONNEL.** Describe responsibilities. Include information on research training or certifications related to this project. **CITI is required. Be as specific as possible.** (Include additional personnel in an attachment.) *All key personnel must attach CITI certificates of completion.*

Principle Investigator Andy Stringfellow Title: GTA E-mail address afs0018@auburn.edu  
Dept / Affiliation: Kinesiology

**Roles / Responsibilities:**

Sole researcher, preparing the letters of informed consent, distributing/collecting the letters of informed consent, preparing the video to be used during the interviews, conducting the interviews, transcribing the interviews, securing the transcripts, and analyzing the transcripts.

Individual: Dr. Peter Hastie Title: Professor E-mail address hastipe@auburn.edu  
Dept / Affiliation: Kinesiology

**Roles / Responsibilities:**

Advising and overseeing the sole researcher, research process, and writing of the dissertation.

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

Individual: \_\_\_\_\_ Title: \_\_\_\_\_ E-mail address \_\_\_\_\_  
Dept / Affiliation: \_\_\_\_\_

**Roles / Responsibilities:**

11. **LOCATION OF RESEARCH.** List all locations where data collection will take place. (School systems, organizations, businesses, buildings and room numbers, servers for web surveys, etc.) **Be as specific as possible.** Attach permission letters in **Appendix E.** (See sample letters at <http://www.auburn.edu/research/vpr/ohs/sample.htm>)

All interviews will be conducted in room 106 of the Kinesiology Building at Auburn University

12. PARTICIPANTS.

a. Describe the participant population you have chosen for this project including inclusion or exclusion criteria for participant selection.

Check here if using existing data, describe the population from whom data was collected, & include the # of data files.

Four groups of five will be used:

Group 1 - Kinesiology Doctoral students at Auburn University - Men and Women

Group 2 - Professors of Kinsiology at Auburn University

Group 3 - Kinesiology Undergraduate students at Auburn University

Group 4 - Professional physical education teachers in the Auburn City School system

b. Describe, step-by-step, in layman's terms, all procedures you will use to recruit participants. Include in [Appendix B](#) a copy of all e-mails, flyers, advertisements, recruiting scripts, invitations, etc., that will be used to invite people to participate. (See sample documents at <http://www.auburn.edu/research/vpr/ohs/sample.htm>.)

1. Potential participants will be contacted (in person) and invited by reading a recruiting script if they would like to be a part of the study. Script attached in Appendix B.

2. Individuals that agree will be provided a letter of informed consent, and only those that complete the informed consent will participate in the interview process. Form is in Appendix B.

c. What is the minimum number of participants you need to validate the study? 20

How many participants do you expect to recruit? 20

Is there a limit on the number of participants you will include in the study?  No  Yes - the # is 20

d. Describe the type, amount and method of compensation and/or incentives for participants.

(If no compensation will be given, check here: )

Select the type of compensation:  Monetary  Incentives

Raffle or Drawing incentive (Include the chances of winning.)

Extra Credit (State the value)

Other

Description:

13. PROJECT DESIGN & METHODS.

- a. Describe, step-by-step, all procedures and methods that will be used to consent participants. If a waiver is being requested, check each waiver you are requesting, describe how the project meets the criteria for the waiver.

- Waiver of Consent (including using existing data)  
 Waiver of Documentation of Consent (use of Information Letter)  
 Waiver of Parental Permission (for college students)

1. Potential participants will be contacted in person and read a recruitment script (see attached).
2. At this point the researcher will explain the purpose of the study and what is expected of the participant, and how the data will be collected.
3. Potential participants that show interest will be given a letter of informed consent.
4. Participants will be asked to consent at that time.
5. All consent forms will be collected and stored in a locked file cabinet in room #106 of the Kinesiology Building at Auburn University.

- b. Describe the research design and methods you will use to address your purpose. Include a clear description of when, where and how you will collect all data for this project. Include specific information about the participants' time and effort commitment. (*NOTE: Use language that would be understandable to someone who is not familiar with your area of study. Without a complete description of all procedures, the Auburn University IRB will not be able to review this protocol. If additional space is needed for this section, save the information as a .PDF file and insert after page 7 of this form.*)

Interviews will be conducted in Room #106 of the Kinesiology Building at Auburn University. Only individuals that complete an informed consent letter will be allowed to participate in the interview process. The interview will take approximately 30 minutes and will be recorded using a digital audio recorder. Each participant will select a time of day that is most convenient for them and every effort will be made by the researcher to accommodate the participants desired time for the interview.

The interview will consist of 10 video clips that last between 10 and 25 seconds. Video clips were created from previously recorded videos from undergraduate method courses. These videos were collected from method classes where undergraduate students and school age students' parents/guardians agreed to allow recordings that can be used for future educational purposes.

Participants that will be interviewed will be asked four questions (see section 13 c. below) regarding what they perceive about a designated individual in the video clip. Responses will be recorded and transcribed. Once the transcription is complete, the researcher will extract the terms used by the participant to answer the questions.

13. PROJECT DESIGN & METHODS. *Continued*

c. List all data collection instruments used in this project, in the order they appear in [Appendix C](#).

(e.g., surveys and questionnaires in the format that will be presented to participants, educational tests, data collection sheets, interview questions, audio/video taping methods etc.)

1. Sony digital audio recorder

2. Interview Questions -

(1) I want you to watch \_\_\_\_\_ (e.g. girl in the red shirt) and give me your thoughts about his or her "lesson involvement."

(2) Can you give me a description of what the term engagement means to you?

(3) Now watch again and describe whether the student is engaged using your terms.

(4) Now watch the next video, and you select two students that, in your opinion, display not engaged at all and highly engaged behaviors and give a rationale for your opinion.

d. Data analysis: Explain how the data will be analyzed.

The terms used by the participants will be extracted from the transcript and a histogram depicting the frequencies of the terms will be generated.

14. RISKS & DISCOMFORTS: List and describe all of the risks that participants might encounter in this research. If you are using deception in this study, please justify the use of deception and be sure to attach a copy of the debriefing form you plan to use in [Appendix D](#). (Examples of possible risks are in section #6D on page 2)

1 - Participants in this study may experience coercion to be a participant.

2 - Breach of confidentiality is a possibility, so all responses to the interview questions will remain confidential and original recordings will be deleted and/or erased once the transcriptions are complete.

15. **PRECAUTIONS.** Identify and describe all precautions you have taken to eliminate or reduce risks as listed in #14. If the participants can be classified as a "vulnerable" population, please describe additional safeguards that you will use to assure the ethical treatment of these individuals. Provide a copy of any emergency plans/procedures and medical referral lists in Appendix D. (Samples can be found online at <http://www.auburn.edu/research/vpr/ohs/sample.htm#precautions>)

1. The researcher will make it clear that a decision not to participate will not affect the invitee's relationship with Auburn University or the School of Kinesiology. Thus, the risk of coercion is removed.
2. The responses to the interview questions will be erased and/or deleted from the digital audio recorded once the transcriptions are complete

**If using the Internet or other electronic means to collect data, what confidentiality or security precautions are in place to protect (or not collect) identifiable data? Include protections used during both the collection and transfer of data.**

Names of the participants will not be mentioned during the interviews, and all recordings will be deleted once the transcriptions are complete.

