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Need supportive instructor training: perspectives from graduate teaching assistants in a college/university physical activity program

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ABSTRACT

Background: In the U.S. college/university setting, physical activity courses are often offered as part of the general education program, where students earn college credits towards the completion of their degree program. These courses are typically taught by graduate teaching assistants (GTAs), who face several challenges in instructing undergraduate students. Often, GTAs are thrust into their roles without the preparation that traditional teachers receive as customary with education degrees. Literature on need supportive teacher training, as part of self-determination theory, indicates that teachers including GTAs, can be successfully trained to meet the needs of their students regardless of years of previous experience. Presently, there is little information on the impact of such a training program from the perspective of the GTAs participating in the program.

Purpose: The aim of this study is to provide in-depth perspectives on need supportive training through examination of GTAs reflections of the training process.

Participants and setting: Fourteen GTAs from a university physical activity and healthful living program were recruited for this study, but two dropped out. All participants taught one of the following courses: aerobics, basketball, body conditioning, bowling, flag football, golf, racquetball, soccer, tennis, ultimate frisbee, volleyball, or yoga.

Data collection: Teaching reflections were written by participants at the end of a year-long training program.

Data analyses: Written reflections completed by the GTAs were analyzed via content analysis. Data were organized by how strategies were implemented, most/least successful use of the strategies, and adherence to the training. Once organized, the data was examined by two different researchers independently and themes were shared with participants as part of the member checking process. Searches for negative cases were utilized during the analysis process as well.

Findings: Across the data, it was determined that the GTAs felt the training to be beneficial, influencing much of how they worked with students. Results suggested that GTAs found several ways to implement the reviewed need supportive teaching strategies, including giving students the choice of activities and group membership. They were also able to better respond to students' negative affect and give explanatory rationales. Goal setting was a consistently used strategy by the GTAs; however, it was cited as one of the least successful strategies due to the inability to effectively follow-up on the goals made during classes with

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the students. Additionally, it was noted that the GTAs had difficulties with devising their own ways of implementing the strategies and relied heavily on the examples that were provided during their training sessions.

Conclusion: In better understanding, the perceptions of GTAs who engage in need supportive training programs, researchers can better gauge the effectiveness of such programs and how they can be improved. Future research should focus on how to help GTAs to engage in more creative ways of using need supportive teaching strategies in physical activity environments.

Introduction

In the U.S. college/university setting, physical activity courses are often offered as part of the general education program, where students earn college credits towards the completion of their degree program. College and University Physical Activity Programs (CUIPAPs) typically rely on graduate teaching assistants (GTAs) to deliver much of the content in physical activity courses. Unlike traditional physical educators, these GTAs are not always fully and properly trained to work with the student population. They are often hired because of content expertise but lack the teaching experience or training needed to understand the nuances of proper physical activity instruction. Without the pedagogical knowledge, GTAs could be detrimentally affecting students' desire to continue being physically active in the future (Russell 2010). In a recent study, Langdon et al. (2017) showed that providing a need supportive training program to GTAs helped to increase the quantity and quality of strategies to motivate students (i.e. need supportive strategies) used among this group. Many of these strategies are embedded in best practices recommended by physical education (PE) teacher education governing bodies, including providing positive and corrective feedback and engaging the inner motivation of students. They are also further recommended in general education, aligned with the principles of differentiated instruction (Santangelo and Tomlinson 2012). Within the PE literature, a dearth of studies indicates the relative success of such need supportive interventions on various environments. However, few provide a detailed account of what trainees learn and how need support is applied during the training sessions. The aim of this study is to provide such information, through examination of GTAs reflections of the training process.

SDT and need support

Self-determination theory (SDT; (Deci and Ryan 1985) serves as a broad framework to aid in explaining human motivation and personality. At its core, SDT posits the existence of a continuum of motivation, which can be organized by either controlled or autonomous types. Controlled motivation is derived from external sources and is comprised of external and introjected regulations. Extrinsically regulated behaviors are those that an individual engaged in for extrinsic rewards, such as a good grade or a prize. Introjected regulation refers to engaging in an activity to obtain feelings of pride or to avoid feelings of guilt (Ryan and Deci 2000). Both external and introjected regulation are pressured forms of motivation with the pressure either coming from external (i.e. external regulation) or internal (i.e. introjected regulation) sources. More autonomous forms of motivation, namely identified (personally pursuing a goal that they find to be of personal value) and integrated regulations (engaging in an activity whereby the activity aligns with the person's internal value system) are closely tied to intrinsic motivation, which stems from an internal source of interest, enjoyment, and curiosity for an activity (Ryan and Deci 2000). Although external, introjected, identified, and integrated regulations are all considered more extrinsic, the latter two represent more autonomous forms because of their volitional nature. There is clear evidence among college-age students to suggest that adopting more autonomous forms of motivation leads to more adaptive outcomes,

such as engagement-focused coping strategies and intentions to persist in a specific major (Bonneville-Roussy et al. 2017). Guay, Lessard, and Dubois (2015) also report that autonomous motivation enhances perseverance, academic achievement, desire to engage in difficult material, and fosters more enjoyment of the educational process. Furthermore, specifically to the context of PE, research has shown a link between autonomous motivation and a range of positive outcomes such as in-class physical activity levels (Xiang et al. 2017), effort (Ntoumanis 2001) and engagement in physical activity throughout the lifespan (Haerens et al. 2010).

