

## PEDAGOGY - DANCE

# Task Design and Skill Level Perceptions of Middle School Students Toward Competition in Dance-Related Active Gaming

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### Abstract

*In this study, we drew upon McCaughtry, Tischler, and Flory's (2008) reconceptualized ecological framework to examine middle school students' perceptions ( $N = 391$ ) of competition in physical education, specifically after participating in noncompetitive and competitive active gaming (AG) sessions. Chi-square tests of independence were computed on students' open-ended questionnaire responses. In terms of the AG sessions, students enjoyed AG and felt happy regardless of the task structure; however, what they liked and disliked about the AG tasks varied according to skill. Lower skilled students in the noncompetitive situation focused on success more frequently and in the competitive situations reported liking task elements and competition less frequently than did other skill groups. Discussion was focused on improvements in equipment features and task design to enhance students' experience.*

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*Note.* This study is the second of two papers. The first published paper is different in an analysis of gender and grade-level differences for the same sample.

Physical education activities can help students acquire the skills, knowledge, and dispositions needed to live a healthy, active lifestyle (Centers for Disease Control and Prevention, 2012). Students report, however, that activities are often repetitive, boring, and irrelevant to their lives (Cothran & Ennis, 1999; Subramaniam & Silverman, 2002). As one way to foster student interest, physical educators have incorporated active gaming (AG) activities or units (Hansen & Sanders, 2010). AG involves video simulations that include movement, unlike traditional video game play during which players remain sedentary. Finding activities to which students can relate is important during middle school as physical activity declines (Chen & Hancock, 2006; Sallis, Prochaska, & Taylor, 2000). This is especially important as low skilled students might not have the skill to participate in some activities (Ennis, 2000). Energy expenditure has been investigated during the use of AG (Bailey & McInnis, 2011; Fawcner, Niven, Thin, MacDonald, & Oakes, 2010; Gao, Hannon, Newton, & Huang, 2011), but little is known about how students perceive AG in physical education and if students of different skill levels find it enjoyable.

How physical educators design the students' learning environment is an important component to creating student interest (Ennis, 2000; Ennis et al., 1997). Using ecological theory, McCaughtry, Tischler, and Flory (2008) conceptualized the ecology of the gym is created through negotiations between teachers and students. Teachers and students enter physical education with goals and objectives, and these negotiations influence how students engage in the task and how teachers respond to the behavior of the students. Teachers' and students' behaviors make up the "negotiated plan of action," or interaction of behavior through three task systems: instruction, social, and managerial. Teachers design tasks not only so students perceive their relevancy, but also with a careful consideration of the social system or the nature of how students relate and interact with their peers while they learn. Finally, the task is presented and managed in a way in which students have clear expectations of what and how they should complete the task (i.e., rules, routines, and accountability).

The introduction of competition in a physical education task system can change the negotiated plan of action (Rink, French, Werner, Lynn, & Mays, 1992). In most competitive situations, the task goal is to outperform or score more points than the other person or team. Often, the contest winner is designated by skill, whereby the higher

skilled students experience success and the lower skilled do not. If the teacher does not create a learning environment that “levels the playing field,” the lower skilled students could be spotlighted for poor performance and may not be able to participate in the task. This could lead to a negative spiral of feeling embarrassed, continued lack of success, and students not wanting to participate (Carlson, 1995; Ennis, 1996). Skill is important because it allows students to participate at a level comparable to their peers and achieve success in the task. Experiencing success promotes interest in physical education and continuation in tasks (Bernstein, Phillips, & Silverman, 2011; Rink, 1993; Portman, 1995; Silverman, 2005). Thus, it is important to create task structures in which students receive appropriate practice trials. Appropriate practice trials are related to an increase in skill and students’ enjoyment in the task (Silverman, 1990; Silverman, Dodds, Placek, Shute, & Rife, 1984).

Research indicates that if AG tasks are structured correctly, it positively affects students’ participation and enjoyment (Staiano, Abraham, & Calvert, 2012; Staiano & Calvert, 2011). However, no researchers to our knowledge have investigated students’ perceptions of the negotiated plan of action in competitive and noncompetitive AG tasks in physical education and if students of different skill levels have similar or different perceptions of the task. The purpose of this study was to examine middle school students’ perceptions of AG during two task systems by students’ skill level. Gaining insight from the students’ perspective can help educators understand students’ motivational attributes or how they attribute success or failure in AG task systems (Ferrer-Caja & Weiss, 2000).

