As the first step of an instrument development, teaching challenges that occur when students with autism spectrum disorders are educated in general physical education were elicited using Goldfried and D’Zurilla’s (1969) behavioral-analytic model. Data were collected from a convenience sample of 43 certified physical educators (29 women and 14 men) using a demographic questionnaire and an elicitation questionnaire. Participants listed 225 teaching challenges, 46% related to cooperative, 31% to competitive, and 24% to individualistic learning situations. Teaching challenges were categorized into nine themes: inattentive and hyperactive behaviors, social impairment, emotional regulation difficulties, difficulties understanding and performing tasks, narrow focus and inflexible adherence to routines and structure, isolation by classmates, negative effects on classmates’ learning, and need for support.

Autism spectrum disorders (ASD) are present in as many as 1 in 110 children, aged 3–17 years (Kogan et al., 2009) in the United States. The growing trend in the prevalence of children with ASD, as reported by the U.S. Department of Education (2003), indicates the number of students aged 5 through 21 years receiving special education services for ASD under the Individuals with Disability Education Act grew from 10,000 in 1992 to approximately 65,000 in 2001. This trend is attributed to an increase in professional and parental awareness, improved screening and identification, and the growth of professional organizations advocating services for children with ASD.

Conceptualization of ASD has also dramatically changed over the past two decades. Under the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychological Association [APA] 2000), there are currently five subtypes of Pervasive Developmental Disorders.
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(referred to as ASD throughout this manuscript): (a) autism disorder; (b) pervasive developmental disorder, not otherwise specified (PDD-NOS); (c) Asperger syndrome (AS); (d) childhood disintegrative disorder; and (e) Rett disorder. Since the publication of the DSM-IV-TR, researchers have been trying to examine the unique attributes of each ASD subtype (Witwer & Lecavalier, 2005) even though all subtypes share qualitative impairments in reciprocal social interaction and a restricted, stereotyped, repetitive repertoire of interests and activities based on the DSM-IV TR criteria (APA, 2000). For example, AS should differ from autism disorder in that it requires no general delay in language or cognitive development. In addition, the individual with AS should not meet criteria for qualitative impairments in the communication domain (APA, 2000; Witwer & Lecavalier, 2005). Despite these diagnostic criteria, enormous variability in behaviors and developmental profiles make accurate diagnosis very difficult, particularly when it comes to differentiating between high-functioning autism and AS (Witwer & Lecavalier, 2005). As such, the APA (2010) has proposed changing the criteria in the fifth edition of the DSM, so that the five ASD subtypes fold into the general category of ASD. ASD would then vary based on level of functioning and autistic symptoms.

Children with ASD are commonly known to withdraw from social contact, prefer social isolation, and lack the ability to establish and maintain age-appropriate relationships (Müller, Schuler, & Yates, 2008; Shaked & Yirmiya, 2003). These social impairments have been found to contribute to the child’s emotional vulnerability, depression, and extreme stress or frustration (Müller et al., 2008). Children with ASD have been found to exhibit symptoms of Attention Deficit/Hyperactive Disorder (Gillberg, 1989; Holtmann, Bolte, & Poustka, 2007; Oswald, Coutinho, Johnson, Larson, & Mazefsky, 2008), strong preference toward certain sensory stimuli, overselectivity, and intense interests (Oswald et al., 2008), and deficits in fine and gross motor development (Emck, Bosscher, Beek, & Doreleijers, 2009). This wide repertoire of student behaviors within ASD can pose significant teaching challenges across the ecology of the gymnasium.

The ecology of the gymnasium serves as a theoretical framework for understanding the interrelated task systems (instructional, managerial, and social), which teachers and students interact within as a part of the physical education setting (McCaughtry, Tischler, & Barnard Flory, 2008; Siedentop & Tannehill, 2000). The framework facilitates understanding the dynamic physical education setting by examining the teachers’ objectives expressed through their instructional tasks (e.g., presenting a developmentally appropriate sequence of tasks using unambiguous instruction), managerial tasks (e.g., establishing the learning environment through the use of rules, routines, expectations, and consequences), and their interactions with students (e.g., emotionally connecting with students). It also examines and accounts for students’ perspectives of instructional, managerial, and social task (e.g., student-to-student interactions and the influence of the social climate of the school on the physical education program) systems in their physical education classes. Taken in combination, these directly influence student learning in physical education.

Student learning in physical education for individuals with ASD has recently focused on the development of effective instruction and interventions to accommodate unique learner attributes (e.g., Crollick, Mancil, & Stopka, 2006; Reid &
Wide variation in the learner attributes and in the teaching contexts faced by physical educators often makes effective implementation of these strategies difficult. Therefore, a more individualized approach to assessment and intervention implementation is necessary (Howlin, Magiati, & Charman, 2009). As such, it is important to assess the factors that reliably contribute to teaching challenges in general physical education (GPE; Reid & O’Connor, 2003); however, to date, no instrument has been developed that would systematically identify these factors or teaching challenges in GPE.