Knowing that autonomous motivation is more highly desired, instructors can cultivate such outcomes by considering and supporting students' basic psychological needs. In accordance with the basic psychological needs mini-theory of SDT, three fundamental needs must be met: autonomy (feelings of ownership), competence (confidence in one's abilities), and relatedness (feeling connected to others; Deci and Ryan 2000). Supporting students' basic psychological needs to enhance autonomous motivation has been well investigated. In PE, basic need satisfaction was found to be positively related to autonomous motivation among adolescents (Haerens et al. 2015) and intrinsic motivation for exercise among college-age students (Liu and Jung 2016).

Satisfaction of basic needs is typically a result of instructors providing autonomy support, structure, and relatedness support, which together form needs support. Autonomy support, in the educational context, is defined as the actions an instructor implements during their interactions with students that promotes the identification, nurturing, and building of a student's inner motivational resources (Deci and Ryan 1985; Reeve, Deci, and Ryan 2004). The nurturing of inner motivational resources requires a teacher to develop a sense of awareness of resources their students possess and then find a means to adapt lessons to help nurture and develop those resources (Reeve 2009). In the context of College and University Physical Activity Programs, a GTA can provide students with an opportunity to develop their own workout to teach to their peers. Implementing explanatory rationales provide students with information that can serve as the foundation that facilitates the conversion of information that is deemed unimportant or irrelevant into something of value (Reeve 2016). In essence, GTAs can provide explanations to students as to why they might be engaging in a particular conditioning drill. Non-controlling, informational language is given to provide a student with a flexible message that is non-evaluative and information-rich (Ng, Liu, and Wang 2015). Examples include providing skill-related feedback to students that is specific to the task they are participating. Patience, as an autonomy supportive behavior, stresses the importance of placing a sense of trust in the motivational drive of the student and fostering an environment conducive to self-paced learning (Webster et al. 2013). Implementation of patience can be achieved by providing hints when a student appears to be struggling and vocalizing praise for observed signs of progress, such as successfully executing a previously difficult shot for the first time. Finally, the acknowledgement and acceptance of expressions of negative affect consists of viewing the situation from the lens of the student, which provides an instructor with the means to alter classroom/sport related activities accordingly and align future activities with the inner motivational resources of the student.

Investigations linking autonomy support to positive outcomes exist in the PE and sport literature, including the direct and indirect influence of autonomy support. Haerens et al. (2015) indicated that perceived autonomy support directly influenced need satisfaction and indirectly influenced autonomous motivation among adolescent PE students. Similarly, autonomy support, specifically that of change-oriented feedback, helped to predict athletic performance across a variety of ages (Carpentier and Mageau 2013). Liu and Jung (2016) also found perceived autonomy support in a PE class to indirectly influence university students' motivation for exercise outside of class. Combined with evidence from Ntoumanis (2001), there are clear associations between autonomy support and desired outcomes of PE and physical activity courses.

Structure is also a key component of supporting basic need satisfaction and consists of providing clear expectations to learners (Sierens et al. 2009). This can also include consistent follow-through and constructive feedback for improvement. GTAs can combine structuring strategies, including providing clear step-by-step instructions and expectations for learning tasks with autonomy

supportive teaching behaviors, such as nurturing inner motivational resources, where social interaction drives the development of the workout or displaying patience, whereby the GTA listens and responds to student interests and perspectives. For the purposes of this study, it is assumed that by demonstrating such behaviors, teachers also invoke structure into the learning environment along with providing relatedness support, thus providing well-developed need support to students.

Empirical evidence suggests that use of structure can yield promising results when combined with autonomy supportive strategies. For example, Guay and colleagues (2017) determined that the structure a teacher provides is positively associated with autonomous motivation when she/he frequently engages in adaptive teaching strategies, which can be a means to bolster the perceived competence of a student. Additionally, Hospel and Galand (2013) concluded that student engagement (including positive emotions) was higher in classrooms where teachers provided more structure and lower levels of negative emotions in more autonomy supportive classrooms.

Relatedness support, within PE, involves teachers fostering positive social relationships with students, in a way that supports the students' need for connectedness (Xiang et al. 2017). Investigations have focused on relatedness support in education, with studies indicating the direct influence of teacher support on students' feelings of relatedness (Cox, Duncheon, and McDavid 2009). Such support is cultivated by focusing on cooperation, showing interest in students' feelings and perspectives, and 'fostering the feeling of being part of a group and creating a friendly atmosphere' (Ntoumanis, Vazou, and Duda 2006, p. 148).

