Putting self-determination theory into practice: application of adaptive motivational principles in the exercise domain

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Abstract

Grounded in self-determination theory (SDT; Deci and Ryan 1985, 2000), and in the group exercise context, this qualitative study explored: 1) instructors' experiences of operationalising motivational strategies following participation in an SDT-based training programme, 2) exercisers' views on instructors use of motivational strategies and any impact on exercisers' basic psychological needs and motivation, and 3) the challenges and facilitators reported by instructors when implementing motivation strategies in practice. Thirteen indoor group cycling instructors and 15 exercisers, who had been regularly attending a group cycling class taught by one of the instructors, participated in semi-structured interviews. Ten instructors also completed self-reflective diaries detailing their experiences of implementing the need-supportive strategies. Data were analysed using the Framework Method and coding was performed using an abductive reasoning approach. Analysis revealed specific examples of 'how to' operationalise motivation strategies within group exercise settings. Challenges to implementation included: the structured nature of the group exercise class, initiating meaningful one-to-one conversations, phrasing instructions in a need-supportive way, and breaking old habits. Facilitators to implementation included establishing a connection with exercisers and understanding SDT. Findings are discussed in relation to the theoretical, practical and research implications. The findings of the present study could potentially be used to improve the design and training content of SDT-based training programmes in group exercise contexts and other similar group activity settings within sport and healthcare settings.

Keywords: motivation; autonomy support; self-determination theory; psychological need satisfaction; exercise.

There are many factors that affect physical activity participation. It is well established that the motivation style of the instructor is one of them (e.g., Edmunds *et al*. 2008, Ng *et al.* 2012, Teixeira *et al.* 2012). Self-determination theory (SDT; Deci and Ryan 1985, 2000) is a macro theory of human motivation which proposes that an interpersonal teaching style which supports individuals' basic psychological needs for autonomy, competence and relatedness fosters higher levels of self-determined motivation and engagement. Furthermore, SDT suggests that an interpersonal teaching style which thwarts individuals' psychological needs will have detrimental consequences for individuals' motivation and well-being.

A paucity of research has connected theory to practice by exploring the process and practicalities of implementing need-supportive teaching strategies. The present article explores instructors' experiences of implementing motivational strategies in a group exercise context, following participation in an SDT-based communication training programme. Exercisers' views on the instructors' use of motivational strategies and the potential impact on exercisers' basic psychological needs and motivation are also considered. Such research can help to inform the practical application of motivational principles from SDT.

Motivational strategies

Extensive research in various life settings, including sport (e.g., Bartholomew *et al.* 2009), exercise (e.g., Edmunds *et al.* 2008), and health (e.g., Ng *et al.* 2012), have used SDT (Deci and Ryan 1985, 2002) to identify different types of communication/instructional styles that can support or undermine individuals' motivation and, in turn, their engagement in an activity. A motivationally adaptive communication style (also called a need-supportive style in the SDT literature) involves the provision of autonomy support (acknowledging feelings, offering meaningful choice, and nurturing individuals' interests and goals; Mageau and Vallerand 2003), structure (providing clear expectations, consistent guidance, and timely and

informative feedback; Reeve 2002), and interpersonal involvement (interacting with warmth, affection, and care; Reeve *et al.* 2004). A motivationally adaptive instructing style has been found to support exercisers' basic psychological needs for autonomy (i.e., a sense of choice and ownership over one's own behaviour), competence (i.e., feeling capable of successfully meeting the demands of the desired behaviour), and relatedness (feeling connected to and valued by significant others), as well to enhance the quality and longevity of the exercisers' engagement (Edmunds *et al.* 2008, Ng *et al.* 2012, Teixeira *et al.* 2012).

In contrast, a motivationally maladaptive communication style is characterised by control and may involve coercion and the use of guilt inducing techniques and pressure to elicit desired behaviours (Bartholomew *et al.* 2010). A motivationally maladaptive instructing style has been found to be associated with both low need satisfaction, thwarting of individuals' basic psychological needs, and less self-determined motivations for engagement in sport (Bartholomew *et al.* 2011), physical activity (Gunnell *et al.* 2013), and physical education (De Meyer *et al.* 2014).