One of the most widely used approaches to identifying individual, behavioral, and environmental challenges or problem situations is the behavior-analytic model put forth by Goldfried and D’Zurilla (1969), refined and revised over the years by D’Zurilla and Nezu (2006), and used in therapeutic and educational studies (e.g., Cavell & Kelley, 1992; Grover, Nangle, & Zeff, 2005). The model assesses the process of individuals interacting in situations with challenging demands and the problem solving process as they attempt to find a solution that is effective for the given situation (Goldfried & D’Zurilla, 1969). When applied in GPE, the model can be used to identify and operationalize salient details and circumstances within the dynamic GPE situation so that teaching challenges may be addressed in an individualized approach. The model allows the decision-making process to continue with various solutions being evaluated toward the desired outcomes.

Application of the behavioral-analytic model calls for a series of criterion analyses to identify relevant teaching challenges, responses to these challenges, and significant other’s judgments as to the efficacy of these responses (Goldfried & D’Zurilla, 1969). Such an approach can provide a framework for (a) designing strategies when teaching children with ASD in GPE, (b) offering professional preparation and supervision of preservice physical educators, and (c) providing in-service training for physical educators. Therefore, the purpose of this study was to use the Goldfried and D’Zurilla’s (1969) behavioral-analytic model and the ecology of the gym framework to elicit teaching challenges that occur when students with ASD are educated in GPE classes. Empirical identification of these challenges could increase relevance of future assessment procedures and provide a clearer picture of the factors to be addressed in future interventions. The research question guiding this study was the following: What are the instructional, managerial, and social challenges that instructors face when teaching students with ASD in GPE?

Method

Participants

A convenience sample (Fowler, 2009) of 43 teachers (29 women and 14 men) teaching in four regions of the United States (12% from the Northeast, 37% from the Midwest, 42% from the South, and 9% from the West) participated in the study. The mean age of the sample was 43.4 years ($SD = 10.0$, range = 25–59). Participants in the study met the following eligibility criteria: (a) current license to teach GPE or adapted physical education (APE) in at least one state of the United States, (b) current full-time teaching position in GPE or APE in a public school in any grade,
(c) a minimum of at least two years of full-time experience teaching physical education to students in any grade, and (d) experience teaching physical education to a student similar to Chris in GPE (described in the questionnaire’s written vignette).

With regard to teaching licensure, 88% of the teachers were licensed to teach GPE in their respective state and 64% were licensed to teach APE in their respective state or held a national certification in APE. The teachers reported a mean of 10.7 years \((SD = 9.2, \text{ range } = 2–35)\) of experience teaching GPE, with 33% of the teachers currently teaching GPE at the preschool (3–5 years), 81% at the elementary (6–12 years), 49% at the middle or junior high (13–15 years), and 30% at the high or secondary (16–21 years) school level. They also reported a mean of 8.9 years \((SD = 9.8, \text{ range } = 0–30)\) of experience teaching APE, with 30% of the teachers currently teaching APE at the preschool, 67% at the elementary, 56% at the middle or junior high, and 16% at the high or secondary school level. The teachers reported their current teaching assignment as GPE only (19%), APE only (30%), and a combination of GPE and APE (51%).

**Instrumentation**

Two online questionnaires were administered to the participants: (a) a background questionnaire and (b) an elicitation questionnaire. The *background questionnaire* gathered information on participants’ demographics (i.e., age, sex, and state in which they were teaching); current position; experience teaching APE, GPE, and students with ASD; and the program levels the participants taught. The *elicitation questionnaire* gathered information about participants’ perceptions of challenges that occurred when teaching students with ASD in their GPE classes. It consisted of a written vignette, elicitation questions, and elicitation definitions.

The *written vignette* described a hypothetical student named Chris who was included in a GPE class. The vignette was based upon the twelve DSM IV-TR criteria for AS (APA, 2000). A gender-neutral name was chosen for the vignette and the questionnaire to avoid effects of same sex preferences on participants’ responses (VanFleet & Atwater, 1997). Moreover, the label of AS or ASD was omitted in the vignette to eliminate the effect of labeling on participants’ perceptions (Tripp & Rizzo, 2006). Following is the vignette:

Chris is a bright 12-year-old student who is taking a GPE class in the gym. Chris’s language skills and intelligence are appropriate for her/his age. Chris is a good reader and does well in science and history. Still, Chris has some very real difficulties in school.

Even though Chris has been in general physical education (PE) since kindergarten, s/he does not do well. Chris is clumsy and uncoordinated. Chris has difficulty in learning advanced motor skills like serving a volleyball and combining movements like dribbling and then shooting a basketball. Chris often needs single-step directions and constant attention from the teacher. Chris also needs lots of practice to learn new skills. Chris cannot transfer a skill s/he has learned in one situation to a new situation. S/he also struggles in new or different environments, such as when PE is outdoors instead of in the gym. Chris has difficulty performing sports skills during game play. Chris also
Chris has a hard time with activities that require physical contact and quick changes from offense to defense. When Chris thinks s/he will not be successful doing what the teacher asked her/him to do, s/he often sits down or wanders around instead of following teacher directions.