Specifically in the PE literature, the TARGET framework (Task, Authority, Recognition, Grouping, Evaluation, and Time; Epstein 1989), although not part of the literature in SDT, has been used in previous studies to help combine the concepts of autonomy support, structure, and relatedness support in practice (Ferrer-Caja and Weiss 2000). For example, for the aspect of authority, the TARGET framework specifies for authority that instructors can create a more mastery-oriented climate by allowing students 'to have choice and leadership roles' (Boyce 2009, p. 50). This directly relates to the autonomy supportive behavior of nurturing inner motivational resources. Furthermore, for the aspect of grouping, Ntoumanis, Vazou, and Duda (2006) describe connections between TARGET and SDT, whereby a leader invokes a task-involving motivational climate that supports teamwork. This has a clear connection to the grouping aspect of TARGET.

In traditional learning environments, research in need support highlights the fact that engaging in autonomy support alone does not guarantee the benefits seen in student achievement. In fact, Vansteenkiste et al. (2012) indicated that autonomy support and structure are naturally intertwined. Students in this study who had high levels of perceived autonomy support and clear expectations (structure) also had higher levels of concentration, information processing, persistence, and lower levels of test anxiety than students who had low levels of perceived autonomy support and vague expectations. Sierens et al. (2009) also note higher levels of self-regulated learning when both autonomy support and structure are present in a learning environment.

As the courses that GTAs teach consist of both physical activity and educational components, understanding the benefits is paramount to motivating GTAs to engage in the behaviors described. From this perspective, the last decade of research in the physical activity and academic contexts provide support for implementing interventions on need supportive teaching for instructors, including GTAs. Tessier, Sarrazin, and Ntoumanis (2008) laid the foundation for need supportive teaching training interventions for PE teachers. In their study, participants in the intervention group attended an information session that detailed the tenets of SDT including different types of motivating styles, the types of teacher interpersonal styles, and empirical evidence espousing the benefits that students receive from such teaching. As a result of this training, PE teachers implemented more need supportive styles, neutral styles, and provided more praise (i.e. positive feedback) to their students than the control group. Additional studies mirroring the intervention framework began to emerge in the literature and corroborated similar observed improvements (Aelterman et al. 2013; Aelterman et al. 2014; Aelterman et al. 2016). Recent literature indicates participation in need supportive training increases the likelihood of teachers applying these strategies into the learning environment

(Aelterman et al. 2016). For example, Cheon, Reeve, and Moon's (2012) longitudinal study observing the impact that need supportive training protocols had on PE teachers revealed that the teachers in the intervention group were able to better support students' basic psychological needs in comparison to the students of the teachers in the control group. The basic characteristics of each of these interventions are similar in that each study included a basic introduction to SDT and need supportive behaviors as well as group discussion as to what strategies can be utilized in teaching.

Along with investigating the effects on instructors, studies have examined the influence of autonomy support teaching interventions on the students of the participating teachers. Reeve and Cheon (2016) examined the efficacy of need supportive intervention programs with Korean secondary school PE teachers. Results indicated that the students of the teacher in the intervention group reported higher perceptions of need supportive teaching than that of the students of the control group teachers. Similarly, Sebire et al. (2016) using a mixed methodology design to examine the efficacy of an SDT-based physical activity program, finding that male students reported a higher sense of intrinsic motivation, as seen in both responses to questionnaire items and in interviews.

Collectively speaking, the literature in PE, physical activity, and academic contexts indicate that students benefit when their teachers implement need- supportive strategies, and teachers can be effectively trained to do so. Few have chosen to study GTAs who have newly transitioned to teaching undergraduate physical activity classes. This group of GTAs is unique because they do not always come in with the requisite pedagogical knowledge needed to help students be successful. Furthermore, few studies have examined teacher reflections to determine how and where such learned strategies are applied. In 2017, Langdon et al. introduced a long-term training protocol to GTAs, in which participants met with a trainer every three weeks for 16 weeks to improve their use of need supportive behaviors in physical activity classes. GTAs were able to quickly learn and apply autonomy supportive behaviors and structure, as evidenced by objective measures of need supportive behaviors during teaching. To provide further information on their experience, the purpose of this study was to take a more in-depth look at the reflections of GTAs who went through this training. More specifically, the researchers were interested in understanding how GTAs implemented the learned strategies, what they found to be most and least successful during implementation, and what new ideas they may have discovered in the process.