## **Method**

### **Participants and Setting**

Middle school students ( $N = 391$ ) between the ages of 10 and 14, from an eastern United States public school were involved in this study (188 females, 203 males). The middle school population was 627 students of which 80 sixth graders, 185 seventh graders, and 125 eighth graders participated. Parental opt-out forms and child assent was conducted in agreement with IRB approval and the school district. Sixteen physical education classes participated in the study and one male and one female physical educator. This paper is a second paper on AG in which gender and grade level differences of

these participants were analyzed (Gibbone, Bernstein, & Rukavina, 2013).

Team teaching was a typical format for these teachers, so approximately 50 students were partaking in a class session. The full gymnasium was used, and televisions were placed in stations across the length of both sides of the room and a large projector screen was set up on one end. The screen accommodated larger groups of students, and the 10 television stations comprised six with dance pads for *Dance Dance Revolution* and four with remotes for *Just Dance* or *Dance Central* games.

### **Instrumentation**

Two questionnaires were used to collect data. The first questionnaire was a preassessment administered before students engaged in AG in which students were asked to write a response to the statements “I like competitive sports or activities because” and “I do not like competitive sports or activities because.” The second questionnaire was completed after the first round of AG during the non-competitive focused session, and this Active Gaming Questionnaire contained three open-ended questions: “What did you like about this session?”, “What don’t you like about this session?”, and “How did you feel when you were playing today?” The Active Gaming Questionnaire was also used after the second round of AG, which was 2 days later, during the competitive focused session. These open-ended questions were selected because of the exploratory nature of this study. An instrument needed to be created because of the lack of literature regarding this particular topic.

An additional instrument was used to assess students’ skill level. Both teachers were familiar with using rubrics to assess student skill performance and learning outcomes. We asked the teachers to rate their students’ skill level using a rubric we designed. We adapted this rubric from the 2007 New York State Education Physical Education Profile (refer to Table 1). Both teachers were asked to observe all of the students who participated in the study and together assign them a score.

**Table 1**  
*Categories for Determining Students' Dance-Related AG Skills and Sample Percentages*

Low skilled	Medium skilled	High skilled
29%	50%	21%
Student effectively and consistently demonstrates the intended dance techniques; proper posture and positioning; and spatial patterns with few, if any observable errors in technique	Student effectively demonstrates the intended techniques with minor errors	Student demonstrates some of the intended techniques, but performance is ineffective and inconsistent

*Note.* Categories adapted from the NYS PE Profile rubric for Dance & Aesthetic activities.

**Procedure**

For the first AG session, students were instructed to participate by “just having fun.” The teacher asked students to be active for the entire class, practice dance moves, and be considerate to their classmates. Students were told not to be concerned with who wins or who is using the remote as the idea was to set up a recreational climate without scoring and competition. The teachers’ objective for the lesson was threefold: psychomotor (to participate in moderate physical activity for the class period), affective (to learn group processes through positive social interaction), and cognitive (to interpret rhythm and dance patterns).

Students completed the preassessment prior to any AG activity. At the next class meeting, students were introduced to the lesson with instructions to participate by “just having fun” to set the stage for recreational play void of scoring and imposed competition. Students at the *Dance Dance Revolution* stations were to share the dance mats and engage in shadow play while not on the mats to enjoy the activity with their classmates. The technique of shadowing involves mimicking the moves without having the motions transmit to the game. Those playing games that do not require a mat were not concerned with shadowing as all users simply followed the motions together as a group. Visiting different stations was allowed; however, students were told that wasting time by wandering was

not acceptable. Once the class period was almost at its end, students stopped play and completed the Active Gaming Questionnaire based on the establishment of a noncompetitive focused climate.