Previous research within the SDT literature (e.g., Bartholomew *et al.* 2009, Mageau and Vallerand 2003, Reeve and Jang 2006, Su and Reeve 2011, Van de Berghe *et al.* 2013) has provided suggestions of behaviours which support or thwart individuals' basic psychological needs. These suggested behaviours (e.g., 'provide choice within specific rules and limits'; Mageau and Vallerand 2003) provide useful guidance as to what individuals can do to be more need supportive. Such motivational strategies can be used within SDT-based intervention training programmes to educate teachers/instructors/coaches on what behaviours are motivationally adaptive or maladaptive.

The current study

The current study explores group exercise instructors' experiences of operationalising SDT-informed motivational strategies, following participation in a motivation communication training programme. A key component of the training programme (see Hancox *et al*. 2015 for details) was to encourage instructors to maximise their use of motivationally adaptive (i.e., need-supportive) strategies and minimise or replace their use of motivationally maladaptive (i.e., unsupportive and controlling) strategies. Twenty motivational strategies (10 adaptive and 10 maladaptive), based on those identified as motivationally relevant in previous SDT literature (e.g., Bartholomew *et al.* 2009, Mageau and Vallerand 2003, Reeve and Jang 2006, Van de Berghe *et al.* 2013), were developed and customised to the group exercise context. In order to standardise delivery of the workshop, and implementation of the intervention, the strategies were organised into motivationally supportive (Listening to exercisers, Advising exercisers, Relating to exercisers, and Structuring the class; LARS) and motivationally unsupportive (Pressuring language, Appearing cold, and Structuring the class; PEAS) strategies (see Table 1 for details). Instructors were provided with narrative descriptions of the each of the motivational strategies. The descriptions covered *what* the strategy is, *why* the strategy might be considered motivationally adaptive/maladaptive, its implications for exercisers' motivation, and suggestions of *how* the strategies could be operationalised in the group cycling classes. Instructors were encouraged to try out three or four new strategies per week.

[Table 1 near here]

Previous SDT-based intervention studies in the exercise domain (e.g., Duda *et al.* 2014, Fortier *et al.* 2012, Rouse *et al.* 2011) have quantitatively measured change in the provision

of need-support but have not examined in detail how that change has come about and the practicalities of implementing need-supportive strategies within specific contexts.

The present study adopts a pragmatic approach (Greene 2007) which places centrally both theory and practice and focuses on "solving practical problems in the 'real world'" (Feilzer 2010, p.8). Although SDT-informed motivational strategies have been proposed in previous SDT literature (e.g., Bartholomew *et al.* 2009, Mageau and Vallerand 2003, Reeve and Jang 2006, Van de Berghe *et al.* 2013), how such motivational strategies are operationalised, and whether they are indeed need-satisfying, may vary depending on the individual setting and culture in which they are implemented. The instructors in the current study were provided with some examples of how the motivational strategies *could* be operationalised, however, the usefulness of such strategies within the specific context of indoor group cycling classes was not known.

Researchers examining the translation of SDT into practice within education contexts (Reeve and Halusic 2009) have reported teachers to value being given specific examples of what they could say and do to be more need-supportive. Furthermore, skills-based interventions which provide 'how to' examples and recommendations for being more need-supportive have been found to yield relatively large effect sizes compared to interventions providing basic information (Reeve and Cheon 2016). Thus, examination of how instructors operationalised the need-supportive strategies, and the challenges and facilitators to doing so within the specific constraints of group exercise classes, would be of value for improving future SDT training programmes.

When implementing an intervention it is crucial to consider the views and experiences of the end users, in this case the exercisers. Within SDT (Ryan and Deci 2002), it is theorised that individuals' self-determined motivation is influenced not by the objective behaviours of significant others, but rather the individuals' subjective interpretation of such behaviours. In

order to identify whether the way in which the instructors operationalised the strategies was indeed need-supportive, and thus, uncover which SDT-informed motivational strategies are beneficial within indoor group cycling classes, it is important to consider exercisers' perceptions of the motivation strategies and any impact upon their need satisfaction and motivation.

The purpose of the study was to examine the process of instructors understanding and adopting, and the practicalities of operationalising, specific motivational strategies within the particular context of indoor group cycling classes. Qualitative research methods were adopted to enable an in depth examination of specific contexts and how these contexts influence the experiences, thoughts, beliefs and actions of people who operate within them (Sparkes and Smith 2014). Such research will advance understanding of how SDT can most effectively be implemented in practice. More specifically, the present study aimed to qualitatively explore:

1) Group exercise instructors' perceptions of how they operationalised the motivational strategies within classes.