Methods

Participants

Fourteen GTAs from the university's physical activity and healthful living program were recruited for this study. All participants taught one of the following courses: aerobics, basketball, body conditioning, bowling, flag football, golf, racquetball, soccer, tennis, ultimate frisbee, volleyball, and yoga, at a midsized university in the United States. Prior to participating in the current study, the GTA's had only received a week of teacher education at the beginning of the semester. Two of these participants moved to research positions over the course of this study, thus preventing completion of the study requirements. Of the remaining teaching assistants ($M_{\text{age}} = 23.31$, range = 22–27), six were male and six were female, all having a range of 1–2 semesters of teaching experience at the commencement of the study. The majority of the participants were Caucasian ($n = 10$, 83.3%), while the remaining participants were African American ($n = 2$, 16.6%). All GTAs provided informed consent and were informed participation was voluntary.

Procedure

As part of a larger study, participants were led by the primary researcher through a year-long need support training (Langdon et al. 2017). The initial training consisted of two face-to-face meetings with the primary researcher. Each meeting lasted for two hours. Participants engaged in instruction

on the history of SDT and need supportive teaching. Large and small group discussions concerning how need supportive behaviors could be implemented in a PA class were carried out as well. After the face-to-face training, participants met in person with the primary researcher once every three weeks. In preparation for these meetings, participants completed online self-study materials outlining the following need supportive behaviors: nurturing inner motivational resources (week 3), using non-controlling and positive language (week 6), providing explanatory rationales (week 9), and accepting negative affect (week 12; Reeve 2009). Although patience and structure were discussed throughout the training, a separate module was not created for it. Participants also completed materials related to the TARGET framework (Epstein 1989), which gave guidance to GTAs on how they could design the learning environment to support all three basic needs, thereby providing need support. Then, in small group and individual meetings, feedback was given by the primary researcher to GTAs about the self-study materials, correcting and/or suggesting modifications to lesson plans to ensure greater success during teaching. The self-study materials have been used in prior trainings with sport coaches (Langdon et al. 2015a; Langdon et al. 2015b) and were only modified to use language appropriate for GTAs. In developing these materials, the researchers sought evaluation and advice from other researchers in the field.

Data for this study were collected towards the end of the study, as participants reflected on their implementation of the strategies for need supportive teaching they learned through the training. Prior to this reflection, participants were asked to provide practice plans (shortened lesson plans) outlining how they would use the learned behavior in their teaching. Specific questions were asked for each behavior covered in the training:

- (1) In what ways were you able to implement this strategy in your practice?
- (2) How closely did your practice plan follow what was actually carried out?
- (3) What was your most successful use of this strategy?
- (4) What was your least successful use of this strategy?
- (5) What new ideas do you have based on your experience with this strategy?
- (6) What is the most important aspect of this strategy that you have learned?

Data analysis

Written reflections completed by the GTAs were analyzed via content analysis. Member checking for written responses was performed by redistributing initial responses to the participants and asking them to determine the accuracy of their previous statements (Lincoln and Guba 1985). Once the accuracy of the statements was ensured, a content analysis was performed to begin categorizing the data (Hsieh and Shannon 2005). As a first step in the process, two of the researchers read through all of the written documents. From there, general impressions were shared and it was agreed upon to separate the documents into two distinct categories for further analysis, corresponding to the six questions asked in the reflections. These included most and least successful implementation of the strategies (corresponding to questions three and four) and how strategies are implemented (corresponding to questions one, two, five, and six). Second, the two researchers independently read the separated documents several times, taking notes about common words, phrases, or ideas, where necessary. After several iterations of this process, the two researchers came together again to compare notes and establish themes. Once themes were established, all data were organized to best represent the specific themes. Negative cases were also investigated as part of this final process.

Results

Each participant provided feedback on if and how they implemented each of the strategies for need supportive learning through the training program. Consistent with initial impressions of the research

team, data here is presented with respect to each of the behaviors outlined by Reeve and those taught as part of the intervention, including nurturing inner motivational resources, providing explanatory rationales, relying on informational, non-controlling language, acknowledging and accepting expressions of negative affect, and TARGET. This section also includes general information about the adherence to training principles.

Nurturing inner motivational resources

Any educational context is, at the very least, somewhat regulated, in that there are rules, expectations, and protocols to follow. In nurturing inner motivational resources, GTAs were challenged to provide choice to students while still maintaining some amount of regulation within the class. In a yoga course, Shannon provided autonomy by allowing the students to practice whichever level of pose they felt comfortable with. ‘Also, many times I gave the students the option if they wanted to start the class in child’s pose, seated palm, or corpse pose.’ Choice was also implemented by allowing students to pick what skills or drills they would complete during a class, with whom they would team up with, and the level of modification they chose to use in learning specific skills. For example, Blair allowed her students to choose what type of serve they would work on in her volleyball class:

I tried applying autonomy for the students so that they would feel more comfortable with each skill. Especially in serving, not every student was comfortable with overhand serving, or some of them did not like underhand serving so I gave them the option. Also, in passing some students felt more comfortable with a palm in palm form rather than a fist in palm form.

Phoebe gave students:

... options for drills and during game play, I would ask them either individually or as a team how they think they are doing. They also ran the warm up and gave me suggestions on how to make it more enjoyable for them and I changed it based on those suggestions.