16. **BENEFITS.**

- a. **List all realistic direct benefits participants can expect by participating in this specific study.**

(Do not include "compensation" listed in #12d.) Check here if there are no direct benefits to participants.

- b. **List all realistic benefits for the general population that may be generated from this study.**

Once the concept of student engagement in physical education is quantified, the idea of engagement can be used a dependent variable in future research. This may give teachers and researchers more insight into ways to improve the overall experiences of students in physical education.



**17. PROTECTION OF DATA.**

**a. Data are collected:**

- Anonymously with no direct or indirect coding, link, or awareness of who participated in the study (Skip to e)
- Confidentially, but without a link of participant's data to any identifying information (collected as "confidential" but recorded and analyzed as "anonymous") (Skip to e)
- Confidentially with collection and protection of linkages to identifiable information

**b. If data are collected with identifiers or as coded or linked to identifying information, describe the identifiers collected and how they are linked to the participant's data.**

The only identifier of the recording is the voice of the participant. No time, date, or names will be used during the recording of the participant's responses

**c. Justify your need to code participants' data or link the data with identifying information.**

The coding of the data will consist of frequencies of words used to describe what the participant observes in the video clips shown during the interview.

**d. Describe how and where identifying data and/or code lists will be stored. (Building, room number?) Describe how the location where data is stored will be secured in your absence. For electronic data, describe security. If applicable, state specifically where any IRB-approved and participant-signed consent documents will be kept on campus for 3 years after the study ends.**

The information gleaned from the interviews will be stored in Room #106 of the Kinesiology building in a locked file cabinet. The digital recordings will be deleted after transcription and the transcription documents will be printed, kept in a locked file cabinet, and the electronic version of the transcript will be stored on a thumb drive that will also be in the locked file cabinet. All signed consent forms will be stored in a different locked drawer than the transcripts in the same room at the same work station as the transcripts and the thumb drive.

**e. Describe how and where the data will be stored (e.g., hard copy, audio cassette, electronic data, etc.), and how the location where data is stored is separated from identifying data and will be secured in your absence. For electronic data, describe security**

The data will be stored on a digital audio recorded until it is transcribed. Once the transcriptions are completed the recordings will be deleted from the recording device. The transcriptions will be kept in a locked file cabinet in room #106 of the Kinesiology building.

**f. Who will have access to participants' data?**

*(The faculty advisor should have full access and be able to produce the data in the case of a federal or institutional audit.)*

Andy Stringfellow (primary researcher), and Dr. Peter Hastie (faculty advisor)

**g. When is the latest date that identifying information or links will be retained and how will that information or links be destroyed? (Check here if only anonymous data will be retained )**

Appendix A

## References

- Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, 87-107.
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, 45(5), 369-386.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology*, 44(5), 427-445.
- Barrington, B. L., & Hendricks, B. (1989). Differentiating characteristics of high school graduates, dropouts, and nongraduates. *The Journal of Educational Research*, 82(6), 309-319.
- Doyle, W. (1977). 4: Paradigms for Research on Teacher Effectiveness. *Review of Research in Education*, 5(1), 163-198.
- Ensminger, M. E., & Slusarcick, A. L. (1992). Paths to high school graduation or dropout: A longitudinal study of a first-grade cohort. *Sociology of Education*, 95-113.
- Reeve, J. (2013). How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. *Journal of Educational psychology*, 105(3), 579.
- Reeve, J., & Tseng, C.-M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology*, 36(4), 257-267. <https://doi.org/10.1016/j.cedpsych.2011.05.002>

Trowler, P., & Trowler, V. (2010). Student engagement evidence summary.

APPENDIX F  
CONSENT FORM

(NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

### INFORMED CONSENT

For a Research Study entitled

“Experts’ Perception of Student Lesson Involvement in Physical Education.”

You are invited to participate in a research study to develop and assess the content validity of an instrument that enables observers to determine the level of student behavioral engagement in physical education. The study is being conducted by Andy Stringfellow, under the direction of Dr. Peter Hastie in the Auburn University Department of Kinesiology. You were selected as a possible participant because you are an active educator or a prospective education the field of physical education and are age 19 or older.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to watch videos of students participating in a physical education lesson and answer questions about specific students in the videos. Your total time commitment will be approximately 30 minutes.

Are there any risks or discomforts? The risks associated with participating in this study are coercion to be a participant and breach of confidentiality. To minimize these risks, we will destroy and or delete all recorded responses to questions once the transcriptions are completed and make no identifying marks on the transcriptions of the recordings. Additionally, there is no right or wrong answer to the questions.

Are there any benefits to yourself or others? If you participate in this study, you can expect to feel good about contributing to developing quality physical education programs and what affects children in being active. We/I cannot promise you that you will receive any or all of the benefits described.

Will you receive compensation for participating? You will not be paid for participating in this study.

Are there any costs? There are no costs to you if you decide to participate.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be

Participant’s initials \_\_\_\_\_

Page 1 of 2



APPENDIX G  
OBSERVATION DATA COLLECTION FORM



## BEPE Data Recording Table

Completed by Researcher \_\_\_\_\_

**Context Options:** **G** – gameplay; **F** – Fitness; **S**– Skill practice

**Motor Options:** **M** – Motor or movement; **N** – non-motor or no movement

**Engagement Options:** **O** – off-task; **A** – on-task or engaged **(A)** ghly engaged

**Examples of engaged behaviors:**

**Gameplay** – active, focused, ready, wants to be in the play, playing by the rules, effort, excitement

**Fitness** – effort, following directions, participating, into-it-ness, enthusiasm, vigor, energetic

**Skill practice** – following directions, effort, into-it-ness, understands, energetic, extra movements

In order for a student to be considered highly engaged, the student must display the engaged behaviors at an exceptional level.