2) Exercisers' views on instructors' use of motivational strategies and any impact on exercisers' basic psychological needs and motivation.

3) The main challenges and facilitators reported by instructors when implementing the strategies in the group exercise context.

Methods

Participants

Ethical approval was granted from the Ethics Board of a large Australian University and all participants provided informed consent. Participants were 13 indoor cycling instructors (3 male, 10 female; mean age = 39.58 years; SD = 8.69) randomly selected from those who had taken part in a SDT-based training programme designed to support instructors

in implementing a need-supportive communication style. To be eligible instructors needed to be aged 18 years and over and teach a regular indoor cycling session at least once a week. Instructors had been working as group cycling instructors for on average 4 years (SD = 2.60, Range = 6 months - 9 years).

Fifteen exercisers (4 male, 11 female) participated in the present study. Eligibility criteria for exercisers included: being aged 18 years and over, attending an indoor group exercise class of one of the instructors who had received the SDT-based training, and having indicated that they were willing to take part in an interview. A letter was sent to all exercisers who attended an indoor group exercise class of one of the instructors who had received the SDT-based training, inviting them to take part in an individual interview. One hundred and eleven exercisers indicated willingness to be interviewed and provided their contact details. Exercisers were purposively sampled with the aim of recruiting participants of from a variety of fitness clubs (11 in total) and instructors (13), various ages, experience levels, and genders. Exercisers were aged 18-78 years (Mean = 42.27 years; SD = 16.87) and had been attending the cycling class with the specified instructor for on average 1.88 years (range = 2 months – 8 years).

Details of the Training Programme

Instructors attended 3 face-to-face workshops, each lasting an average of 3 hours, delivered in weeks 1, 3, and 10. The workshops were delivered by the authors and aimed to educate instructors on SDT and the targeted motivation/communication strategies. The workshops involved classroom activities (e.g., group discussions, creation of personalised action plans, self-refection diaries) and practical activities (e.g., role play in the cycling studio). Instructors were given rich descriptions of 10 motivational strategies to try to adopt (i.e., need supportive strategies) and 10 to try to reduce (i.e., need thwarting strategies) (see

Hancox *et al*. 2015 for details). Instructors were encouraged to try out 3-4 strategies per week and also had access to a dedicated (private) Facebook page, and additional phone/email support if required.

Interviews

Telephone interviews were conducted by an independent researcher after the intervention and lasted approximately 30 minutes. Instructors were asked about their experiences of implementing the strategies into their cycling classes (e.g., Has the way in which you try to motivate your exercisers changed as a result of the training? If yes, can you provide some examples?), what did not work (e.g., Were there any strategies that you decided not to do and/or that you felt couldn't be easily integrated with your instructor style?), and any challenges they faced (e.g., Did you find any of specific strategies particularly challenging to implement in classes?).

Exercisers were asked about their motivation for attending classes (e.g., What would you describe as your reasons for attending the class?), what their instructor said and did to try to motivate them (e.g., What does your instructor say or do that motivates you?), whether they have noticed any change in their instructors teaching style over the past 4 months, and the extent to which their instructor satisfies their basic psychological needs for competence, relatedness and autonomy (e.g., To what extent do you feel that your instructor says or does things that help you feel that you are in control of your own workout, that you have a sense of freewill? Can you provide examples of things that he/she says that make you feel this way? How do you feel at these times? How do your feelings or engagement or effort in the class change when he/she says or does these things?)

Self-reflection diaries

During the intervention instructors were encouraged to record their thoughts and feelings in relation to putting the motivational strategies into practice within their classes. It was recommended that instructors recorded their reflections after each class or at the end of each week, depending on their own preference. Choice of when to complete the self-reflections was given in order to reduce burden on instructors who teach a large number of classes per week. Guiding questions were provided (e.g., During this class/week, which strategies did you focus on? What worked really well in terms of implementing the strategies? What did you find challenging about using the strategies?), however, instructors were informed that they could record their reflections in whatever way felt most comfortable for them.

A self-reflection diary methodology was chosen to capture instructors' experiences closer to the time at which they occurred (Willig 2013). Diary entries were also used to generate interview prompts (e.g., 'You mentioned in one of your Facebook reflections that you find the inclusive language a bit difficult could you tell me a bit more about that?') which aid recall and generate more in depth understanding of diary entries (Sparkes and Smith 2014).