At the following meeting, the same students participated in AG; however, the conditions of the task were changed. The teachers' objective for the lesson was the same as the first session; however, the expectations and climate were changed based on the instruction and management of the task. All stations were to be used so a competitive game was always the focus. They were to select a battle mode and their own challenge level. The goal was to earn the most points possible during the class period. Since these students typically had prior experience playing the games, either at home or in physical education during other times of the year, they were able to maneuver through the game setting and had knowledge of how to gain points. After each round, the students added up their score to see how many wins they achieved. The students still rotated turns, so shadowing allowed for practice time between bouts. Again, at the end of the class period, students were asked to voluntarily complete the postactivity questionnaire related to their likes, dislikes, and feelings, now focused only on competitive AG. In this situation, students challenged other students during the class time and were to keep score by selecting a battle mode at their own difficulty level. The goal for the class period was to earn as many points as possible by scoring higher than their opponents. Students were told that those with the top scores would receive lollipops. Shadowing in this case was emphasized as "good practice time" between bouts. Once the session was near its conclusion, students again completed the Active Gaming Questionnaire based on the goal of the competitive focused session.

## Results

### Preassessment

The open-ended questions "I like competitive sports or activities because" and "I do not like competitive sports or activities because" were not significant for skill level,  $\chi^2(12) = 14.001, p < .301$ ;  $\chi^2(8) = 7.408, p < .493$ . For the entire sample, however, students indicated fun (33.2%) most frequently,  $\chi^2(6) = 151.548, p < .001$  (see Table 2 for definitions, Table 3 for frequencies). For dislikes, offensive behaviors by other students was the most frequent student response (46.7%),  $\chi^2(4) = 104.571, p < .001$  (see Table 3 for frequencies, Table 4 for definitions).

**Table 2**

*Categories and Sample Responses for the Question, "I like competitive sports or activities because"*

Code	Definition	Samples
Activity	It is associated with wellness	"I get in better shape. It keeps me healthy. They make me more active. They can release stress. It gives you good exercise."
Character	Individuals are competitive by nature	"I am athletic. I am a competitive person. It's what athletes do."
Fun	Tasks are fun and exciting	"They are fun. It is exciting. It is a rush of energy."
Gratified	Tasks affect satisfaction and self-accomplishment	"I feel proud. I try my best. It is good for self-esteem. I like to show what I can do. I feel accomplished. They help me focus."
Improvement	Tasks are challenging and help skill development	"I like the challenge. I test myself. They push me. It helps me get better. It is good practice."
Social	Promotes socializing and engagement with others	"I can work with others. I can play with my friends & other teams. I meet new people. It teaches you teamwork."
Win	Enjoyment of winning and comparing scores	"I like to win. I get to play against others. You know who won and lost."

**Table 3**  
*Preassessment Frequencies and Percentages for the Sample in Response to Open-Ended Questions*

Variable	I like competitive sports or activities because		Variable	I don't like competitive sports or activities because	
	Frequency	%		Frequency	%
Active	67 (62)	15.4	Hurt	12 (42)	5.7
Character	22 (62)	5.1	Offensive	98 (42)	46.7
Fun	144 (62)	33.2	Skill	26 (42)	12.4
Gratified	36 (62)	8.3	Losing	32 (42)	15.2
Improvement	67 (62)	15.4	Task	42 (42)	20.0
Social	47 (62)	10.8			
Win	51 (62)	11.8			
Total	434	100	Total	210	100

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants' responses.

**Table 4**  
*Categories and Sample Responses for the Question, "I don't like competitive sports or activities because"*

Code	Definition	Samples
Hurt	Getting hurt through roughness or physical contact	"I get hurt. People can get hurt. People get too rough."
Offensive	Playing with others who are overly competitive and/or exhibit poor sportsmanship	"People cheat. People fight. Others are unsportsmanlike. They break rules. People brag. Others are mean. It gets way too competitive. People take it too far. People get too into the game. People lose their temper. People get too violent."



**Table 4 (cont.)**

Code	Definition	Samples
Skill	Having a perception of low skill level or low self-efficacy	"I am not good at it. It is too hard. I mess up."
Losing	Feeling of being defeated	"I don't like losing. I feel bad when I lose. I am upset when I lose."
Task	Purpose of competition and how activities are structured	"They are boring. They are not fun. I just don't like them. I am not a competitive person. They take a lot of time. I like to play for fun. The people I play against are too good or not good. I don't like the activity. People don't cooperate with each other. They make me tired. Not enough playing time."