Reliability observer: **Y** **N** Location: **I** **O** Live: **Y** **N**

Observer ID: \_\_\_\_\_ Lesson Topic: \_\_\_\_\_

School: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Example: **Blue shirt with black shoes**

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	N	N	N		M	M	M		M	M	M		M	M	M		M	M	M
E	A	A	A		O	A	A		(A)	(A)	A		A	(A)	(A)		A	A	A

Student #1 \_\_\_\_\_

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C																			
M																			
E																			

Student #2 \_\_\_\_\_

5	0-20	21-40	41-60	6	0-20	21-40	41-60	7	0-20	21-40	41-60	8	0-20	21-40	41-60	9	0-20	21-40	41-60
C																			
M																			
E																			

Student #3 \_\_\_\_\_

10	0-20	21-40	41-60	11	0-20	21-40	41-60	12	0-20	21-40	41-60	13	0-20	21-40	41-60	14	0-20	21-40	41-60
C																			
M																			
E																			

Student #4 \_\_\_\_\_

15	0-20	21-40	41-60	16	0-20	21-40	41-60	17	0-20	21-40	41-60	18	0-20	21-40	41-60	19	0-20	21-40	41-60
C																			
M																			
E																			

Student #5 \_\_\_\_\_

20	0-20	21-40	41-60	21	0-20	21-40	41-60	22	0-20	21-40	41-60	23	0-20	21-40	41-60	24	0-20	21-40	41-60
C																			
M																			
E																			

APPENDIX H  
BEPE DESCRIPTION AND TRAINING MANUAL

# **BEPE**

**(Behavioral Engagement in Physical Education)**

**Description and Procedures Manual  
(Generic Version for Paper Entry)**

**Andy Stringfellow Doctoral Candidate School of Kinesiology  
Auburn University Auburn, AL 36849**

**afs0018@auburn.edu**

**March 15, 2018**

**INSTRUMENT PURPOSE:** To obtain simultaneous objective data on student engagement levels during activity in physical education class and the lesson/session context in which they occur.

**NOTE:** This document is written primarily for studying physical education classes. Researchers interested in assessing other settings can replace the words “session” or “practice” for “lesson,” “session context” for lesson context” and “instructor” or “coach” for “teacher.”

**Acknowledgments:** I wish to thank Dr. Peter Hastie (Auburn University), Jerraco Johnson (Auburn University), Nikki Hollett (Auburn University), Jeffery K. Ward II (Auburn University), and Cory Dixon (Auburn University) for assistance and support with BEPE research and development.

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9.	Practical Directions for Observers
10.	Reliability Checks
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12.	BEPE Recording Form
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15.	Data Tracking Form
16.	BEPE References
17.	BEPE Pacing Cues

## 1. INTRODUCTION

BEPE (Behavioral Engagement in Physical Education) is a tool for assessing the level of student behavioral engagement in physical education (PE) classes by providing for the collection of data on student behavioral engagement levels during a PE lesson in skill practice, fitness, or gameplay context. Physical activity behavioral engagement is one of the leading health-related goals of physical education, and it is needed in order for participants to become physically educated and physically skilled. Participation and being on-task in PE lessons is tantamount to student behavioral engagement.

BEPE has been validated and can be used reliably in skill practice, fitness, and gameplay lessons for K-12. It is a new instrument that can be used as direct observation measurement system to provide both practitioners and researchers with the dependent variable of behavioral engagement that can be used to improve the student experience in PE. Researchers can use it in a live setting, or when reviewing video of physical education lessons. If the video is used, the video should display a wide angle to make sure the entire class is in the frame, and the target students can be observed for the full five minutes. This includes information on:

### Outcome variables:

1. Student behavioral engagement levels: On task, engaged, and highly engaged

### Process variables:

1. Lesson Context: In what context (skill development, fitness, and gameplay) are students displaying the highest levels of behavioral engagement?

BEPE enables researchers, teachers, and supervisors to make judgments about student behavioral engagement levels during PE lessons particularly as they relate to program goals. The protocols identified here are for a general study. Individual researchers need to design adaptations that will best answer their study goals.

Interval recording is the preferred method for using the BEPE observation instrument. The intervals are 10-second observe 10-second record to collect the data.

## 2. SCHEDULE OF ASSESSMENT (TO BE DETERMINED BY PROJECT LEADERS)

BEPE observations will occur during the following measurement periods (dates):  
\_\_\_\_\_ until \_\_\_\_\_.

### 2.1. Scheduling visits during each measurement period (hints)

- Each school will be visited \_\_\_ times per measurement period.
- During each visit, \_\_\_ PE classes will be observed (i.e., total of \_\_\_\_\_ students will be observed).
- Consecutive visits to the same school/class should occur at least \_\_\_ weeks apart (in order to be representative, including seasonality). Go on different

days.

- Preferably measure on days considered as ‘normal.’
- Distribute BEPE measures across a **broad** and entire measurement window (for program generalizability).
- The project coordinator will call the school 24-48 hours prior to a scheduled visit to verify that PE classes will be held as scheduled. If PE classes are not held, observers will reschedule the visit as soon as possible.
- A missed visit to a school (e.g., storm day) should be rescheduled as soon as possible.
- Students observed for less than 5 minutes will not be entered for analyses, and the observation must be rescheduled.

### 3. PHYSICAL EDUCATION CLASS ELIGIBILITY

PE lessons that include students in grade(s) \_\_\_\_\_ will be assessed.

NOTE: BEPE typically serves as student-level analysis and should not be used to assess the entire class at one time.

### 4. FACTORS IN SELECTING LESSONS FOR OBSERVATION:

The BEPE variable (and any data collected in PE) are affected by a number of factors, including those in Table 1. Thus, for an accurate picture of the conduct of PE students in schools, it is essential to sample periodically.

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#### Table 1. Factors influencing BEPE data.

Instructional goals<sup>a</sup>

-fitness, skill, knowledge, social/emotional development

Instructional content

- Type of unit<sup>b</sup>

- Lesson placement in unit<sup>c</sup>

Class characteristics

- Size<sup>d</sup>

- Diversity<sup>e</sup>

Environmental conditions

-size and location of instructional space<sup>f</sup>

-equipment and supplies<sup>g</sup>

-weather

- a. PE has many different goals; a single lesson might target a specific outcome and exclude others (outcomes change as teachers move through instructional units.

- b. Type of lesson (fitness, skills, gameplay) promotes different behavioral engagement levels (e.g., working alone, working with a partner, working as a teammate).
- c. Initial weeks of a unit typically have higher instruction and skill development time; the last weeks have more gameplay.
- d. Larger classes are associated with fewer individual opportunities for practice and gameplay involvement.
- e. Having more objectives in a lesson are associated with increased instruction and management (transitions) time and reduced individual opportunities to be behaviorally engaged
- f. Opportunities to engage may be reduced in smaller spaces, including indoor classes.
- g. More equipment and supplies are associated with increased student opportunities to respond.

To obtain valid measures of behavioral engagement levels, identification of lesson context is essential to ensure the observed behavior is appropriate for the context (e.g., standing in a ready position at third base during a softball game). The students observed should be representative of the class regarding:

- grade level
- sex
- ability level

It is crucial, for example, that the PE lessons chosen to observe students not consist only of one type of lesson (fitness, skill development, gameplay). To obtain a representative sample, before observations are scheduled, contact the teacher/school to identify the type of lesson for the day. It may be easier to follow the instructional unit being taught for several weeks (e.g., basketball, aerobic dance).