Chris likes to know what is going to happen each day in PE class. Chris often gets upset when the teacher changes the activity or the setting (like going from the gym out to a soccer field). Chris’s favorite thing to do in PE is play Bocce and s/he gets irritated when s/he cannot do it. In PE, Chris is troubled by things like bouncing balls, loud music, or even a thread hanging from her/his shirt. Chris uses repetitive behaviors like flicking her/his fingers and walking in circles to calm down when s/he gets overwhelmed. Chris’s personal interests are very limited but s/he can remember a lot of details about those few things. For example, Chris loves movies but is not interested in the story line. Instead, Chris focuses on information about the actors and specific quotes from the movies. Most of Chris’s classmates like to play soccer or hang out after school with friends, but s/he would rather stay in her/his room alone watching her/his favorite movies or playing video games with the same characters. In fact, Chris is so passionate about those activities that s/he is not interested in doing anything else during her/his free time. In conversations, Chris uses language literally and regularly misunderstands the meaning of words. Chris has a hard time understanding social cues and sending appropriate signals that are important for interaction with others. For example, when someone is talking to Chris, s/he often looks down instead of making eye contact. Chris also does not show emotions such as joy, curiosity, or sadness in her/his face when talking to others. When Chris speaks, s/he uses a monotone voice.

In conversations with her/his classmates, Chris often goes on and on talking about the video game s/he played last night or different characters from her/his favorite movies. When her/his classmates try to change the subject, Chris ignores their comments and continues talking about her/his games and favorite movie characters. Chris does not really want to share her/his interests. Instead, Chris wants to talk about something s/he enjoys or is good at. Chris interacts better with younger children and with more understanding adults who overlook her/his odd behaviors. Chris seems to know that s/he is not the same as her/his classmates and is often frustrated by this fact. As a result of these differences, Chris often ends up alone and socially withdrawn in her/his classes.

The elicitation questions gathered information on the challenges physical educators encounter when teaching children similar to Chris in GPE classes. For each learning situation, the participants were asked to list any notable managerial, instructional, or social task challenges that occurred when teaching a student similar to Chris in the gymnasium during GPE classes. In addition, they were asked a multiple-selection question regarding the amount of support (e.g., paraprofessional, modifications) that was available to them when the challenge occurred.

Two sets of elicitation definitions were presented to the participants in the questionnaire. The first set of definitions included three types of learning situations—cooperative, competitive, and individualistic (Johnson & Johnson, 1999).
Cooperative learning situations were defined as those where at least two students work together to achieve a shared goal. In these situations, achieving a goal is more important than other aspects like winning (e.g., when a group works together on a team-building activity). Competitive learning situations were defined as those where winning is important and where students know that success is measured by performing faster and/or better than other students in the class (e.g., teams of students trying to score a goal for their team). Individualistic learning situations were defined as those where a student works independently, as opposed to with a partner or a group, to achieve her/his own goals (e.g., learning to serve a volleyball over the net). The second set of definitions was based on the ecology of the gym theoretical framework and included three types of physical education tasks—instructional, managerial, and social (McCaughtry et al., 2008; Siedentop & Tannehill, 2000). Instructional tasks were defined as activities that physical educators use to teach students knowledge, skills, and behaviors in physical education (e.g., a task teaching students how to kick a ball with the inside of the foot). Managerial tasks were defined as procedures that help the teacher create and maintain the learning environment (e.g., start and stop signals or reminding students to be quiet) and that are not related to the content being taught. Social tasks were defined as social behaviors that students seek out during physical education classes to socialize with peers and to respond to teachers’ instructional and managerial tasks to pass the class. These behaviors are usually initiated by the students and may or may not be viewed as appropriate by the teacher (e.g., a student asks a classmate to play ball after school, congratulates a classmate for his/her good work, or jokes with a classmate).

Content validity and readability of the vignette was evaluated by Panel 1, which consisted of a professor in APE and five physical educators (all certified in GPE and three nationally certified in APE). The judges had a mean of 10.5 years (SD = 9.2, range = 3–26) of full-time experience teaching GPE and 8.8 years (SD = 7.6, range = 1–21) of full-time experience teaching APE in any grade. In addition, one of the judges was a parent of a child with an ASD. All of the judges reported prior experience teaching a student with ASD, including AS in their GPE or APE classes. The judges independently read each of the twelve criteria of AS and evaluated how well they were represented in the vignette using a four-point scale ranging from 4 (very well represented) to 1 (not at all represented). The judges also evaluated whether the description of the criteria in the vignette was relevant to GPE classes using a four-point scale ranging from 4 (very relevant) to 1 (not relevant at all). Finally, the judges evaluated readability and overall quality of the vignette for use with GPE and APE teachers using a four-point scale ranging from 4 (excellent) to 1 (poor). The principal investigator conducted informal interviews with the judges to validate how the criteria of AS were represented in the vignette. After two reviews, the Flesch Reading Ease score of the vignette was 63.0 and the Flesch-Kincaid Grade Level score of the vignette was 8.6, an appropriate readability level for the target population.

Panel 2 evaluated content validity, readability and technical quality of the demographic questionnaire, the definitions, and the elicitation questions. The panel consisted of three professors in physical education pedagogy, two profes-
sors in APE, and one doctoral student majoring in physical education pedagogy. All judges had a minimum of two years of full-time experience teaching GPE or APE in any grade and a minimum of two years of experience conducting survey research. Using a four-point scale ranging from 4 (very well represented) to 1 (not well represented at all), the judges independently evaluated (a) how well the original definitions (Johnson & Johnson, 1999; Siedentop & Tannehill, 2000) were represented in the elicitation definitions and (b) how well the demographic variables (e.g., teaching experience) were represented in the demographic questionnaire items. Panel 2 also evaluated readability of the questionnaires for GPE and APE teachers using a four-point scale ranging from 4 (excellent) to 1 (poor). After the second review, the readability scores ratings for the questionnaires ranged from 3.7 to 4.0, indicating excellent readability for the target population. Test-retest reliability of the questionnaires was assessed on a sample of 33 physical educators, with 5–10 days between the administrations. All teachers were certified to teach kindergarten through 12th grade GPE and eight were also certified to teach APE. Intraclass correlation coefficients (ICC) ranged from 0.95–1.00, with a mean of 0.98. In addition, the 33 teachers were asked to provide feedback on the questionnaire items. Content Validity Index (CVI; Lynn, 1986) was calculated for each content validity rating. The CVIs were computed as the number of experts giving a rating of either three or four, divided by the total number of experts. Revisions and panel review continued until all teachers’ comments were addressed and the item CVIs were at least 0.90 (Polit & Beck, 2006).