Ten instructors (2 male, 8 female) completed and returned self-reflection diaries to the research team. The methods via which instructors shared their self-reflections included; setting up a private online blog, writing the self-reflections in an email and sending it to the lead researcher, keeping a paper diary, audio recording their thoughts, and posting their reflections on a (private) Facebook page which was set up for the project. In the first couple of weeks most instructors provided self-reflections after each class. In later weeks instructors tended to provide reflections on specific instances in which strategies 'worked' or not and more general reflections over the past week, as opposed to noting reflections after each class. The length of self-reflection entries varied from 15 words to 2198 words per entry.

Data analysis

Data were analysed using the Framework Method (Gale *et al.* 2013). Semi-structured interviews and audio-recorded self-reflections were transcribed verbatim and anonymised. All data were imported into NVivo (Version 10, QSR, Southport, UK). The first author became familiar with each participant's data (i.e., interview transcript and self-reflections for instructors and interview transcripts for class members) and noted initial analytic observations. Following familiarisation, the data were coded and a working analytical framework developed. As the purpose of the study is to examine implementation of a specific theory (SDT) within indoor group cycling classes, concurrent deductive and inductive thematic analysis, also referred to as abductive reasoning (Ryba *et al.* 2012, Sparkes and Smith 2014), was used. Deductive analysis was used to identify examples of, and challenges and facilitators relating to, the implementation of the *a priori* SDT-based motivational strategies (see Table 1 for details). Deductive analysis was also used to identify SDT mechanisms (i.e., basic need satisfaction, motivation regulations) reported by exercisers. Alongside this, inductive analysis was used to explore themes arising from the data (e.g., challenges and facilitators reported by instructors when implementing the strategies in the group exercise context which were unrelated to SDT). Though interpreting the data through an SDT lens, we aspired to remain critically aware and reflexive of phenomena and themes unrelated to SDT, moving between everyday meanings and theoretical explanations (Sparkes and Smith 2014).

Indexing was performed by systematically applying codes from the agreed analytical framework systematically to the whole dataset. A spreadsheet containing a convergence coding matrix was generated and data charted into the matrix. Columns contained themes and subthemes, rows contained individual cases, and summarised data from each transcript were

entered into the appropriate cell. This approach enabled integration of interview and self-reflection data and facilitated comparison with ease across data cases as well as within individual cases. A clear audit trail, documenting analytic decisions was created and maintained to maximise transparency and ensure credibility and quality. The audit trail and coding matrix were distributed among the author team for consideration and discussion. The coding matrix and themes were further refined and discussed, using constant comparison and critical reflection, until a group consensus was reached.

Results

The results relevant to aims 1 and 2 are presented together under the headings 'Motivationally adaptive strategies' and 'Motivationally maladaptive strategies'. Results related to aim 3 are presented under the headings 'Challenges' and 'Facilitators'.

The majority of exercisers reported attending indoor cycling classes with their instructor on a regular basis (3 twice a week, 11 once a week, 1 once a fortnight). The main reasons exercisers cited for attending classes included: valuing its benefits (i.e., fitness, recovery from injury, and social interaction) and the intrinsic enjoyment of the class (e.g., 'I go because I want to go, because I love it.' EC). When asked, the majority of the exercisers said that their reasons for attending have not changed over the past 4 months. However, one exerciser (EG) described becoming more intrinsically motivated: 'I'm enjoying it even more...the instructor's enthusiasm is quite contagious.'

Motivationally adaptive strategies

Analysis revealed all of the motivationally adaptive strategies were reported to have been operationalised by the instructors within their classes. The instructors mentioned that they already, to some extent, used the strategies within their practice, but that they recognised that

274 'how' they were previously delivering the strategies may not necessarily have been done in
275 ways that foster their exercisers' feelings for autonomy, competence and relatedness. When
276 asked whether their teaching style has changed, one instructor explained 'I do think it has
277 changed, um, somewhat…there were some of the supportive ones [strategies] I found that I
278 was sort of already using. But I was able to use the rich descriptions to take that to the next
279 level.' (I1, interview). When asked, only 4 exercisers reported noticing a change in their
280 instructors teaching style over the past 4 months. Two exercisers noticed a general
281 improvement (e.g., 'Now he seems a bit more comfortable and confident in his teaching.'
282 EG) and two picked out specific changes (e.g., the instructor is 'more specific about technical
283 things and bike set up…making sure everybody is informed.' EA). The other exercisers
284 reported not noticing any specific differences in the instructors teaching 'I don't know about
285 anything specifically I can call out that's changed' (EN). Instructors' experiences of
286 operationalising the motivationally supportive strategies, exercisers views on the strategies
287 and ensuing feelings of need satisfaction and motivation are presented in relation to each
288 motivationally supportive strategy using the LARS categorisation as higher order themes.