## **5. OBSERVER TRAINING, RELIABILITY, RECALIBRATION, AND REACTIVITY**

1. During initial training, observers complete standardized classroom training, video analysis, field practice, and certification assessments. Retraining experienced observers and training of new ones will be conducted before each measurement period. The BEPE *Observer Training* DVD developed by Andy Stringfellow, Dr. Peter Hastie, and Nikki Hollett 2018 will be available online and can be used for both training and assessing observers. It is recommended, however, that researchers working on large or very specialized projects create their assessment tapes so that specific contextual events can be captured.
2. Accuracy will be assessed with periodic evaluations of pre-coded *gold-standard* video segments by observers. Summary statistics from the observer and the *gold-standard* videos will be compared.

3. During each measurement period, approximately \_\_\_\_% (e.g., 12%) of BEPE lessons will be coded simultaneously by two independent observers. Only data from the designated “lead” observer for the lesson will be used for analysis. Percent agreement between scores from the “lead” and “reliability” observers will be computed on an interval-by-interval basis. A minimum of 80% agreement between scores is expected. The table in Section 9.5 explains how to compute reliability. Reliability should be computed in the field, or at least the same day so that immediate feedback is available.
4. If a reliability score between observers is less than 80%, both the lead observer and the reliability observer should follow these steps until the reason for low agreement is resolved:
  - (a) Scrutiny of the protocols and review of definitions, followed by in-house discussions to identify possible areas of disagreement;
  - (b) Review the BEPE training video together, and
  - (c) Complete live practice sessions with the lead observer.

If the reason(s) for disagreement are ones that should be shared with all BEPE measurement staff, then steps a-c should be done with the entire group.

5. Reliability below 80% does not preclude continuing BEPE observations until the steps in item 4 above are completed, but discussions should immediately take place to assess why the reliability is low. If the difference is in overall reliability, try to determine which particular section is causing the disagreements, and focus discussions and retraining on that section. If reliability is a problem, refresher work should take place as soon as possible.
6. **Reducing Reactivity.** When visiting schools avoid indicating exactly which PE lessons you will be observing as long as possible. You are a visitor to class/school and are there to “see what students do during PE lessons.” Do not tell teachers which students you will observe. Thank teachers for allowing you to visit. Avoid providing them (and others) feedback about the students, including the time and percentages of occurrence for any observed behavior or how you perceived how the class went.

Look globally when observing. Do not stare directly at a target student. You do, however, need to assess the student's behavioral engagement level at the record signal. Avoid being distracted by unusual events. Be polite when asked by students and others about what you are doing in class. Respond in a businesslike manner such as, "I am sorry; I am in the middle of a task. I will try to answer your question at the end of class." Consider pausing your audio pacing device.

## 6. BEPE TECHNICAL DESCRIPTION (ABBREVIATED)

BEPE is conceptualized as a 4-phase decision system. Observer codes lesson context, motor or non-motor activity, a student is on or off task, and degree of the student's level of behavioral engagement in sequence during each 10-second record interval.



## **Phase 1. Type of lesson being taught/lesson context.**

The first phase of the decision sequence involves coding the lesson context. This information should be obtained from the teacher at the beginning of the lesson before instruction begins. If for some reason the observer is unable to acquire this information, the observer can use their best judgment to determine if the lesson is fitness, skill, or gameplay oriented.

What is the nature of the lesson being taught?

- Choices:
- (1) Fitness
  - (2) Skill Development
  - (3) Gameplay
  - (4) Non-motor

**Context** refers to lesson time when the primary focus is on student motor engagement (i.e., physical activity). Categories include fitness (**F**), skill practice (**S**), and gameplay (**G**), Non-motor (**N**).

Fitness (F). Time allocated to activities whose principal purpose is to alter the physical state of the individual regarding cardiovascular endurance, strength, or flexibility. This includes aerobic dance, calisthenics, distance running, weight training, agility training, fitness testing, and warm-up and cool-down activities. Code relays conducted with more than three per team as games (**G**), not fitness.

Skill Practice (S). Activity time devoted to the practice of skills with the primary goal of skill development (e.g., volleyball passing drills, exploring movement forms in creative dance, and practicing dribbling a basketball, dance steps, or balance beam skills). Included is time devoted to the refinement and extension of skills in an applied setting (similar to the one in which the skill is used) during which there are frequent instruction and feedback (e.g., scrimmage).

Gameplay (G). Activity time devoted to the application of skills in a game or competitive setting. Game participants perform without significant intervention from the instructor, such as during volleyball and tag games, balance beam routines, and folk dance performances.

## **Phase 2. Identification of Motor or Non-Motor behavior**

The second phase of the decision sequence is determining if the current activity is motor (**M**) or non-motor (**N**). Simply stated, if the students are moving then code **M** and if the students are not moving then code **N**.

Motor (**M**). Any time the student is moving during the lesson (e.g., fitness stations, transitioning)

Non-Motor (**N**). Any time in which the target student's behavior does not display active involvement in the movement aspects of a lesson (e.g., listening to instruction, waiting in line)

### **Phase 3. Identification of target student's behavior as on-task or off-task**

The second phase of the decision sequence involves coding for the student's behavior as on-task or off-task. For each observation sample (a 10-second interval), a decision is made regarding whether the student's behavior is to be considered on-task (**A**; such as following directions) or off-task (**O**; such as not following directions). Observers may need to infer what the direction may be based on what other students are doing.

The student's behavior is determined by what the student displays during most of the 10-second interval. If the observer codes the student as off-task (**O**) then the interval is over, and the observer must wait for the next interval to begin to continue coding the target student. Intervals begin at 0-seconds, 21-seconds, and 41 seconds in a single minute. 10-seconds of observation followed by 10-seconds of recording

Choices:	<u>On-task (A)</u>	<u>Off-task (O)</u>
	Following directions	Not following directions
	Active	Not active
	Focused	Not paying attention
	Effort	Not involved

### **Phase 4. Determining the level of engagement**

If the target student's behavior demonstrates a high degree of engagement then the observer circles the "A" the student received for demonstrating appropriate behavior.

Choices:	<u>Circled "A"</u>
	Noticeably Very Active
	Intently Focused
	Noticeable Effort
	Into-it-ness

At this point, the observer waits until the next observation interval begins before recording the next observation on the same student.

## **7. BEPE METHODOLOGY (USING INTERVAL RECORDING)**

Data collection: Pre-recorded verbal prompts on CDs, MP3s, or audiotapes keep observers on pace throughout a lesson via alternating 10-second observe/record prompts. During each recording interval, the observer enters a code for each of Phase 2, 3, and 4 decision sequence phases.