Procedure

The study was conducted in accordance with the ethical standards of the APA with Institutional Review Board approval obtained. A list of physical educators (N = 448) who passed the Adapted Physical Education National Standards (APENS) certification exam within last five years was obtained from the National Consortium for Physical Education and Recreation for Individuals with Disabilities. Following Dillman, Smyth, and Christian (2009), only 50% of the teachers (n = 224) were randomly selected for the study. Every attempt was made to include teachers from all four regions of the United States. To keep track of who has responded and to ensure that only sampled teachers accessed the survey, the invitation e-mail was sent through the Qualtrics survey mailer, which generated an access code for each recipient. The access code was contained in the URL so that clicking on the URL automatically gained respondents access to the survey. The access code was not matched with participants’ responses.

Of the 224 invitation e-mails sent, 75 were undeliverable. As a result, additional teachers from the other half of the sample were randomly stratified based on the four geographic regions and sent an invitation e-mail until a total of 224 e-mails were delivered. Of the 224 teachers contacted, 132 answered the questionnaire, resulting in a response rate of 59%. Of the 132 respondents, 58 did not meet the eligibility criteria and 32 either provided unusable responses to or failed to answer the open-ended questions. Therefore, the current results are based upon responses of 43 teachers representing 19 states in the USA.
Data Analysis

Data were analyzed using directed approach to qualitative content analysis (Hsieh & Shannon, 2005). Qualitative analyses were performed to obtain a more in-depth, complex view and understanding of the experiences physical educators encounter when teaching students with ASD in their GPE classes. For the first 30 responses, the principal researcher first segmented teacher responses within three data sets (i.e., cooperative, competitive, and individualistic situations) based on whether the challenges were managerial, instructional, or social. The two researchers then independently examined teacher responses within each segment and proposed a set of concepts. The researchers met to compare proposed concepts and agree on an initial master list of codes. For each code, the researchers derived a set of coding rules. After the initial codebook was created, using NVivo 8.0, the principal researcher and a trained research assistant independently coded the first 30 responses. If new codes were derived, the researchers recoded the entire data set. Intercoder reliability was calculated between the principal investigator and the research assistant using Cohen’s kappa (Cohen, 1960), which yielded a reliability score of 0.94. All disagreements between the coders were discussed, and any changes to the codebook resulted in recoding of the data sets. The researchers sorted response concepts, along with the transcribed responses within each data set, into clusters based on similarities in theme. Using selective coding, the researchers generated a label for themed responses by reviewing concepts and individual teacher responses placed in data clusters. Because no further unique concepts and themes emerged from the data when coding the remaining 13 responses, the researchers did not attempt to collect more data (Corbin & Strauss, 2008). Finally, frequencies of teacher responses under each concept and theme were calculated.

Results

Descriptive Data on Teaching Challenges

Teachers listed 225 teaching challenges in the survey. Of those, 103 (46%) were related to cooperative, 69 (31%) to competitive, and 53 (24%) to individualistic learning situations. The categorization of the teacher responses revealed six distinctive themes for teaching challenges related to Chris’s behavior and three themes for teaching challenges related to other elements of GPE. The most frequent theme was related to teaching challenges created by Chris’s inattentive and hyperactive behaviors (39% of total responses), followed by teaching challenges related to social impairment (36%), emotional regulation difficulties (22%), difficulties understanding and performing tasks (21%), narrow focus (18%), and inflexible adherence to routines and structure (16%). The percentages do not equal 100% because many responses met criteria for more than one theme. Three additional themes for teaching challenges were related to other elements of GPE and included (a) Chris being ignored or isolated by classmates (20%), (b) negative effects on classmates’ learning (19%), and (c) need for support and lack of training (18%).

As presented in Table 1, for cooperative learning situations, the teachers (n = 37) reported similar percentage of social interaction (35%), managerial (33%),
and instructional (32%) teaching challenges. The three most frequently reported teaching challenges were, in order, those related to Chris’s social impairment (46%), inattentive and hyperactive behaviors (42%), and Chris being ignored or isolated by classmates (30%). For competitive situations, the teachers (n = 29) reported more managerial (37%) and social task (37%) teaching challenges than instructional teaching challenges (24%; see Table 2). The three most frequently reported teaching challenges in competitive situations were those associated with inattentive and hyperactive behaviors (38%), emotional regulation difficulties (36%), and social impairment (33%). For individualistic situations, the teachers (n = 29) reported more instructional (42%) and social interaction (35%) teaching challenges than managerial teaching challenges (22%; see Table 3). The three most frequently reported teaching challenges were those related to inattentive and hyperactive behaviors (34%), difficulty understanding and performing tasks (30%), and social impairment (26%).