289 *Listening to exercisers*

290 ***Taking time to listen and be responsive to your exercisers' needs.*** Before and after
291 class instructors reported addressing exercisers by name and actively listening to what they
292 have to say. One instructor (I15, interview) explained:

293 It really helps to, I've noticed, to try and learn people's names. I think people really
294 appreciate that and that's made a big difference. I've tried every class to learn one
295 more person's name and maybe a little bit about them. If they've got an injury or they
296 were going away or they've got something going on, you know, they were training for
297 something, I would remember that the next time they came and say 'how's the
298 training going?' or 'how's the injury? If you need to modify anything to compensate

for the injury then that's fine'. So it's that connection I think that that's for me has been the most important part.

During class instructors reported paying attention to exercisers' facial gestures, body language and energy to gauge who is or is not comfortable, enjoying themselves or clear on what they are doing. Instructors explained that they used this information to provide appropriate feedback/support to the exercisers either during or after class. One instructor (I15, self-reflection) noted:

> During the sprint track I noticed a few of the participants were struggling with their speed. I got them all to look at me instead of looking down so I could make eye contact with them to encourage them and support them through the tough part and also gave them time checks so they knew how long they had to go.

One exerciser (EK) explained that when the instructor refers to them by name it makes them feel valued and '…important for being in that class, rather than just a number', thus supporting the exerciser's sense of relatedness, and motivating her to return to the class: 'I guess it makes you feel like that it's worth coming in because someone takes any interest in you.' An exerciser (EN) described how she finds it motivating that her instructor 'notices the small things' and believes it to be 'a sign of a good instructor…when the instructor is feeding off the energy of the class and adjusting as they go and really paying attention, noticing, if someone's struggling.' Thus, the instructor taking time to show that they have noticed exercisers and responding to their needs was reported by exercises to contribute to feelings of relatedness and motivation to continue with the class.

Encouraging questions and feedback from exercisers' regarding their goals, problems or preferences. Instructors explained that they specifically approached one or two exercisers each week to ask how they got on within the class, what they liked/disliked about

the class and/or to follow up on a previously discussed goal or problem. For example, an instructor (I11, self-reflection) described:

> What I have found, at the end of the class, when I choose 1 or 2 different people to ask how they went this week and what they liked/disliked, is that people are revealing their goals. One of my regulars wanted to increase her resistance and pace in her sprints. We are now working at ways she can do that!

Instructors explained that finding out exercisers' goals and reasons for coming to the class has helped to develop a stronger rapport and connection: 'I'm now asking people more the reasons why they are coming….and that's really been connecting and making people feel more at ease.' (I23, interview).

This was corroborated by exercisers who reported having the opportunity to provide feedback contributed to self-determined motivations for engagement: 'She actually, you know, cared about our thoughts on the class and that, you know, makes you feel that she wanted you to be there and she appreciated you being there and enjoyed you being in her class.' (EK)

Advising exercisers

Giving meaningful and appropriate explanations. Instructors reported taking more time than they used to, to explain the rationale behind their instructions. One instructor revealed how they operationalised the strategy in their class: 'I explained why we did certain things to get the most of our workout, [such as] chest up in the climbs so it's easier to breathe, relaxing the upper body to be able to sprint faster. I got them to tense up during a sprint, then relax so they could feel the difference.' (I15, self-reflection).

Exercisers mentioned that they feel motivated in class when instructors provide appropriate explanations:

I guess the way that she describes that if you've got to a level where you feel like your legs are going wobbly or you feel your heart elevating, it means that you're really working your muscles. You can then gauge what you're doing and what she's saying and assess if you are on the right track. And then that actually spurs you on to work that little bit harder and push yourself. (EI)

Giving specific and constructive feedback. Instructors reported replacing motivationally empty feedback, such as 'good' and 'well done', with more specific feedback: 'I often tell my class that I am loving their speed for example, giving reasons why....it will improve their fitness.' (I11, self-reflection). Instructors also described giving specific individual feedback to exercisers at the end of classes: 'I have been choosing a minimum of two class members at the end of each class to personally acknowledge their effort and have a chat.' (I11, self-reflection).