Elise said, “My most successful use of this strategy was allowing them to choose teams and partners. They enjoyed being able to choose who they could have on their team instead of counting them off all the time.” Parker also commented on allowing students to choose their own groups.

While I encouraged changing them up every so often, it was evident that they became comfortable with their smaller group. This comfort began to manifest itself toward the end of the semester as students would give each other feedback without my prodding.

Beyond the standard use of choice in classes, some unique applications of nurturing inner motivational resources were used by some of the GTAs. Elise commented that along with allowing students to choose their own teams, she “took gradual steps toward more advanced skills, and used different methods of feedback.” In this way, she was able to personalize the skills learned as each student was capable of performing them, thus responding to their own level of challenge as well as tying in structure. Parker also “gave them the skills we were to work on, but gave them some options for more difficult drills or to play games when comfortable.” In essence, he was allowing students to choose the kinds of games they wanted to play with the skills they had currently mastered.

Elise noted that her use of ‘positive feedback and adjustment of the drills for different skill levels was most successful in teaching. The students responded well to being able to modify the drill to fit their needs.’ Furthermore, students reported feeling less nervous during skills tests once they were informed that she ‘understood their varying skill levels and would grade them accordingly.’

For some GTAs, like Sophia, giving up control was difficult, but the student response helped them to see the benefit.

Honestly, giving students a strong sense of autonomy was new for me. I did a lot of things when teaching Aerobics that I did not realize were not autonomy supportive. Letting go of control and giving students freedom and decision-making responsibilities make a huge difference.

Of note is some of the GTAs' reflection on the aspects of nurturing inner motivational resources that were difficult to implement in the learning environment. This included asking students what they wanted to do in a large class. Sophia commented that it was difficult to please everyone in this regard. Additionally, GTAs were instructed that having students set goals was a valuable way of nurturing inner motivational resources and providing structure. While the goal setting itself aligns with structure, supporting those goals through lesson delivery supports the idea of nurturing inner motivational resources. In their reflections, GTAs consistently commented that individual goal setting and evaluation of goals was a behavior that they internalized, but were not able to implement successfully. Shannon said:

Although I had students set goals in the beginning of the semester, I could have done better with checking in on their progress towards their goals. Next semester, I think I could give students more time at the end of class to work on poses they would like to work on which would fit into the 'choice of activity' concept.

Elise commented that she might try to create a specific assignment in the course to track goal setting and progress: 'A potential new idea for nurturing inner motivational resources is to set up a goal setting sheet for each individual that they can follow throughout the semester.' Shannon was actually able to implement such an assignment:

In regards to goals, I challenged students each class to set an intention/goal for the class or for the rest of their day. Students also had an assignment where they had to set goals for their semester.

Providing explanatory rationales

Much like providing certain types of choices, students also responded well to GTAs use of explanatory rationales. During explanations of skills and drills, Blair noted that students appreciated the 'thorough explanation of certain skills and drills' and that 'they understood why they may have had to do a drill that was not as fun.' Elise echoed this idea, when she explained the importance of explanatory rationales:

The most important aspect of this strategy is letting the students know 'why' we are doing something. Often times, they are just told to do something and they do it. But if they know why, it seems like they are more likely to comply with instructions.

Participants noted their most successful uses of explanatory rationales occurred in game play. Riley, while teaching tennis, noted that his most successful use of providing explanatory rationales was during the various aspects of game play.

So, when I would see something that could be improved or done differently during a game, I would stop the players and explain/demonstrate something else they could try. I found that students would often begin nodding and then thank me for that explanation. Then, I would see the student commonly using the changes suggested.

Interestingly, GTAs felt they had few issues with providing explanatory rationales. However, Blair did discuss some difficulty in using explanatory rationales when having students practice fundamentals:

With my intermediate class I could have been better with communicating 'going back to basics' they were all about learning the next big thing when going back to the fundamentals was important yet boring for them. I was more like 'do it because you need to' instead of really telling them why they needed to.

Relying on informational, non-controlling language

The following quotes illustrate the fact that GTAs closely adhered to the examples of informational and non-controlling language given in the training:

I implemented this strategy in class by framing instructions and feedback in terms of ‘Try this’ or ‘Let’s do this’ rather than saying ‘Make sure you’ (Sophia)

Instead of saying ‘you should do this,’ I changed it to ‘maybe try this ...’ (Phoebe)

I always tried to give feedback framed as, ‘try and do ____.’ I felt that this would make them feel less pressure to change things and notice that I am just attempting to help, but understand they may have difficulty with it. (Parker)

During workouts by changing words to using ‘you may’ or ‘let’s get after it’ (Candace)

I really tried to be cognizant of using words like ‘Try this ...’ or ‘When you’re ready, move into this pose.’ I also focused on using a positive tone throughout the class despite my own mood. (Shannon)

The word ‘try’, which is suggested as a way to provide informational feedback in the literature (Reeve 2009), was adopted by all GTAs. Other than allowing for choice, GTAs seemed to use this practice more than any other suggestions given by the trainer.