In line with the study’s objectives, the study themes are presented in six sections below, along with illustrative quotes from participants: (a) inattentive and hyperactive behaviors, (b) social impairment and isolation, (c) difficulties meeting performance standards, (d) emotional regulation difficulties, (e) difficulties related to narrow focus and inflexible adherence to routines and structure, and (f) support and training.

### Table 1 Teaching Challenges Related to Cooperative Learning Situations

<table>
<thead>
<tr>
<th>Theme</th>
<th>Total (n = 103)</th>
<th>Instructional (n = 33)</th>
<th>Managerial (n = 34)</th>
<th>Social Interaction (n = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inattentive and hyperactive behaviors</td>
<td>44 42.7</td>
<td>15 45.5</td>
<td>19 55.9</td>
<td>10 27.8</td>
</tr>
<tr>
<td>Social impairment</td>
<td>46 44.7</td>
<td>4 12.1</td>
<td>12 35.3</td>
<td>30 83.3</td>
</tr>
<tr>
<td>Narrow interest</td>
<td>16 15.5</td>
<td>4 12.1</td>
<td>6 17.7</td>
<td>6 16.7</td>
</tr>
<tr>
<td>Difficulties understanding and performing tasks</td>
<td>23 22.3</td>
<td>18 54.6</td>
<td>5 14.7</td>
<td>0 0</td>
</tr>
<tr>
<td>Emotional regulation difficulties</td>
<td>18 17.5</td>
<td>6 18.2</td>
<td>5 14.7</td>
<td>7 19.4</td>
</tr>
<tr>
<td>Inflexible adherence to routines and rituals</td>
<td>18 17.5</td>
<td>7 21.2</td>
<td>10 9.4</td>
<td>1 2.8</td>
</tr>
<tr>
<td>Chris being ignored or isolated by classmates</td>
<td>31 30.1</td>
<td>3 9.1</td>
<td>5 14.7</td>
<td>23 63.9</td>
</tr>
<tr>
<td>Negative effect on classmates’ learning</td>
<td>22 21.4</td>
<td>15 45.5</td>
<td>7 20.6</td>
<td>0 0</td>
</tr>
<tr>
<td>Need for support</td>
<td>24 23.3</td>
<td>7 21.2</td>
<td>10 29.4</td>
<td>7 19.4</td>
</tr>
</tbody>
</table>
### Table 2  Teaching Challenges Related to Competitive Learning Situations

<table>
<thead>
<tr>
<th>Theme</th>
<th>Total (n = 69)</th>
<th>Instructional (n = 17)</th>
<th>Managerial (n = 26)</th>
<th>Social Interaction (n = 26)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>f</td>
<td>% of n</td>
<td>f</td>
<td>% of n</td>
</tr>
<tr>
<td>Inattentive and hyperactive behaviors</td>
<td>26</td>
<td>37.7</td>
<td>11</td>
<td>64.7</td>
</tr>
<tr>
<td>Social impairment</td>
<td>23</td>
<td>33.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Difficulties understanding and performing tasks</td>
<td>5</td>
<td>7.3</td>
<td>4</td>
<td>23.5</td>
</tr>
<tr>
<td>Emotional regulation difficulties</td>
<td>25</td>
<td>36.2</td>
<td>3</td>
<td>17.6</td>
</tr>
<tr>
<td>Narrow interest</td>
<td>21</td>
<td>30.4</td>
<td>5</td>
<td>29.4</td>
</tr>
<tr>
<td>Inflexible adherence to routines and rituals</td>
<td>5</td>
<td>7.3</td>
<td>2</td>
<td>11.8</td>
</tr>
<tr>
<td>Chris being ignored or isolated by classmates</td>
<td>12</td>
<td>17.4</td>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>Negative effect on classmates’ learning</td>
<td>14</td>
<td>20.3</td>
<td>7</td>
<td>41.2</td>
</tr>
<tr>
<td>Need for support</td>
<td>10</td>
<td>14.5</td>
<td>2</td>
<td>11.8</td>
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</table>

### Table 3  Teaching Challenges Related to Individualistic Learning Situations

<table>
<thead>
<tr>
<th>Theme</th>
<th>Total (n = 53)</th>
<th>Instructional (n = 22)</th>
<th>Managerial (n = 12)</th>
<th>Social Interaction (n = 19)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>% of n</td>
<td>F</td>
<td>% of n</td>
</tr>
<tr>
<td>Inattentive and hyperactive behaviors</td>
<td>18</td>
<td>34.0</td>
<td>12</td>
<td>54.5</td>
</tr>
<tr>
<td>Social impairment</td>
<td>14</td>
<td>26.4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Difficulties understanding and performing tasks</td>
<td>16</td>
<td>30.2</td>
<td>10</td>
<td>45.5</td>
</tr>
<tr>
<td>Emotional regulation difficulties</td>
<td>7</td>
<td>13.2</td>
<td>1</td>
<td>4.6</td>
</tr>
<tr>
<td>Narrow interest</td>
<td>3</td>
<td>5.7</td>
<td>1</td>
<td>4.6</td>
</tr>
<tr>
<td>Inflexible adherence to routines and rituals</td>
<td>12</td>
<td>22.6</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Chris being ignored or isolated by classmates</td>
<td>3</td>
<td>5.7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Negative effect on classmates’ learning</td>
<td>7</td>
<td>13.2</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Need for support</td>
<td>6</td>
<td>11.3</td>
<td>2</td>
<td>9.1</td>
</tr>
</tbody>
</table>
Inattentive and Hyperactive Behaviors