Exercisers expressed that individual, meaningful feedback or praise from their instructor contributed to their feelings competence (e.g., 'He [the instructor] actually paid attention to the fact that, you know I'd, I've managed to up my performance and was capable of more than I had been…and the fact that he noticed, that you know made my confidence increase.' [EG]), and relatedness (e.g., 'She'll come up to you personally and tell you how I've done sort of good job and stuff. I just feel more motivated to be there and it makes me feel like my instructor does care.' [EM])

Using inclusive language. Instructors reported this to be the easiest strategy to implement: "I found it fairly easy to start to incorporate inclusive language such as 'let's or 'we'" (I12, self-reflection). Instructors explained that following the training they now direct instructions towards the group working together (e.g., 'we can do this…together let's finish this') as opposed to being directed towards individuals (e.g., 'you can push yourself harder, you can do this'). Instructors also described now using a questioning style to phrase

instructions (e.g., ‘How about we…?’) and words that open up the possibility of choice (e.g., ‘perhaps’ and ‘let’s see if we can add a little more’).

Exercisers described how the use of inclusive language made them feel part of a team, promoting a sense of belonging: ‘I think he [the instructor] turns [the class] into much more of a team environment, like it’s not so much a group of individuals all working towards their own aims but I think he makes everyone sort of gel together and come together as a group which is really nice.’ (EG) and motivation ‘That whole, I guess, family atmosphere makes it motivating.’ (EE)

Relating to exercisers

Acknowledging exercisers’ feelings and responding appropriately. Instructors described acknowledging both the feelings of the class as a whole during sessions and of individual exercisers on a one-to-one basis. An instructor (I15, self-reflection) described an example with an exerciser who: ‘likes to push herself but is also apprehensive about getting on the bike again in case she reinjures herself.’ The instructor acknowledged the exerciser’s feelings and reassured her that it was ok to go at her own pace. Following the class, the instructor said that the exerciser ‘came to thank me for taking the time to reassure her, for checking in with her during the class to make sure she was feeling ok, and for making her so welcome.’

Exercisers reported that they liked it when their instructor noticed and acknowledged how they were feeling. One exerciser explained:

> If you look a bit tired or she [the instructor] notices that you’re looking a bit run down then, you know, she’ll always sort of touch base with you… and say ‘Are you feeling ok?’ or um yeah after the class she’ll have a chat to you and that. So yeah always she’s a very personal type of person. (EE)

Offering meaningful praise which is unconditional. Instructors explained that they tried to make their praise more meaningful by relating it directly to a specific action or outcome that the exerciser(s) had achieved. One instructor (I15, self-reflection) said: 'I've realised that although I praise my class I don't really qualify it and say why they did well. So I've been trying to focus more on that this week. For example, you were sprinting with great control there, well done as opposed to good sprinting guys".

Exercisers described their instructors offering praise simply to celebrate what was achieved. Such praise helped to support exercisers' feelings of competence and motivation: 'At the end of the class she'll say oh 'everyone's worked really hard'. That does give you the motivation to go back and also it does gives you that confidence thing of, you know, well we're doing ok.' (EL)

Structuring the class

Creating opportunities for exercisers to have input and make decisions about the workout. Instructors explained that they invited input from the class regarding music choice and general feedback on delivery of the content. Instructors described listening to the feedback and then demonstrating to the exercisers that their views had been reflected in the workout decisions. An instructor (I15, self-reflection) explained: 'At the end of the class a couple of the exercisers came to me and said they'd enjoyed the challenge but could we please do some shorter sprints the following week, which I did.'

Exercisers explained that being invited to have some input and to make decisions made them feel as if they had more ownership over the session, thus increasing their feelings of autonomy: 'She always does ask for suggestions at the end…if there's a certain song you might like or suggestions of what she could do better. I think that's important as well.' (EN).

Offering choice and variety which are realistic and relevant to exercisers' needs. Instructors described giving exercisers options as to how much resistance to add to the bikes

during the tracks, how much rest to take and how often, and how long to complete high intensity spinning for. Most instructors also mentioned explaining to exercisers at the beginning of classes that they are free to adapt the workout to suit their own needs and goals. In a self-reflection an instructor (I5) shared what she says to her exercisers:

> This is your ride, you are in control of your ride. At any stage throughout the ride feel free to make adjustments to your dial, the key is to feel safe and in control. This works both ways, if you are feeling good, take the advanced options and don't be afraid to add more resistance at any time, and the reverse applies, if you feel you need to reduce the dial at any stage feel free to adjust that dial to meet your fitness goals.