Observation technique: Code **Lesson Context** at the beginning of the observation. Observe the target student for 10-seconds. At the sound of the 10-second prompt code **ON-TASK (A) or OFF-TASK (O), and degree of engagement (A)**. At the next 10-second prompt (21-seconds, 41-seconds, or on the minute), begin observing the target student again.

Interval length: Alternately “observe” and “record” during 10-second intervals. This yields 3 observations per minute and 15 observations per five minutes. Note: Observe only one student at a time for five minutes and record the results during the “record” interval boxes on the recoding form.

Selection of students: Select five target students for each lesson. Observe Student One for five minutes, and then rotate your focus to the next student for five minutes and so on until the lesson ends. A 30-minute lesson would yield 75 observation intervals (15/student). The form has space for five different students to be observed.

Data Yield: Data may be summarized by time (3 intervals = 1 minute), percent of intervals, or amount of lesson time appropriately engaged highly engaged. Comparisons may be made among different categories, from class to class over time, or to established standards.

## **8. BEPE DEFINITIONS AND CODING CONVENTIONS**

### **8.1. Lesson context**

Lesson Context refers to how PE subject matter is delivered. Code the lesson context to indicate the primary delivery system operating using momentary time sampling (i.e., code **F**, **S**, or **G** at the beginning of the time interval).

### **8.2 Motor or Non-Motor**

Motor and Non-motor activities are part of physical education and most of the time students do not have a choice in the matter. Code the student to indicate the activity that they are involved (**M** for movement during a warm-up, **N** for standing or sitting during instruction). The BEPE instrument is a behavioral observation tool so the observer should be looking for actual physical movement during the motor portion of the lesson.

**NOTE**: Transition time from one location to another can still be coded as **M** or **N**, **O** or **F**, and **A** or a **circled A**.

### **8.3 Student task involvement**

Code the student’s task involvement in one of the two following categories using momentary time sampling (i.e., code a letter (**A** or **O**) to indicate what the student has been doing for most

of the recording period at the “record” prompt):

1. On-task (**A**)
2. Off-task (**O**)

Code the degree the student’s engagement in one of the two following categories using momentary time sampling (i.e., code **A**) with a circle around it if the student’s behavior is determined to be highly engaged. Highly engaged students show **Noticeably Very Active, Intently Focused, Noticeable Effort, Into-it-ness** to name a few).

## **9. DIRECTIONS FOR BEPE OBSERVERS**

### **9.1. Warm-up**

Arrive at the instructional site and be prepared to collect data at least ten minutes before the announced start time of the lesson. Warm-up by mentally rehearsing or actively practicing the coding conventions.

### **9.2. Equipment**

The following supplies are needed for BEPE observation (unless digital recorders are used)

- Pencils, a clipboard, ample BEPE observation sheets,
- Portable audio player, ear jack, fresh batteries
- Pre-recorded BEPE audio to pace the observations,
- Hip pack/armband to hold the audio player, so observers’ hands are free

**NOTE:** It is wise to have an additional audio player available for emergencies.

### **9.3. Select target students**

Select five students who are representative of the class as possible targets for observation. Do not select students who are sitting out. As students arrive at the instructional station, select students 4, 8, 12, 16, and 20 in classes with fewer than 25 students, and select numbers 5, 10, 15, 20, and 25 in classes with more than 25 students. Note some identifying characteristics of the students on the BEPE Lesson Observation Form in the space provided next to the student number above each recording block to enable you to locate them later.

Observe each student for 5 consecutive minutes before changing your focus to the next student. Reserve the fifth student as a backup replacement in case one of the first four leaves the observation environment. If you are observing the replacement student and the original student comes back to class, continue observing the replacement student for that rotation. A rotation is a five-minute interval of observation. Go back to the original student during the next rotation.

Before the lesson starts, it may be difficult to determine which students are in a class if more than one class shares the instructional space. Hopefully, once the teachers are present, the classes will disperse into more definable groups of students. However, if the observation has begun and it turns out that a student being observed is in a different class, change immediately to a representative of the target class.

Students often look similar when wearing uniforms without numbers. The protocol states that the 5<sup>th</sup>, 10<sup>th</sup>, 15<sup>th</sup>, etc. student is to be selected, but observers may be tempted to pick students who are more readily identifiable (e.g., those with an unusual hairstyle or polka dot socks). Avoid doing so, because the goal of observing a representative sample would be compromised.

If you cannot locate the student initially selected, observe a similar looking student instead. Use caution not to introduce bias (e.g., selecting an active person because you are attracted to motion).

#### **9.4. Observation procedures**

1. The target student is the primary focus of the observation, however, position yourself in a position so you can observe what the class as a whole is doing. Be as inconspicuous as possible and do not interfere with class activities. Be prepared to relocate frequently.
2. Do not begin observations until the teacher is present.
3. Start the audio player/computer and begin observing when the target student reaches the instructional station (gymnasium or designated outdoor space) and the teacher is present. Enter the start time on the first cover page.
4. Data should be representative of the entire lesson. Even in emergency situations (e.g., can't find the class), do not begin observations if the lesson has been underway for over five minutes.
5. Observe the lesson context, motor or non-motor, student behavior, and degree of engagement throughout the 10-second “**observe**” interval. Enter codes by entering the appropriate symbols during the 10-second “**record**” interval.
5. Code Student One for five consecutive minutes (15 observations). Then code Students Two, Three, and Four in sequence. Continue in this manner, rotating the focus on a different target student every five minutes until the lesson ends.
6. End observing when the teacher stops the lesson. Record the end time on the cover page.

Cue the audio for the next lesson

### **9.1. Summarize Data**

1. Calculate and record the lesson length on page one of the BEPE observation booklet.
2. Tabulate (sum vertically) and record the total for each of the 4 coding categories at the bottom of each page in the booklet.
3. Copy the summary scores from each page to the BEPE Summary Form (see Appendix F).
4. Calculate the total (across all pages) and record under TOTAL.
5. Complete the header information of the BEPE Summary Form.
6. Attach forms in the following order: 1) BEPE Summary Form; 2) BEPE Lesson Observation Booklet; and 3) any reliability materials.

### **9.2. Reliability checks**

1. With well-trained data collectors, approximately 12% of all BEPE lessons should be coded simultaneously by two independent observers. All observers should complete reliability checks.
2. To the extent possible, reliabilities should take place:
  - a.) At least once per school year
  - b.) More frequently early in the study, rather than later (the rationale being if the reliability is weak, we want to know about it earlier rather than later)
3. When doing reliability checks, use a single audio player to pace both observers. Insert a y- adapter into the audio-out and attach the two ear jacks to it.
4. One person will be designated the Lead Observer and his/her data will be used for analysis. The other person will be the Reliability Observer and will indicate this on the cover page of the BEPE Booklet.
5. It is critical that the Lead Observer and the Reliability Observer begin observing **AT THE SAME TIME** and that they record the same information on the front page of the BEPE form for all entries except REL OBS. The Lead Observer will check 'NO' for REL OBS, and the Reliability Observer will check 'YES.'