Teachers noted that students similar to Chris often exhibit behaviors such as inattention, hyperactivity, and impulsivity. Among the most common responses for teaching challenges related to inattention were Chris’s difficulty sustaining attention in tasks or games, not listening when spoken to directly, not following through on instructions from the teacher or classmates, failing to finish tasks during GPE classes, disliking activities that require sustained effort, and being easily distracted by external stimuli. Teaching challenges associated with hyperactivity were noted by the teachers as fidgeting, leaving her or his group or personal space (particularly during cooperative activities), and running around the gym at inappropriate times. Impulsivity was noted as blurt out answers or questions during general instruction, difficulty waiting turns in cooperative and competitive group games, interrupting others, or involving others in inappropriate behavior.

Addressing inattentive and hyperactive behaviors appeared to be a serious teaching challenge for the teachers in their GPE classes. It seemed to affect all three types of physical education tasks and learning situations as reflected in the following quotes from two teachers:

Chris doesn’t stop on the indicated signal (even after multiple trials of practice).
Chris doesn’t stay with their designated group (not intentional misbehavior).
Chris doesn’t stay on his home base during instructional time because of his limited attention span.

Chris is often “off task” and forces his partner off task, which does two things. His partner is either involved with another person inappropriately, or his partner is involved in trying to “force” Chris into activity that he is uncomfortable, leading to frustration and discipline problems.

Teachers noted that while Chris’s peers would often ignore inattentive and hyperactive behaviors or try to make helpful comments to bring Chris back on-task, there were students who would “show negative consequences like not wanting the student in their group.”

Social Impairment and Social Isolation

The second most frequent theme in the reported teaching challenges was related to Chris’s social impairment. Teaching challenges included situations when Chris had difficulty responding to others (or to their emotions), did not make eye contact, had difficulty reading emotions of others, did not share equipment or personal space with classmates, and was not motivated to work in a group or with others. The teachers noted that these teaching challenges especially influenced managerial and social tasks in GPE and were more prevalent during cooperative and competitive learning situations. This is depicted in the following statement:

Competitive situations often are the worst activities for students like Chris. Chris has trouble with waiting turns, turn-taking, sharing equipment, roles and boundaries. . . . It was always difficult to pair Chris up with a partner or work in group-activities.
Several teachers regarded these teaching challenges to Chris not wanting to interact with classmates (e.g., “Chris often shies away or terminates contact because he wants to be alone”), which seemed to contribute to Chris being ignored or isolated by his peers. As one of the teachers said,

Some students try to get Chris to participate (mainly the girls) but most just stay away from him like he doesn’t even exist [sic]. They are [sic] not mean to him but they just avoid contact with him, like he is not even in the room.

In some situations, particularly when peers got upset or frustrated by Chris’s behaviors, the teachers noted teaching challenges when some students treated Chris “in a rude way.” In return, Chris would respond similarly or withdraw socially, creating additional teaching challenges. One teacher depicted the consequential teaching challenge as “classmates have no interest interacting with Chris, they thought he was weird and didn’t want to partner or talk to him; he would talk to himself out loud.”

Difficulties Understanding Instruction and Performing Tasks

Teachers noted that many teaching challenges occur because Chris has difficulty understanding instruction or performing motor tasks in physical education classes. These difficulties contributed to Chris seeing himself as ‘someone who can’t do’ what the other kids are doing, at least not ‘as well’ and therefore retracting into a shell.” Several teachers indicated that additional teaching challenges occurred as Chris’s poor motor performance in physical education led to lower engagement in the assigned task and higher engagement in off-task behaviors. One teacher stated:

If the activity was one that Chris struggled with, like fitness activities and rollerblading (he has poor balance and core strength), he would be more inclined to disengage from the activity and either check his weather radio (located near the PE office) or try to start an off-topic conversation with a classmate nearby. While some teachers indicated that individualistic situations resulted in fewer teaching challenges and provided a better learning environment for Chris, others did not think the learning situation made a difference:

Chris was always very concerned when he did not do well even when his performance was not compared to that of his classmates; he still would get worked up about his perception that he was not being successful.

Without proper accommodations and supports, teachers indicated that Chris’s behavior created significant teaching challenges to their instruction (e.g., “it will be extremely difficult to get cooperative instruction because this student will require constant supervision and continuous repetition and some physical manipulation”) and lesson planning (e.g., “we would spend less time on team games and more time on the skills he cannot perform”). Teachers also expressed that they, as well as their teaching assistants and Chris’s peers, need training to better address teaching challenges associated with including students similar to Chris in their classes (e.g., “most PE classes are overloaded; additional trained staff is a must with this
student”). Based on the teachers’ responses, desired training should focus on inclusive teaching strategies, peer tutoring programs, effective collaboration with teaching assistants and paraeducators, and the Individualized Education Program process that includes students similar to Chris in GPE.