Prior to the training instructors tended to demand high performance from all exercisers with those unable to keep up then having to 'opt out'. If exercisers are unable to reach or maintain the desired goal this may thwart their basic need for competence. Instructors found that challenging exercisers to take the higher options was a more need-supportive approach. For example, one instructor (I2, self-reflection) noted:

> Usually I would encourage all riders to move into the fast racing by saying: 'Accelerate up to the beat' and follow up maybe 10 seconds later saying 'If you can't get to the beat, just do your best'. I don't think this is necessarily unsupportive but I changed my language slightly to be more positive by saying: 'If you want more of a challenge, accelerate to find the beat'. The goal here is to build confidence in riders so that they don't feel defeated if they need to slow down. Overall I think it was a great change in language to make riders feel more successful.

Having choice and control over their workout, contributed to exercisers' feelings of autonomy (e.g., 'So she gives you that sort of options and you feel like you've got control over what you want to do' [EL]), competence (e.g., 'Knowing that you can make that workout suit you individually makes you feel motivated because you know that you can suit

it to how you are that day. So yeah, if you aren't energetic you can still push yourself as hard as you can but not feel that you've failed because you haven't been able to achieve what you might have been able to achieve two days ago' [EE]), and self-determination (e.g., 'If an instructor gives you options then you're more likely to want to…come back and challenge yourself for next week and maybe put the dial up a bit higher, but know that you still have that freedom to drop it if you want to' [EK]).

Creating opportunities to interact with all members. Instructors reported that the best time to interact with members individually was before and after class. Instructors described arriving 15-20 minutes early and standing by the door to greet people as they walk in and/or walking around the room and proactively approaching exercisers and initiate conversations. A few instructors explained that walking around the room made it easier to identify individuals who were new, looked a bit nervous, or in need of assistance. One instructor mentioned that thinking of the class as a party, and her as a good host, helped her to interact with more exercisers.

The exercisers expressed that a friendly instructor, who interacts with exercisers on a one-to-one basis is crucial for engagement: 'You just feel more loyal I guess to that instructor because they know you and they, you can tell that they actually care about you. Not many instructors do that actually and I think that's a really good quality to have as an instructor I think, it just shows that one-to-one personal caring sort of thing.' (EL) Another exerciser (EJ) explained: 'I would immediately turn off if they [the instructor] wasn't friendly. If they're not friendly, well, you think why are you doing this.'

Motivationally maladaptive strategies

Generally, instructors expressed that they did not use many motivationally maladaptive strategies and exerciser reports supported this assertion. Below instructors'

experiences of reducing their use of the motivationally unsupportive strategies, exercisers views on the strategies and ensuing influence on need satisfaction and motivation are presented in relation to the motivationally unsupportive strategies which were mentioned by instructors or exercisers. The motivationally maladaptive strategies were organised, based on the categorisation of strategies used in the training, into 3 higher order dimensions: Pressuring language, Appearing cold, and Structuring the class. No data emerged on instructors or exercisers experiences of operationalising strategies related to the category 'Empty communication'.

Pressurising Language

Using commands and directives or inducing guilt and shame. Instructors reflected that they had been in the habit of *using commands and directives* when instructing because… "We have been very much taught to use that type of language - 'It should feel like this, this next gear is a must do'. It took me a long time to get out of, because it just slipped out. It's just habit" (I1, interview). Instructors explained that with time, they were able to reduce their use of commands and directives by replacing them with inclusive language (e.g., 'Let's try…', 'We could aim to…'), questioning phrasing (e.g., 'Can you feel...?'), meaningful explanations (e.g., 'When I ask participants to stay low into the legs when climbing…I explain why - more load through the legs, engage correct muscles, not wasting energy, gives better results'), and options phrased in a challenging way (e.g., 'If you want an extra challenge add again').

Appearing cold

Using 'no pain-no gain' language. A few instructors acknowledged that their teaching style prior to the training programme was 'directed at those who thrive on the no pain, no gain style' (I11, self-reflection). For example, one instructor (I7, interview) noted: "Before I might've just gone 'alright skipping through the break, go hard, or go home, push

on through', whereas now I probably give a little bit more choice.' The instructors acknowledged that the 'no pain, no gain' mentality may not be motivating for all individuals, particularly newer class members. Instead instructors said that they encouraged exercisers to try their hardest by using more motivationally supportive strategies such as, providing choice, giving explanations, using inclusive language, and acknowledging exercisers feelings.