**Noncompetitive AG Assessment**

Lower skilled students reported enjoyment (17.2%) less frequently than did medium skilled (24.6%) and higher skilled (23.1%) students when asked about what they liked after participating in the noncompetitive AG session,  $\chi^2(12) = 41.828, p < .001$  (refer to Table 5 for definitions, Table 6 for frequencies). Lower skilled students indicated liking success (8.6%) more frequently than did medium skilled (2.4%) and higher skilled (3.4%) students; however, lower skilled students expressed liking nothing more frequently (7.8%) than did medium skilled (.5%) and higher skilled (2.6%) students. Overall, the task (32.5%), followed by exercise (23%) and enjoyment (22.2%), was most frequently reported for this sample,  $\chi^2(6) = 274.794, p < .001$  (refer to Table 7).

**Table 5**

*Categories and Sample Responses for the Question, “What do you like about this session?” for the Noncompetitive and Competitive Active Gaming Sessions*

Code	Definition	Noncompetitive session	Competitive session
		Samples	Samples
Competition	Comparing scores and having a winner determined	“I like trying to beat other players. It got competitive.”	“That it was competitive. It was more interesting. Competing. We got to compete. You get a score. I like playing tournaments.”
Enjoyment	Pure interest and fun	“I think it is awesome. It is cool. It was fun. It is exciting. You get to have a lot of fun.”	“It is more fun. It is fun. It was exciting. It gets me pumped.”
Exercise	Moving and being physically active	“I like moving my body. It is active. Very intense. It is a major workout.”	“It is a good workout. That you get exercise. To be active. It burns calories.”
Nothing	No likes	“Nothing.”	“Nothing.”
Social	Promotes socializing and engagement with others	“I like playing with my friends. Choosing who I am playing against. Multiple people can play. I can be silly with others.”	“I got to play against my friends. You can play with who you want. I was with friends.”
Success	Personal achievement and improvement	“I did better. I advanced a level. I can practice. I can learn new moves.”	“I advanced in the game. I did better. I got better. I got a lot of points. I tried harder levels.”
Task	Skill application and game features	“It was a different kind of game. You got to pick any station. I like dancing. Dancing. We choose the songs. It is fast paced.”	“You get to dance. The dancing. The dance moves. The moves were fun and difficult. I got to pick my song.”
Everything	No dislikes	N/A	“Everything.”

**Table 6**  
*Frequencies and Percentages for the Question, “What did you like about this session?” in the Noncompetitive and Competitive Active Gaming Session*

	Lower skilled		Medium skilled		Higher skilled		Total
	Frequency	%	Frequency	%	Frequency	%	
Noncompetitive							
Competition	0 (1.7)	0	0 (2.8)	0	6 (1.5)	5.1	6
Enjoyment	22 (28.4)	17.2	52 (46.7)	24.6	27 (25.9)	23.1	101
Exercise	30 (29.5)	23.4	50 (48.6)	23.7	25 (26.9)	21.4	105
Nothing	10 (3.9)	7.8	1 (6.5)	0.5	3 (3.6)	2.6	14
Social	16 (17.4)	12.5	31 (28.7)	14.7	15 (15.9)	12.8	62
Success	11 (5.6)	8.6	5 (9.3)	2.4	4 (5.1)	3.4	20
Task	39 (41.5)	30.5	72 (68.5)	34.1	37 (38)	31.6	148
Total	128	100	211	100	117	100	456
Competitive							
Competition	19 (26.8)	15.1	48 (44.2)	23.1	22 (18.1)	25.9	89
Enjoyment	30 (31.3)	23.8	53 (51.6)	25.5	21 (21.1)	24.7	104
Everything	3 (3.6)	2.4	5 (6)	2.4	4 (2.4)	4.7	12
Exercise	19 (11.7)	15.1	18 (19.4)	8.7	2 (7.9)	2.4	39
Nothing	11 (3.9)	8.7	1 (6.5)	0.5	1 (2.6)	1.2	13
Social	7 (16.2)	5.6	36 (26.8)	17.3	11 (11)	12.9	54
Success	10 (6.9)	7.9	13 (11.4)	6.3	0 (4.7)	0	23
Task	27 (25.6)	21.4	34 (42.2)	16.3	24 (17.2)	28.2	85
Total	126	100	208	100	85	100	419

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants’ responses.