Acknowledging and accepting students’ expression of negative affect

GTAs tended to accept and respond to negative affect individually, rather than as a class. Often, individual students were unmotivated to complete a task or were resistant to what the instructor was asking them to do. In one instance, Jace was able to allow a student to explain why she was not engaged:

A great example this semester was when a female student just didn’t pay attention or implement the exercises the way I wanted her to. She was really zoned out and never put forth effort. I decided to pull her aside and ask her what was going on. I followed our chat up with an email expressing my concern. The student decided to open up about family issues and mention that she was having a rough time. I suggested that she used exercise as an outlet to all the stress that she has in her life and see where it takes her. From that point on in the semester she has put forth her best efforts and has reached a different level of intensity. I haven’t had a single issue with her in the class from that point. This was very rewarding for me.

In addition to this situation, Blair was able to resolve an issue that an individual student had with her chosen team:

One student was very upset when her teammates were not performing, I pulled her aside and we took a little walk around the gym and I told her that since she was the better player on the team that she served as their role model and they fed off of her energy. The rest of the classes she came in way more energized and had a positive attitude to encourage her teammates.

Furthermore, Parker noted a more positive response from students when he was more accepting of negative affect:

I think the most important aspect of this strategy is to remember not to assume an attitude or lack of participation is ‘just how that student is.’ If it is something that is noticed about a student early, it is good to ask them about things and get a clear picture of what may be going on for them.

Noah echoed this idea, finding that accepting negative affect was:

... effective in allowing people to open up and actually enjoy the class even if they could not care less about soccer. On top of that, it allows me to find how best to communicate with individuals in one-on-one situations according to the values they have conveyed and the language they use. One thing that I have found particularly cool is that sharing laughs and frustrations as a person with students seems to add weight to my words spoken as an authority figure.

With regard to the most and least successful use of accepting negative affect, GTAs consistently commented on the ways that students responded to their teaching and how their teaching may have improved based on those responses. Furthermore, Parker successfully implemented the strategy of accepting negative affect by individually interacting with students when he saw that they lacked energy in his 8am class. He allowed them to have a few minutes to themselves when needed and

students responded positively. By the end, he noted, ‘they began to up their participation and become more talkative with their classmates.’

There were very few instances in the classes where entire groups of students became unmotivated or distracted, although some GTAs indicated that they struggled with accepting negative affect at times. For example, Blair commented that:

When students just don’t want to do a drill, I do not handle that as positively as I could, a lot of the time I tell the students at the beginning of the semester that they are all adults and I am not here to baby them so constantly keeping them on track is something I did not want to tolerate. That’s the Army Brat in me coming out, but I could handle those types of situations better.

Also, the courses had several required elements, including online exams and skills tests. Elise said, ‘when they complain about the online exams or skills tests, it’s hard for me to acknowledge it and change it to something that they’d like better.’ In this environment, the GTAs did not always have the authority to modify or remove these elements from the courses.

Target

GTAs provided numerous examples of how they implemented TARGET strategies in their classes, which are highlighted here. Within these examples are illustrations of how the TARGET framework enabled some GTAs to apply both autonomy supportive and structuring strategies. Elise used ideas about task to sequentially move students towards more advanced skills. Furthermore, Phoebe

... grouped the students into teams (Grouping), gave them choices on what they would like to work on for the day (Authority), saved some time at the end of most days to praise them on their effort during drills (Recognition), and would suggest other ways of completing a task such as how to do a layup correctly (Evaluation).

In her yoga course, Shannon felt that she was most successful in implementing the task and recognition aspects of TARGET:

It was necessary to provide students with various levels of poses because the skill level in the classes varied a lot [addressing task]. For the most part, I feel like I did a good job of challenging each student. I also found using students’ names and giving them individual feedback positively influenced the class.

Some GTAs felt least successful in using the strategy to differentiate tasks to 30 students at a time and giving sufficient individual feedback. Parker also struggled with grouping in his racquetball course: ‘It came to the point that no one wanted to be in charge of that [warm-ups] and I would have to select someone as opposed to someone volunteering to do it.’

Adherence to the training

Generally speaking, GTAs responded to the training well, indicating what they learned and how they were able to use the strategies in their teaching. Many felt that they learned more beneficial ways to respond to negative affect, develop awareness of students’ feelings towards tasks, and promote skill mastery. Even with these recognized benefits, GTAs were not always able to see beyond a surface level understanding of the strategies. When asked to provide potential new ideas for how the strategies could be better implemented, most of the GTAs were unable to provide examples other than what was given by the trainer. They also felt that the ideas they came up with were sufficient in most cases. In fact, many of the answers given by GTAs were that the strategies made sense, that their ideas for specific tasks were ideal and that the strategies were implemented correctly without modification.