It is acceptable for reliability and lead observer to talk to each other when changing students (i.e., at the end of each five-minute interval) to ensure that they are observing the same student

## 9.5. Calculating reliabilities

Calculate percentage agreement for the three major categories on an interval-by-interval basis using the standard formula (agreements/observed intervals multiplied by 100) using the following steps:

- a) Match the lead observer's recordings to the reliability observer's booklet
- b) On the reliability observer's form, mark a red square to indicate instances of disagreement for the lesson, context, motor activity, engagement appropriateness, and degree of appropriate engagement.
- c) Total the number of disagreements (red squares) for the lesson, context, motor activity, engagement appropriateness, and degree of appropriate engagement.
- d) Complete a table similar to the following (for a 25-minute lesson or 75 intervals).
- e) Calculate the reliabilities (percent agreement) using the formula:

$$\text{Percent Agree} = (\text{Total \# Agree}) / (\text{Total \# Observed}) \times 100$$

- f) Attach results to the Reliability observer's booklet.

	INTERVALS	AGREEMENTS	DISAGREEMENTS	%
Lesson Context	75	113	7	94.1%
Student Behavior	75	108	12	90.0%
Degree of Engagement	75	102	18	85.0%

Note: When reliabilities fall below 80%, do refresher work using videotapes. In the absence of a refresher tape, assessors need to practice, preferably in pairs or groups, and discuss disagreements until a consensus is reached. Note that it is unrealistic to expect high agreements without practice in diverse environments. See Section 5 for more details.

## 10. COMPLETING THE BEPE OBSERVATION FORM

### 10.1. ID labels

An ID system needs to be generated to keep track of forms and information. Consider having a district, school, and teacher ID.

How will forms be collected, sorted, stored, entered, and analyzed? Who will do each task?

### 10.2. Data management

**Observer ID:** Each certified BEPE observer is to be assigned a unique observer ID number.

**Location:** Specify the primary location of the lesson: **O** = outdoors; **I** = indoors

**Reliability Observer:** Circle **Y** or **N**.

**Date:** Enter numbers for Month (**MM**), Day (**DD**), and Year (**YYYY**) **Period:** Enter the class period being observed at the school that day.

**Grade:** Enter the school grade of the class (enter median grade for combination classes).  
Listed above

**Lesson context:** Identify the lesson context occurring at the "record" signal: **F**=fitness activity; **S**=skill drills; **G**=game play.

**Motor or Non-motor:** Identify if the students are engaged in motor (**M**) or non-motor (**N**) activities

**Student behavior:** Determine if the student behavior is on-task (**O**) or off-task (**F**) and if the behavior is appropriate (**A**).

**Degree of engagement:** Determine if the level of engagement is high **Circled A**.



**BEPE Data Recording Table**

Completed by Researcher

**Context Options:** G – gameplay; F – Fitness; S– Skill practice

**Motor Options:** M – Motor or movement; N – non-motor or no movement

**Engagement Options:** O – off-task; A – on-task or engaged; – Highly engaged (A)

**Examples of engaged behaviors:**

**Gameplay** – active, focused, ready, wants to be in the play, playing by the rules, effort, excitement

**Fitness** – effort, following directions, participating, into-it-ness, enthusiasm, vigor, energetic

**Skill practice** – following directions, effort, into-it-ness, understands, energetic, extra movements

For a student to be considered highly engaged, the student must display the engaged behaviors at an exceptional level.

Reliability observer: Y N Location: I O Live: Y N

Observer ID: \_\_\_\_\_ Lesson Topic: \_\_\_\_\_

School: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Example: Blue shirt with black shoes

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	N	N	N		M	M	M		M	M	M		M	M	M		M	M	M
E	A	A	A		O	A	A		(A)	(A)	A		A	(A)	(A)		A	A	A

Student #1 \_\_\_\_\_

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C																			
M																			
E																			

Student #2 \_\_\_\_\_

5	0-20	21-40	41-60	6	0-20	21-40	41-60	7	0-20	21-40	41-60	8	0-20	21-40	41-60	9	0-20	21-40	41-60
C																			
M																			
E																			

Student #3 \_\_\_\_\_

10	0-20	21-40	41-60	11	0-20	21-40	41-60	12	0-20	21-40	41-60	13	0-20	21-40	41-60	14	0-20	21-40	41-60
C																			
M																			
E																			

Student #4 \_\_\_\_\_

15	0-20	21-40	41-60	16	0-20	21-40	41-60	17	0-20	21-40	41-60	18	0-20	21-40	41-60	19	0-20	21-40	41-60
C																			
M																			
E																			

Student #5 \_\_\_\_\_

20	0-20	21-40	41-60	21	0-20	21-40	41-60	22	0-20	21-40	41-60	23	0-20	21-40	41-60	24	0-20	21-40	41-60
C																			
M																			
E																			

## BEPE SUMMARY FORM

SCHOOL \_\_\_\_\_

OBSERVER ID \_\_\_\_\_ DATE \_\_\_\_\_ GRADE \_\_\_\_\_

TOTAL OBSERVED INTERVALS \_\_\_\_\_ LENGTH OF LESSON \_\_\_\_\_

		Student					
	Code	1	2	3	4	5	TOTAL
Context	G						
	F						
	S						
Motor	M						
	N						
Engagement	O						
	A						
Level of Engagement	Ⓐ						

## Coding Conventions

1. Q: How do I code students during teacher instruction or demonstration  
A: If the target students are not moving then they should be coded a non-motor. If the target student is paying attention to the teacher and watching the demonstration, then they should be coded as appropriate. If they are not paying attention than they are off task.
2. Q: During gameplay, if the target student is the goalkeeper, how should they be coded?  
A: During gameplay, if the goalkeeper is stationary then they are non-motor. If the goalkeeper is in a ready stance and watching the flow of the game, they should be coded as appropriate.
3. Q: During skill practice, some of the students are waiting their turn, how should they be coded?  
A: If the student is stationary and waiting in line they are non-motor and appropriate. If the student is not paying attention to the others practice the skill, they should be coded as off-task.
4. Q: During a lesson, what is the difference between appropriately engaged and highly engaged?  
A: Appropriately engaged means the student is doing exactly as the teacher has instructed while highly engaged means that the student is doing exactly as the teacher has instructed but with more energy, vigor, intention, or intensity.
5. Q: If the target student leaves the class or cannot be seen do I select a new student?  
A: The best way to deal with this is to move onto the next pre-selected target student immediately. If time permits, you can go back to the original student when they return to class or come back into view.
6. Q: Should any modifications be made for different environments or students that need assistance with how they ambulate?  
A: No, all coding should remain the same but use common sense when faced with this kind of situation.
7. Q: What should I say to students who want to know what I am doing in their class?  
A: The response should be "I am sorry, I cannot talk now." If needed, a further response could be "We are interested in learning what goes on in physical education classes in schools." Pause the audio if the disruption requires more than 10 seconds.