**Table 7**

*Questionnaire 2 Frequencies and Percentages for the Sample in Response to Open-Ended Questions*

Variable	Likes for the noncompetitive AG session		Likes for the competitive AG session	
	Frequency	%	Frequency	%
Competition	6 (65)	1.3	89 (52)	21.2
Enjoyment	101 (65)	22.2	104 (52)	24.8
Exercise	105 (65)	23.0	39 (52)	9.3
Nothing	14 (65)	3.0	13 (52)	3.1
Social	62 (65)	13.6	54 (52)	12.9
Success	20 (65)	4.4	23 (52)	5.5
Task	148 (65)	32.5	85 (52)	20.3
Everything	N/A	N/A	12 (52)	2.9
Total	456	100	419	100

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants' responses.

When asked about dislikes (refer to Table 8 for definitions, Table 9 for frequencies) following the noncompetitive AG session,  $\chi^2(10) = 23.908, p < .008$ , lower skilled students indicated the task (26.9%), or how competition was structured in the activity, more frequently than did medium skilled (10.6%) and higher skilled (17.9%) students. Constraints (40%) were most reported for all skills levels in this sample, followed by having no dislikes (23.2%),  $\chi^2(5) = 166.874, p < .001$  (refer to Table 10).

**Table 8**

*Categories and Sample Responses for the Question, “What don’t you like about this session?”*

Code	Definition	Noncompetitive session	Competitive session
		Samples	Samples
Constraints	Attributes of the task structure	“I only got a few songs in. You have to wait a while to go. There are not enough remotes. Some groups were too big.”	“It gets too competitive. I don’t like to shadow. I don’t like waiting to use the remote. I don’t like that too much time is in between songs. I don’t like waiting for a turn.”
Everything	No likes	“I do not like anything.”	“Everything. I don’t like it.”
Interactions	Unfavorable feelings related to others	“People were bothering me. Others kept jumping in and messing me up. People were hogs.”	N/A
Nothing	No dislikes	Nothing	“I liked everything. Nothing.”
Performance	Personal outcomes	“Tired. I can’t keep up with the beat. Dancing is tiring. People watch you. I don’t like dancing in front of people.”	“It is embarrassing. I don’t like dancing in front of people. I don’t like getting tired. It’s tiring.”
Task	Skill application and game features	“The mat messes me up. You have to get it on the line or it does not count. It is boring. Some songs are bad.”	Disliking the task “It is boring, I don’t like dancing. I don’t like jumping. Some of the songs.”
Losing	Being defeated	N/A	“When I lose. I lost. Losing. People beat me.”
Difficulty		N/A	“It was too fast. It was hard.”

**Table 9**  
*Frequencies and Percentages for the Question, “What don’t you like about this session?” for the Noncompetitive and Competitive Active Gaming Session*

	Lower skilled		Medium skilled		Higher skilled		
	Frequency	%	Frequency	%	Frequency	%	Total
Noncompetitive							
Constraints	29 (37.3)	31.2	70 (56.9)	49.3	22 (26.8)	32.8	121
Everything	8 (4.6)	8.6	4 (7.1)	2.8	3 (3.3)	4.5	15
Interactions	2 (4)	2.2	6 (6.1)	4.2	5 (2.9)	7.5	13
Nothing	17 (21.6)	18.3	36 (32.9)	25.4	17 (15.5)	25.4	70
Performance	12 (9.5)	12.9	11 (14.6)	7.7	8 (6.9)	11.9	31
Task	25 (16)	26.9	15 (24.5)	10.6	12 (11.5)	17.9	52
Total	93	100	142	100	67	100	302
Competitive							
Constraints	27 (38.6)	26.5	65 (47.6)	51.6	18 (23.8)	28.6	110
Difficulty	16 (11.9)	15.7	10 (14.7)	7.9	8 (7.4)	12.7	34
Everything	6 (3.9)	5.9	5 (4.8)	4.0	0 (2.4)	0	11
Losing	4 (4.9)	3.9	7 (6.1)	5.6	3 (3)	4.8	14
Nothing	32 (28.7)	31.4	29 (35.5)	23	21 (17.8)	33.3	82
Performance	3 (6.7)	2.9	6 (8.2)	4.8	10 (4.1)	15.9	19
Task	14 (7.4)	13.7	4 (9.1)	3.2	3 (4.5)	4.8	21
Total	102	100	126	100	63	100	291

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants’ responses.