**Emotional Regulation Difficulties**

When teaching students similar to Chris in their GPE classes, teachers noted three types of teaching challenges related to emotional regulation difficulties: (a) anxiety, (b) aggression, and (c) oppositional-defiant behaviors. They reported that anxiety occurred when Chris was unsuccessful performing a task, did not know what to expect from the lesson, was expected to interact with others, had to do a competitive activity or an activity he did not like, or was seeking attention from her or his peers, which created teaching challenges. Examples of these behaviors included having a tantrum or a meltdown, being irritable or agitated, walking away from the group, or lying on the floor. Anxiety was well depicted in this statement:

Chris needs one-on-one support from peers and the teacher. He may leave the area to seek out equipment or activities that he enjoys. He may get aggressive and difficult to handle if he has to join an activity. He may sit on the floor, close his ears, or become deaf to conversation.

Aggression, which took a form of negative verbal expressions, physical contact, or anger toward others or self, was noted by the teachers to lead to teaching challenges including social isolation:

As Chris’s negative talk and/or frustrations escalated, Chris’s classmates would withdraw more. The students without disabilities would try to be supportive of Chris and tell him to keep trying but as he got more and more frustrated, they would start to ignore him more and even avoid eye contact or even move farther away from him on the court.

Oppositional-defiant behaviors, described by the teachers as Chris blaming others for his mistakes or misbehaviors or deliberately attempting to annoy or upset classmates or the teacher, created teaching challenges. These behaviors often occurred during competitive learning situations as depicted in this statement:

When the student was not on the winning team or group, he shut down. Once, he threw a piece of equipment at the teacher when he was tagged. The other students were completely appalled and could not believe Chris did it. Chris responded by yelling, “What are you looking at?”

**Narrow Interest and Inflexible Adherence to Routines and Structure**

Narrow interest seemed to create many instructional and managerial teaching challenges, particularly in competitive learning situations. For example, the teachers mentioned that students similar to Chris do not enjoy certain activities or would
get fixated on certain colors, equipment, or a process of the game. Instructional and managerial tasks were impacted by such teaching challenges as illustrated in the following statement:

Chris likes to play alongside peers not with [them]. He can play with [her or his peers] depending on the activity, such as striking a golf ball with a club. But, if the activity is competitive like a game, he will not participate and remove himself from the situation. Thus, class management takes more time trying to engage them.

Inflexible adherence to routines and structure created managerial teaching challenges, particularly during cooperative and individualistic learning situations. While not elicited with the elicitation questions, the teachers in their responses suggested the following strategies to address the managerial teaching challenges: (a) utilizing a structured class environment; (b) providing Chris with a schedule of activities for the class, week, or month; (c) using consistent classroom procedures; (d) placing Chris near the teacher; and (e) rewarding a good behavior.

Support and Training

Teachers reported that students similar to Chris required constant supervision, physical manipulation/hand-over-hand assistance, and continuous prompting, all of which are difficult to provide while teaching an entire GPE class. To prevent these teaching challenges from negatively affecting the learning of other students in GPE classes, the teachers identified the need for support from a trained teaching assistant (paraeducators, peer tutors, or APE teachers) and/or smaller class sizes. Interestingly, teachers noted that the presence of a teaching assistant in GPE does not always guarantee success—a finding consistent with research (Block, 2007; Gill, 2003). Teachers commented that when a teaching assistant was available, some students refused to have anything to do with the assistant. In other instances, having a teaching assistant in GPE classes caused unintentional pressure on the student similar to Chris to interact with the assistant, which was described by the teachers as a very difficult task for these students. This resulted in other teaching challenges (e.g., aggression, withdrawal, or “I can’t” attitude). Furthermore, some teachers noticed a dependence of the students similar to Chris on their teaching assistant, which prevented social interaction with their peers. A number of teachers noted training as a solution to addressing these teaching challenges (e.g., “pre-service training and collaboration with a trained assistant is critical to the success or participation in the PE setting”).

Discussion

This study revealed numerous teaching challenges encountered by physical educators educating students similar to Chris in their GPE classes. Teaching challenges were related to the student’s inattentive and hyperactive behaviors, social impairment, inability to understand and perform physical education tasks, impairment in emotional regulation, narrow interest, and inflexible adherence to routines and structure. The teachers noted that these challenges were more frequent during
competitive and cooperative learning situations, because students similar to Chris (a) perceived or had their performance compared with that of their classmates and (b) had to interact with others. They also noted the challenges occurred across the instructional, managerial, and social task systems of the ecology of the gym. In addition, teachers reported teaching challenges related to the type and amount of support available and to classmates’ behaviors.

**Instructional Task System**

Numerous teaching challenges within the instructional task system were reported including providing instruction that addressed difficulties in understanding and performing PE tasks, inflexible adherence to routines or structure within instruction, and a narrow interest in physical activities. Teachers also reported teaching challenges resulting from a need for instruction designed with high levels of cueing, prompting, physical assistance, and/or with assistance from an APE teacher, paraeducator, or selected peer. Teachers also reported that instructional tasks were more often challenging during competitive activities, which is consistent with Reid and O’Connor (2003), who reported that students with ASD often fail to develop a sense of competition. Finally, teachers reported that instructional tasks were impacted by Chris’s need for instructional support from an additional trained professional (e.g., APE teacher, paraeducator, peer tutor), a finding also supported by the literature (Crollick et al., 2006; Reid & O’Connor, 2003; Zimbelman et al., 2007).