**BEPE PACING CUES (for Interval Recording)**  
**(Initial Verbal Cues for 5 subjects/75 intervals/25 minutes)**

Auditory (verbal) prompts are needed to pace the alternating 10-second observe/record intervals so that observers can keep their hands free and focus directly on the lesson. We use MP3s or iPods instead of tape players. A 48-minute pacing tape is sufficient for all but the longest classes.

Should you prefer to make your own, the following are the initial audio prompts for observing an individual student for four minutes. These can be repeated as needed.

Start audio: "**locate subject one**" ELAPSED

**MIN: SECONDS**

**0:00** observe subject one 0:10 record interval one

0:20 observe

0:30 record 2

0:40 observe

0:50 record 3

1:00 observe

1:10 record interval 4

1:20 observe

1:30 record 5

1:40 observe

1:50 record 6

2:00 observe subject one

2:10 record interval 7

2:20 observe

2:30 record 8

2:40 observe

2:50 record 9

3:00 observe one

3:10 record interval 10

3:20 observe

3:30 record 11

3:40 observe

3:50 record 12

4:00 observe one

4:10 record interval 13

4:20 observe

4:30 record 14

4:40 observe

4:50 record 15 "**locate subject TWO.**"

Moreover, so on ... until 60 intervals (one page at 20:00). REPEAT this sequence of 60 intervals and place them END TO END for additional time (e.g., 30, 35, 40 minutes). Put only the "observe/record cues" on the tape, not the class time (e.g., elapsed 4:20). When making a tape, be in a quiet room and very cautious for at least 20 consecutive minutes!

APPENDIX I  
BEPE SUMMARY FORM

## BEPE SUMMARY FORM

SCHOOL \_\_\_\_\_

OBSERVER ID \_\_\_\_\_ DATE \_\_\_\_\_ GRADE \_\_\_\_\_

TOTAL OBSERVED INTERVALS \_\_\_\_\_ LENGTH OF LESSON \_\_\_\_\_

		Student					
	Code	1	2	3	4	5	TOTAL
Context	G						
	F						
	S						
Motor	M						
	N						
Engagement	O						
	A						
Level of Engagement	Ⓐ						

APPENDIX J

COMPLETED BEPE DATA COLLECTION FORM RELIABILITY OBSERVATION #1

**BEPE Data Recording Table**

Completed by Researcher

**Context Options:** G – gameplay; F – Fitness; S– Skill practice

**Motor Options:** M – Motor or movement; N – non-motor or no movement

**Engagement Options:** O – off-task; A – on-task or engaged; **(A)** ily engaged

**Examples of engaged behaviors:**

**Gameplay** – active, focused, ready, wants to be in the play, playing by the rules, effort, excitement

**Fitness** – effort, following directions, participating, into-it-ness, enthusiasm, vigor, energetic

**Skill practice** – following directions, effort, into-it-ness, understands, energetic, extra movements

For a student to be considered highly engaged, the student must display the engaged behaviors at an exceptional level.

Reliability observer: Y N Location: I O Live: Y N

Observer ID: \_\_\_\_\_ Lesson Topic: \_\_\_\_\_

School: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Example: Blue shirt with black shoes

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	N	N	N		M	M	M		M	M	M		M	M	M		M	M	M
E	A	A	A		O	A	A		<b>(A)</b>	<b>(A)</b>	A		A	<b>(A)</b>	<b>(A)</b>		A	A	A

Student #1

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	S	S	S		S	S	S		S	S	S		S	S	S		S	S	S
M	N	N	N		M	N	M		N	N	N		N	M	M		N	N	N
E	A	A	O		A	A	<b>(A)</b>		A	A	A		A	A	A		A	A	A

Student #2

5	0-20	21-40	41-60	6	0-20	21-40	41-60	7	0-20	21-40	41-60	8	0-20	21-40	41-60	9	0-20	21-40	41-60
C	S	S	S		S	S	S		S	S	S		S	S	S		S	S	S
M	N	N	N		N	M	N		N	N	N		N	N	N		N	N	M
E	A	O	O		O	A	A		A	A	A		A	A	A		A	A	<b>(A)</b>

Student #3

10	0-20	21-40	41-60	11	0-20	21-40	41-60	12	0-20	21-40	41-60	13	0-20	21-40	41-60	14	0-20	21-40	41-60
C	S	S	S		S	S	S		S	S	S		S						
M	M	M	N		N	M	N		M	M	N		N						
E	<b>(A)</b>	A	A		A	O	A		<b>(A)</b>	A	<b>(A)</b>		<b>(A)</b>						

Student #4

15	0-20	21-40	41-60	16	0-20	21-40	41-60	17	0-20	21-40	41-60	18	0-20	21-40	41-60	19	0-20	21-40	41-60
C																			
M																			
E																			

Student #5

20	0-20	21-40	41-60	21	0-20	21-40	41-60	22	0-20	21-40	41-60	23	0-20	21-40	41-60	24	0-20	21-40	41-60
C																			
M																			
E																			



APPENDIX K

COMPLETED BEPE SUMMARY FORM RELIABILITY OBSERVATION #1

## BEPE SUMMARY FORM

RELIABILITY OBSERVATION VIDEO #1 – Primary researcher

SCHOOL \_\_\_\_\_

OBSERVER ID \_\_\_\_\_ DATE \_\_\_\_\_ GRADE \_\_\_\_\_

TOTAL OBSERVED INTERVALS 40 LENGTH OF LESSON 00:13:20

	Student						
	Code	1	2	3	4	5	TOTAL
Context	G	0	0	0	-	-	0
	F	0	0	0	-	-	0
	S	15	15	10	-	-	40
Motor	M	4	2	5	-	-	11
	N	11	13	5	-	-	29
Engagement	O	1	3	1	-	-	5
	A	14	12	9	-	-	35
Level of Engagement	Ⓐ	1	1	4	-	-	6

APPENDIX L

COMPLETED BEPE DATA COLLECTION FORM RELIABILITY OBSERVATION #2

**BEPE Data Recording Table**

Completed by Researcher

**Context Options:** G – gameplay; F – Fitness; S– Skill practice

**Motor Options:** M – Motor or movement; N – non-motor or no movement

**Engagement Options:** O – off-task; A – on-task or engaged; (A) ghly engaged

**Examples of engaged behaviors:**

**Gameplay** – active, focused, ready, wants to be in the play, playing by the rules, effort, excitement

**Fitness** – effort, following directions, participating, into-it-ness, enthusiasm, vigor, energetic

**Skill practice** – following directions, effort, into-it-ness, understands, energetic, extra movements

For a student to be considered highly engaged, the student must display the engaged behaviors at an exceptional level.