**Table 10**  
*Questionnaire 2 Frequencies and Percentages for the Sample in Response to Open-Ended Questions*

Variable	Dislikes for the noncompetitive AG session		Dislikes for the competitive AG session	
	Frequency	%	Frequency	%
Constraints	121 (50)	40.0	110 (50)	37.8
Everything	15 (50)	5.0	11 (50)	3.8
Interactions	13 (50)	4.3	N/A	N/A
Nothing	70 (50)	23.2	82 (42)	28.2
Performance	31 (50)	10.3	19 (42)	6.5
Task	52 (50)	17.2	21 (42)	7.2
Difficulty	N/A	N/A	34 (42)	11.7
Losing	N/A	N/A	14 (42)	4.8
Total	302	100	291	100

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants’ responses.

Results regarding the question about feelings during participation were not significant for skill level,  $\chi^2(8) = 11.891, p < .156$ ; however, for the entire sample, happy was by far the most frequent response (48.6%), followed by active (18.3%),  $\chi^2(4) = 211.256, p < .001$  (refer to Table 11 for definitions, Table 12 for frequencies).

**Table 11**  
*Categories and Sample Responses for the Question, “How did you feel when you were playing?”*

Code	Definition	Noncompetitive session	Competitive session
		Samples	Samples
Active	Physically active and exercising	“My heart was beating faster. I was exercising. Good workout. Getting my pulse up. Active.”	“Heart pumping. Fit. Active. Working my feet. My heart was racing. My heart was working.”

**Table 11 (cont.)**

Code	Definition	Noncompetitive session	Competitive session
		Samples	Samples
Excited	Roused	“Excited. Alive. Hyper. Energized.”	“Very excited. Energetic. Pumped. It is a rush.”
Gratified	Satisfied and accomplished	“I can actually do something. I did good. I feel good about myself. I can do it well.”	“I am good. I can beat someone. Proud of my scores. I got to play a lot. I got much better.”
Happy	Pure enjoyment and fun	“Happy. It is fun. Really happy.”	“Like I was having fun. It is a good time. Happy.”
Neutral	Indifference	“Okay. Fine.”	“I felt okay. Normal. It was fine.”
Unpleasant	Unfavorable thoughts	“Embarrassed. I felt awkward. Bored.”	“It is boring. I am embarrassed. I feel nervous. People kept annoying us. Awkward. Annoyed.”

**Table 12**  
*Questionnaire 2 Frequencies and Percentages for the Sample in Response to Feelings During Participation*

Variable	Feelings for the noncompetitive AG session		Feelings for the competitive AG session	
	Frequency	%	Frequency	%
Active	71 (77)	18.3	86 (67)	21.4
Excited	60 (77)	15.5	63 (67)	15.6
Gratified	32 (77)	8.3	23 (67)	5.7
Happy	188 (77)	48.6	199 (67)	49.4
Neutral	N/A	N/A	7 (67)	1.7
Unpleasant	36 (77)	9.3	25 (67)	6.2
Total	387	100	403	100

*Note.* Expected frequencies in parentheses. The total number of responses exceeds the sample size because of double coding of participants’ responses.



## Competitive AG Assessment

When students were asked about what they liked after the competitive AG session,  $\chi^2(14) = 51.294$ ,  $p < .001$ , lower skilled students reported competition less frequently (15.1%) than did medium skilled (23.1%) and higher skilled (25.9%) students (Table 6). Similar results were found in the social interaction category for lower skilled students (5.6%), different than medium skilled (17.3%) and higher skilled (12.9%) students. Conversely, lower skilled students had higher than expected results for liking exercise (15.1%), which was different than medium skilled (8.7%) and higher skilled (2.4%) students. Overall, the group as a whole liked the enjoyment (24.8%), competition (21.2%), and the task (20.3%),  $\chi^2(7) = 177.487$ ,  $p < .001$  (Table 7).