There were some GTAs who did say that they had new ideas, but very few gave specific details. Elise commented that she had new ideas about how to be more open to student’s questions and respond with more information, while Sophia had new ideas about how to frame instructions and feedback that would motivate her students. Candace stated that she had ‘ideas on how to phrase things before speaking.’ Beyond this, however, no details were given that specifically address those

ideas. Overall, GTAs were able to use the strategies they learned, but did not feel the need to move beyond the general concepts they learned.

Discussion

Due to the paucity of literature surrounding the unique experiences of GTAs, the authors aimed to discover how these GTAs implemented strategies taught during a need supportive intervention. Beyond the unique context of this study, there is little to no evidence of collection of participant perspectives in the literature on need support interventions. Studies such as this add to the literature by giving voice to those engaging in an intervention, moving beyond the surface-level information gleaned from survey and observation data to a much richer understanding of the experience and how ideas learned in the intervention are used. By examining the reflections of the GTAs, we were able to determine that the GTAs felt the training to be beneficial, influencing much of how they worked with students. Furthermore, GTAs found several ways to implement the strategies including presenting tasks in a logical and sequential order, giving students choice of activities and group membership, using informative and non-controlling language, acknowledging negative affect and responding to students who were unmotivated to complete a task, and giving detailed rationales for skills and games. Considered together with the previous study identifying the behavioral change process for these GTAs (Langdon et al. 2017), we assert that although GTAs were not as creative in implementing the strategies they were trained to carry out, the process of implementing the simplest aspects of need support was recognized and internalized by participants.

Investigating each behavior in more detail, choice was generally implemented at a very simplistic level, giving students the opportunity to choose groups or teams and how they might want to perform specific skills. The implementation of choice among GTAs is not unlike those in other studies. Aelterman et al. (2016) found that trained PE teachers might have seen implementing choice more so as giving students the option to choose what activities to engage in. After training, the PE teachers in that study saw more options available including changing the difficulty or order of specific tasks. In the current study, several ideas were given to GTAs on how to implement choice, and much like the PE teachers in the Aelterman et al. (2016) study, teaching behavior mimicked what was taught in the training. This supports the notion that providing choice was perceived as feasible.

While choice might be the easiest way to implement need support, it is not always the only one that students recognize. In a study with young students, Assor, Kaplan, and Roth (2002) found that the most influential behavior was fostering relevance, even more so than providing choice. Compared to responses from the current study, GTAs mostly utilized the strategy of providing rationales to explain why certain skills were being taught or how certain tactics and strategies are important. However, GTAs failed to reflect on communicating relevance of the game to life skills, enhancement of positive feelings and engagement. Vansteenkiste et al. (2012) indicate that self-generated rationales may be more effective in supporting students, by which instructors ask students questions to help them develop personalized rationales for engaging in activity. Based on this information, future training might incorporate self-generated rationales for GTAs to improve their application of providing explanatory rationales to students.

The use of non-controlling language affords a student with the opportunity to complete tasks with a sense of flexibility in the execution of their behaviors (Su and Reeve 2011). Additionally, Carpentier and Mageau (2013) suggested that feedback is preferably delivered in an even tone (without yelling) in order to avoid coming off as a controlling behavior. Based on the responses, it was indicated that the GTAs were able to successfully provide their students with feedback while being cognizant of tone that was relevant to completing skills, as determined by the student. Carpentier and Mageau (2013) offer other steps that can be implemented while providing feedback to students, including providing feedback as soon as possible after an occurrence, providing feedback away from classmates, and pairing the feedback with tips. Based on the GTAs reflections, these recommendations were followed.

Participants of the study tended to acknowledge students' negative affect individually as opposed to addressing the class collectively. Vansteenkiste and colleagues (2012) noted that acknowledging negative affect is accomplished by taking the perspective of the student into account. Bearing this in mind, it is plausible that addressing the negative affect of students on an individual level allows GTAs to gain a more complete understanding of the student's perspective. Moreover, acknowledging negative affect prior to providing a rationale could potentially help to facilitate the internalization process. Reeve (2009) suggests that an instructor can also acknowledge the negative affect of a class collectively. For example, a GTA can ask the class for their opinion, or provide students with the option of submitting their opinion anonymously, perhaps through the use of online polls. It is paramount for GTAs to understand that there are numerous means for them to acknowledge the negative affect of students and determine which of these means is most effective for a specific situation. Data from the current study suggests that GTAs were not using all available mechanisms for students to express negative affect.