**Reliability observer:** Y N                      **Location:**    I    O    **Live:** Y    N

**Observer ID:** \_\_\_\_\_ **Lesson Topic:** \_\_\_\_\_

**School:** \_\_\_\_\_ **Grade:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Example: Blue shirt with black shoes**

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	M	M	M		M	M	M		M	M	M		M	M	M		M	M	M
E	O	A	A		O	A	A		(A)	(A)	A		A	(A)	(A)		A	A	A

**Student #1 \_Blue shirt**

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	M	M	M		M	M	M		M	M	M		M	M	M		M	M	M
E	O	(A)	(A)		(A)	(A)	(A)		(A)	(A)	A		(A)	O	(A)		(A)	(A)	(A)

**Student #2 \_Grey jeans**

5	0-20	21-40	41-60	6	0-20	21-40	41-60	7	0-20	21-40	41-60	8	0-20	21-40	41-60	9	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	N	M	M		M	M	M		M	M	N		M	M	M		M	M	N
E	O	A	A		A	A	A		A	A	O		O	O	A		A	A	A

**Student #3 \_Black shirt**

10	0-20	21-40	41-60	11	0-20	21-40	41-60	12	0-20	21-40	41-60	13	0-20	21-40	41-60	14	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	M	M	M		M	M	M		M	N	M		N	M	M		M	M	M
E	O	A	A		O	A	A		O	O	(A)		O	A	A		A	A	A

**Student #4**

15	0-20	21-40	41-60	16	0-20	21-40	41-60	17	0-20	21-40	41-60	18	0-20	21-40	41-60	19	0-20	21-40	41-60
C																			
M																			
E																			

**Student #5**

20	0-20	21-40	41-60	21	0-20	21-40	41-60	22	0-20	21-40	41-60	23	0-20	21-40	41-60	24	0-20	21-40	41-60
C																			
M																			
E																			

APPENDIX M

COMPLETED BEPE SUMMARY FORM RELIABILITY OBSERVATION #2

## BEPE SUMMARY FORM

RELIABILITY OBSERVATION VIDEO #1 – Primary researcher

SCHOOL \_\_\_\_\_

OBSERVER ID \_\_\_\_\_ DATE \_\_\_\_\_ GRADE \_\_\_\_\_

TOTAL OBSERVED INTERVALS 45 LENGTH OF LESSON 00:15:00

		Student					
	Code	1	2	3	4	5	TOTAL
Context	G	0	0	0	-	-	0
	F	15	15	15	-	-	45
	S	0	0	0	-	-	0
Motor	M	15	12	14	-	-	41
	N	0	3	1	-	-	4
Engagement	O	2	6	4	-	-	12
	A	13	9	11	-	-	33
Level of Engagement	Ⓐ	13	1	3	-	-	17

APPENDIX N

COMPLETED BEPE DATA COLLECTION FORM RELIABILITY OBSERVATION #3

**BEPE Data Recording Table**

Completed by Researcher

**Context Options:** G – gameplay; F – Fitness; S– Skill practice

**Motor Options:** M – Motor or movement; N – non-motor or no movement

**Engagement Options:** O – off-task; A – on-task or engaged; (A) ighly engaged

**Examples of engaged behaviors:**

**Gameplay** – active, focused, ready, wants to be in the play, playing by the rules, effort, excitement

**Fitness** – effort, following directions, participating, into-it-ness, enthusiasm, vigor, energetic

**Skill practice** – following directions, effort, into-it-ness, understands, energetic, extra movements

For a student to be considered highly engaged, the student must display the engaged behaviors at an exceptional level.

Reliability observer: Y N                      Location:    I    O    Live: Y    N  
 Observer ID: \_\_\_\_\_ Lesson Topic: \_\_\_\_\_

School: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_

Example: Blue shirt with black shoes

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	F	F	F		F	F	F		F	F	F		F	F	F		F	F	F
M	N	N	N		M	M	M		M	M	M		M	M	M		M	M	M
E	A	A	A		O	A	A		(A)	(A)	A		A	(A)	(A)		A	A	A

Student #1 \_ORANGE PANTS

0	0-20	21-40	41-60	1	0-20	21-40	41-60	2	0-20	21-40	41-60	3	0-20	21-40	41-60	4	0-20	21-40	41-60
C	G	G	G		G	G	G		G	G	G		G	G	G		G	G	G
M	M	M	M		M	M	M		M	M	M		M	M	M		M	M	M
E	A	(A)	(A)		A	(A)	(A)		A	(A)	A		(A)	(A)	(A)		A	(A)	A

Student #2 \_GOAL KEEPER

5	0-20	21-40	41-60	6	0-20	21-40	41-60	7	0-20	21-40	41-60	8	0-20	21-40	41-60	9	0-20	21-40	41-60
C	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
M	N	N	N		N	M	N		N	N	N		N	N	N		N	N	M
E	A	(A)	A		A	A	(A)		A	A	(A)		(A)	A	(A)		A	A	A

Student #3 \_JEANS AND WHITE SHIRT

10	0-20	21-40	41-60	11	0-20	21-40	41-60	12	0-20	21-40	41-60	13	0-20	21-40	41-60	14	0-20	21-40	41-60
C	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
M	N	N	N		M	M	M		M	M	N		M	M	M		N	M	M
E	A	A	A		(A)	(A)	(A)		A	(A)	A		(A)	(A)	A		A	A	A

Student #4 \_\_\_\_\_

15	0-20	21-40	41-60	16	0-20	21-40	41-60	17	0-20	21-40	41-60	18	0-20	21-40	41-60	19	0-20	21-40	41-60
C																			
M																			
E																			

Student #5 \_\_\_\_\_

20	0-20	21-40	41-60	21	0-20	21-40	41-60	22	0-20	21-40	41-60	23	0-20	21-40	41-60	24	0-20	21-40	41-60
C																			
M																			
E																			



APPENDIX O

COMPLETED BEPE SUMMARY FORM RELIABILITY OBSERVATION #3

## BEPE SUMMARY FORM

RELIABILITY OBSERVATION VIDEO #1 – Primary researcher

SCHOOL \_\_\_\_\_

OBSERVER ID \_\_\_\_\_ DATE \_\_\_\_\_ GRADE \_\_\_\_\_

TOTAL OBSERVED INTERVALS 45 LENGTH OF LESSON 00:15:00

		Student					
	Code	1	2	3	4	5	TOTAL
Context	G	15	15	15	-	-	45
	F	0	0	0	-	-	0
	S	0	0	0	-	-	0
Motor	M	15	8	10	-	-	33
	N	0	7	5	-	-	12
Engagement	O	0	0	0	-	-	0
	A	15	15	15	-	-	45
Level of Engagement	Ⓐ	9	5	6	-	-	20