As for what students disliked about the competitive AG, constraints (37.8%) and no dislikes (28.2%) were the most frequent responses,  $\chi^2(6) = 216.536$ ,  $p < .001$  (Table 10); however, lower skilled (26.5%) and higher skilled (28.6%) students did not report constraints as frequently as medium skilled students (51.6%) did. Lower skilled students (13.7%) indicated the task somewhat more than did medium skilled (3.2%) and higher skilled (4.8%) students. Lower skilled students (15.7%) also conveyed difficulty more than medium skilled (7.9%) and higher skilled (12.7%) students did,  $\chi^2(12) = 40.646$ ,  $p < .001$  (Table 9).

Results regarding the question about feelings after participation were not significant for skill level,  $\chi^2(10) = 16.026$ ,  $p < .099$ ; however, similar to the noncompetitive for the entire sample, happy was by far the most frequent response (49.4%), followed by active (21.4%),  $\chi^2(5) = 373.710$ ,  $p < .001$  (Table 12).

## Discussion

According to McCaughtry et al. (2008), teachers and students negotiate the plan of action, which results in how interested and engaged students are in the task. We investigated middle school students' perceptions of competition in competitive sports and activities and their perceptions of competition after they participated in two dance-related AG task structures as a function of skill level. On the preassessment prior to students engaging in AG, students reported they liked competitive sports and activities for a variety of reasons, such as "having fun," being "active," feeling "gratified," being "challenged," and having the chance to "play against and work with others." There were no skill level differences within the

responses, which suggests that all students at different levels of skill enjoyed competitive activities and sports. Students in middle school can enjoy competitive sports for a variety of reasons (Bernstein et al., 2011).

Lower skilled students, however, reported they do not like competitive tasks in physical education when competition is heightened and they are unable to participate (Carlson, 1995; Ennis, 1996; Portman, 1995). In this study, students also reported they did not enjoy sport when peers became overly competitive, getting injured, and playing against others that were not of the same ability. Bernstein et al. (2011) found that students complained that they did not like it when some students displayed poor sportsmanship (i.e., mocked others when they won or took losing too seriously). These behaviors are typical when too much emphasis is placed on winning and social comparison is heightened because of that overcompetitiveness of the task (Hager, 1995).

In this study, the teachers' task goal was varied (competitive or noncompetitive) to see how students perceived those AG task systems. The way a task is designed and presented can increase students' enjoyment (Ferrer-Caja & Weiss, 2000). Regardless of the situation, the AG task systems created a positive experience. The students frequently reported they felt happy and active, which is consistent with other literature involving AG and youth's perceptions (Baranowski, Buday, Thompson, & Baranowski, 2008; Graves, Ridgers, Williams, Stratton, Atkinson, & Cable, 2010; Trout & Zamora, 2005).

Although students in all skill groups liked the AG tasks, the type of task goal (competitive or noncompetitive) was associated with different student perceptions. When competition was not requested in the task, lower skilled students reported they liked the success that they achieved. If students experience success while participating in a task, they are likely to continue their participation (Subramaniam & Silverman, 2002). This is especially important for lower skilled students, who are generally more prone to losing and feeling embarrassed if they are unsuccessful. If they consistently lose, they could start blaming themselves for their lack of success, which can contribute to withdrawing from participation (Carlson, 1995; Ennis, 1996).

When competition was added to the task design, higher skilled students focused on the competitive element of the task and the interaction that the competition brought more frequently than did the lower skilled students. Skill is an important factor in authentic game