**Managerial Task System**

The most frequently reported teaching challenges were related to inattentive and hyperactive behaviors, particularly as challenges to the managerial task system. The coexistence of these behaviors with ASD was described in an early investigation by Gillberg (1989) and, more recently, in a study by Holtmann et al. (2007). Holtmann et al. found that 65% of children and adolescents with high-functioning autism or AS scored above the clinical cutoff on a standardized attention problems scale. The inattentive and hyperactive behaviors created managerial teaching challenges as the teachers struggled to provide additional supervision to keep the student with ASD on-task and address classmates’ reactions to off-task behaviors.

Teachers also associated inattentive and hyperactive student behaviors with difficulties understanding and performing physical education tasks, which created managerial teaching challenges. These findings are consistent with current research indicating children with ASD exhibit impairments in motor performance, particularly those with inattentive and hyperactive behaviors, and are more likely to perceive themselves as incompetent in motor skills (Emck et al., 2009). This student perception can lead to managerial teaching challenges related to inattentiveness and poor motivation in participation.

**Social Task System**

Impairment in social relationships and social behavior constitute one of the main characteristics of individuals with ASD (Müller et al., 2008; Shaked & Yirmiya, 2003). These impairments contributed to serious teaching challenges for the
physical educators in this study. The teachers perceived these challenges as having far-reaching consequences for students, especially in cooperative and competitive learning situations, where students similar to Chris struggle interacting with their peers. The perceptions of consequences when these teaching challenges were not adequately addressed included student social withdrawal, social isolation, low self-esteem, poor motivation to participate in physical activity, and challenges in emotional regulation (e.g., anxiety, poor anger management, aggression, and oppositional-defiant behaviors). In many cases, teachers perceived the emotional regulation and attention difficulties to hinder student success in social tasks. The link among social impairment, emotional regulation, and attention is consistent with research literature (Coie & Dodge, 1998; Laurent & Rubin, 2004; Müller et al., 2008) and was clearly identified by the teachers as a contributing factor to their teaching challenges.

**Directions for Future Research and Implications**

This study represents the first step in the development of the Inventory of Teaching Challenges for Inclusive Physical Education (ITC-IPE), with two more steps to follow (Cavell & Kelley, 1992). In the second step of the process, the elicited teaching challenges will be evaluated in a survey format by a large sample of teachers. The teaching challenges coded as frequent and important by the teachers will be included in the ITC-IPE. The third step will elicit a list of strategies to address these teaching challenges, which will be then included in the ITC-IPE. The ITC-IPE holds promise as a research tool that can be widely applied in clinical settings as well as in field-based studies exploring the psychosocial functioning of students with ASD. When used as an early assessment of teaching challenges that are present when a student with ASD is educated in GPE classes, it can be used to guide the decision-making process and lead to more appropriate, individualized, and theoretically-sound school-based interventions. The ITC-IPE can also be used in an on-going manner to reevaluate the teaching situation as it changes over time. Finally, the instrument can assist practitioners and researchers with evaluating the type and amount of support physical educators need in their GPE classes.

**Limitations**

While providing important new information about the teaching challenges, there are three limitations to this study. First, participants in the study were obtained from a convenience sample of certified adapted physical educators (CAPEs), with a relatively small response rate. These teachers must have had at least two years of full-time experience teaching physical education to students in any grade and two years of experience teaching physical education to students similar to Chris in GPE. CAPEs were selected because they were assumed to have experience teaching physical education to both children with and without disabilities. Detailed analysis revealed that teachers whose current teaching assignment was APE reported similar percentages of instructional, managerial, and social interaction teaching challenges as those whose assignments included GPE. Second, providing a vignette that describes a student with AS participating in a GPE class may have limited interpretation of the findings to other disorders on the autism spectrum; therefore,
the findings may not apply to all children with ASD. In addition, the scenario in the vignette does not apply to all environments (i.e., built and social) nor does it address all types of support that may exert influence in the intensity, expression, modulation, and frequency of behaviors that result in teaching challenges. Third, although the questionnaire included a carefully constructed and validated vignette that describes a student with AS taking a GPE class in the gym, the fidelity and variability of vignette or question interpretation among respondents might have been a source of error that threatened the reliability and validity of the responses (Groves et al., 2004). Future researchers should pay a greater attention to the many stages of question answering, including question interpretation, memory retrieval, judgment, and response selection (Groves et al., 2004).

**Conclusions**

Using the Goldfried and D’Zurilla’s (1969) behavioral-analytic model, the study elicited teaching challenges that physical educators encountered when students with ASD were educated in their GPE classes. To minimize teaching challenges, the findings suggest that physical educators teaching students with ASD in GPE should plan for and address inattentive and hyperactive behaviors, social behavior difficulties, and emotional regulation difficulties. They should prepare for and make accommodations for student difficulties associated with understanding and performing GPE tasks, having a narrow attention focus, and inflexible adherence to routines and structure. The study also suggests that physical educators may have to be proactive in preventing the behaviors of the student with ASD from negatively affecting classmates’ learning or causing them to ignore or isolate the student with ASD. In addition, physical educators should carefully balance the need for educational support when educating a student with ASD in GPE settings against possible unintentional consequences of that support in the learning environment. As physical educators prepare for teaching inclusive GPE classes, they must acknowledge potential teaching challenges that may arise due to instructional decisions, management strategies, and social interactions. That is, they must understand the ecology of their gymnasium, including understanding each student and how his/ her unique learning needs create shifts within that ecology.

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**References**