Numerous components of the need supportive strategies the GTAs were exposed to over the course of their training acknowledged the necessity of goals and goal setting. For instance, one means of providing structure and autonomy support is acknowledging and aiding students with the pursuit of their self-set goals (Reeve 2009). The GTAs consistently noted that their students engaged in some form of goal setting; however, the evaluation of student goals was frequently cited as one of the least successful implementations of learned strategies (i.e. use of TARGET, structuring). Failing to evaluate goals is one of the main pitfalls in goal setting. In turn, failing to meet self-set goals has the potential to undermine intrinsic motivation. Furthermore, Schunk (2003) noted that it is essential for students to receive goal progress feedback, which serves to augment both self-efficacy and motivation when it is delivered in a manner that promotes students' sense of competency. Application of this to a physical activity course may help to increase long-term adherence to physical activity throughout the college experience. Therefore, it is important to include goal setting as a need supportive strategy and ensure that such goals are evaluated regularly.

Examination of self-reports from the GTAs indicates that they were able to observe changes in student responses after incorporating strategies for need supportive learning, which is consistent with previous studies (Standage, Duda, and Ntoumanis 2005; Ahlberg, Mallett, and Tinning 2008; Taylor, Ntoumanis, and Standage 2008). In a 2012 study examining long-term student engagement, Cheon, Reeve, and Moon (2012) found that the implementation of strategies for need supportive learning facilitated a significant increase in classroom engagement and student perceived skill development. Interestingly, in the current study, some students began to provide each other with feedback without direction from the GTA. These findings suggest that the enactment of strategies for need supportive learning has the potential of promoting a sense of relatedness among peers enrolled in the class.

Although the current study was not concerned with the quantitative relationship or effects of providing autonomy support and structure, comments from the GTAs show that the response they received from students was favorable. GTAs were able to support students by combining autonomy support and structuring strategies, which is consistent with previous literature on the relationship between autonomy support and structure (Jang, Reeve, and Deci 2010). When considered together with results from Sierens et al. (2009), the theoretical basis of the application of autonomy support and structure is upheld. Specifically, the researchers concluded that there was a significant interaction between structure and autonomy supportive teaching and that a moderate level of autonomy support in conjunction with structure helped increase self-regulated learning. From a practical standpoint, it means that GTAs can provide both autonomy support and structure through the same strategies, namely those that enhance competence in students.

It is important to mention that many of the implementation examples given by GTAs represent the connection between need supportive strategies and differentiated learning. Pham (2011) described this relationship in college teaching specifically, by explaining that differentiated instruction includes providing individualized feedback and goals for students. Based on this definition,

GTAs engaged in an appropriate form of differentiated instruction within this study. Santangelo and Tomlinson (2012) suggest that teachers who provide differentiated instruction also do so through structure (applied as routines and procedures), in addition to ‘soliciting and reflecting upon students’ feedback about their classroom experiences’ (p. 314).

Finally, GTAs that completed the need supportive teaching training were asked to provide new ideas for the application of the newly learned skills. Common responses included having no new ideas and continuing to utilize the examples provided during the training process. The willingness to deviate from training principles has not been addressed in the education literature, although the multitude of successful need support interventions indicate that training is successful in educating teachers of all types. From a theoretical perspective, there is also little to no information on how long such training should last. Perhaps a more prolonged training session could allow for more advanced application of the need supportive strategies. Unfortunately, that might not be feasible within the GTA population, as they tend to complete two years of work in accordance with their degree programs.

Limitations

Although the GTAs in the study provided detailed reflections of their experiences, each was enrolled as a graduate student at a single university, which could limit generalizability of experience only to similar participants. These experiences might not be the same of adjunct faculty who are also commonly used at colleges and universities to deliver physical activity courses. Similarly, our sample was small compared to other studies outside of physical activity programs. Given these limitations, it is possible that similar programs operating in other areas in the US and/or globally might experience different outcomes. Additionally, all responses could be subject to social desirability, as GTAs had experience working with the primary researcher before this study. From a theoretical standpoint, we purposefully concentrated on autonomy support and structure in the training and analysis. Little consideration was paid to the aspects of relatedness support that are also an integral part of satisfying basic needs (Klassen, Perry, and Frenzel 2012). We recognize this limitation and believe that perspectives of instructors regarding relatedness support should be considered in future work.

Conclusion

Results from this study suggest that GTAs benefited from the training in a variety of ways and that they perceived their students learned more successfully in the process. Based on their reflections, GTAs were most successful at providing simplistic choices to students and using non-controlling feedback. They also felt successful in giving rationales that explained why students were engaging in specific tasks. GTAs noted the successful use of individual acceptance of negative affect as well. With regards to where they felt least successful, GTAs felt that they could have evaluated students’ goals more effectively and found better ways to provide choice in larger classes. It is possible that a stronger focus on specific aspects of the training, including follow-up on goal setting and creatively applying new techniques with this student population may be beneficial for future applications. In terms of application of SDT theory, the study herein provides further justification for the utility of need supportive training in this context. As many of these College and University Instructional Physical Activity Programs continue to rely on novice GTAs to teach, the strategies described here have the potential to allow for GTAs to create a more optimal learning environment for students within a short time frame. Future research should continue to study such interventions on non-traditional physical activity settings with GTAs who may not be fully trained PE teachers.

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