play, and having the skill to be successful at an activity may increase students' enjoyment of that activity (Soberlak & Cote, 2003; Subramaniam & Silverman, 2002). Instead of focusing on competition, the lower skilled students more frequently focused on their enjoyment and being active in the task. AG can have relevance for students, and playing these games can create excitement (Gao, Hannon, Newton, & Huang, 2011; Sun, 2012). As physical activity can decline after middle school (Centers for Disease Control and Prevention, 2012), adding activities that students find interesting can be incorporated in future activity pursuits in adolescence and even adulthood (Haywood, 1991; Thin, Hansen, & McEachen, 2011). Unclear or improper task design can cause students to go off task or deviate from the task (Zmudy, Curtner-Smith, & Steffen, 2009). Although students overwhelmingly liked the AG tasks, in both task system situations, students frequently reported they disliked particular aspects of task, including specific game features and waiting for their turn to be in control of the equipment. Additional complaints included waiting too long for a turn, groups were too large, or not getting adequate feedback from the equipment, of which all can dissuade movement and inhibit enjoyment in physical education. Task design is an important part of enjoyment during gaming (Sweetser & Wyeth, 2005). The way the task is designed can increase or decrease students' enjoyment (Jegers, 2007)

However, students reported different dislikes as a function of participating in competitive and noncompetitive task situations. In the noncompetitive focused AG, students mentioned that unfavorable interactions appeared, such as some students were distracting others and monopolizing equipment. These dislikes could have been associated with the nature of the managerial task system because of the deficiencies and limitations in the AG equipment, such as sliding or unresponsive mats, limited song choices, or necessity to have a larger television screen for easier viewing. On the other hand, in the competitive focused session, students disliked "losing" and "difficulty." Introducing competition to an activity can invite inappropriate behaviors and motor performance when skill level demands do not match the participant (Silverman, 2005). Similarly, McCaughtry et al. (2008) suggested students who do not perceive the task to meet their needs can become disengaged.

Other aspects of the AG situation influenced students' perceptions. In this study, as well as previously indicated (Gibbone et al., 2013), shadowing or mimicking the movements of the game through

observation limited a direct connection to the game for feedback. This was considered a task constraint. Shadowing has been suggested as a potential cause for lower levels of physical activity output because of the lack of feedback, and therefore, students were less motivated (Gao et al., 2011). Shadowing may not be the preferred technique for all as it may be better to have fewer students at a station instead of including shadowing because of limited equipment. Refining the tasks according to student's input helps in negotiating an ideal environment (McCaughtry et al., 2008). Only when students' perceptions and their experiences in an activity are incorporated in the process can teachers best evaluate and modify their lessons to enhance effectiveness.

To engage students fully, physical educators strive to appropriately match the challenge level of a task to the participants' level of ability (McCaughtry et al., 2008). Active video games can offer such components to players in that they are designed for recreation, provide options, contain a variety of levels to match those with different abilities, and provide informative feedback about personal performance (Hansen & Sanders, 2010). In this study, AG provided a natural way to differentiate instruction; students were allowed to select the difficulty level. It is unknown, however, if students did indeed select the most appropriate level or a level that was similar to the person against whom they were competing.

Also, students were allowed to play with whomever they chose and therefore were likely inclined to play with friends. Socializing is important to students, and effective teachers find a balance between instructional tasks and students' social systems (McCaughtry et al., 2008). When a social atmosphere provides opportunities for task mastery, perceived competence can be enhanced. Perceptions of the learning environment and perceived competence can influence task motivation (Ferrer-Caja & Weiss, 2000). Motivation can stem from the task itself, but also how the task is presented and how well students can competently complete the task (Deci & Ryan, 2002).

Students' perceptions can provide valuable information (Schmalz & Kerstetter, 2006) regarding AG lesson design for teachers and administrators. Despite the valuable information gained from students' perceptions, further research is necessary with a larger and more ethnically diverse sample as this study involved a convenience sample largely composed of Caucasian American students from one suburban middle school. Another limitation was not randomizing the order of activities during the classes. We assessed students' per-

ceptions in a real-life situation that was highly representative of the typical lesson design and availability of students at that school.

In conclusion, students' perceptions can give insight into the negotiated plan of action among tasks, class management, and peer socialization for lesson design and preparation (McCaughtry et al., 2008). In this study, students enjoyed the friendly, competitive AG dance session because they liked the task and felt happy while playing. However, it was apparent students would have enjoyed the task further if improvements in equipment features and an increase in playing time were handled. Discovering issues that pertain to constraints helps educators provide a more productive and enjoyable experience for students. There is novelty regarding AG for now, but new technologies will continue to be developed and become the next motivational tools. By using students' input when planning task structures, teachers can account for a more effective learning experience for all students.

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