Structuring your class

Comparing exercisers against each other or being overly competitive. The majority of instructors explained that they encourage individual improvement rather than comparing exercisers against each other. When asked what she now does differently following the training, one instructor (I26, interview) said: 'I'm non-competitive, like I've been telling people more not to worry about everyone else, just... like worry about themselves, and challenging themselves, rather than looking around and being preoccupied with what everyone else is doing.'

A couple of instructors felt that there is a place for competition within the group exercise setting. One instructor (I7, interview) uses competition because it creates a fun atmosphere: 'There's certain tracks that I will bring in a full competition into that track, you know, and it just increases the intensity in the room, and the fun.' Some exercisers mentioned that they find competition motivating when it is delivered in a way which does not compare individuals but instead uses teams to create a sense of comradeship: 'He's very encouraging through harder parts of the class like he won't pick on individuals but he'll maybe try and turn us into teams to compete against each other and that's quite motivating' (EG).

Instructors recognised that not all members like competition 'Not everybody wants it' (I7, interview). Exercisers highlighted the negative influence that competition, which compares individuals against each other, can have on individual's feelings of competence (e.g., 'Some other instructors like to sort of, pit each other off in a class or, you

know…um…I think some people might find that a bit intimidating especially, you know, everyone is at different levels of fitness' EB) and motivation (e.g., "I've been to other classes where they say 'oh try to compete against the person next to you'. That doesn't really work for me. I don't find that very motivating" EH).

Challenges

Four themes related to the challenges that instructors faced when implementing the strategies in the group exercise context were identified: the structured nature of the group exercise class, initiating meaningful one-to-one conversations, phrasing instructions in a need-supportive way, and breaking old habits.

The structured nature of the group exercise class

During indoor group cycling classes, instructors deliver a set routine to a continuous soundtrack whilst demonstrating the exercises on a bike at the front of the class. Instructors explained that this strict format limited their ability to listen, advise, and relate with exercisers on an individual basis during class. Most instructors reported overcoming this challenge by spending more time before and after classes interacting one-to-one with exercisers: 'The one thing that I've really changed is making myself more available before and after class' (I12, interview). However, some instructors found this difficult due to the timing of classes 'Time wise um… the six o'clock morning class is not so easy to do, cause people come in, rush, um, jump on, off the bike, and go' (I14, interview), or their own busy schedules 'On Sundays I have to go and teach a class at another gym after so I can't stay around after the class talking to the participants.' (I15, self-reflection)

Initiating meaningful one-to-one conversations

Some instructors reported feeling apprehensive at first about initiating one-to-one conversations: 'getting to know different types of people, and um… that's always been

something for me that actually puts me out of my comfort zone' (I12, interview). Another instructor (I5, interview) explained that making those one-to-one interactions with exercisers meaningful was challenging: 'Being proactive at the start and creating those conversations with individuals which are meaningful conversations rather than 'how are you going?' Actually trying to connect with them a bit more, that was difficult.' The instructor reported that over time, with practice, it became easier: 'Actually trying to connect with them [exercisers] a bit more that was probably difficult to start with… um… but it became a lot easier and it felt good.' (I5, interview)

Phrasing instructions in a need-supportive way

Instructors acknowledged that in order to deliver the strategies in a need-supportive way they had to change what they said and how they said it: 'I'm more conscious of what I say and how I say it' (I18, interview). However, instructors found it challenging to know how to phrase instructions in a need-supportive way: 'It's just difficult because you know, trying to phrase it, and trying to get it in, in a way um, like that was challenging at times.' (I12, interview). One strategy which instructors found particularly challenging to phrase in a need-supportive way was *offering choice and variety which are realistic and relevant to exercisers' needs*. In trying to cater for new exercisers, instructors reported giving lots of options for exercisers to ease off or take a break if needed. However, instructors reported feeling that the more advanced members were taking the easy options and not challenging themselves. One instructor (I12, self-reflection) explained:

> I feel like giving tons of options makes the class much easier as people will tend to cater towards the lower option frequently. I will need to find a way to make it open for people who want it [to take the lower options] without making the class sound too easy.

How to most effectively implement this strategy into practice was discussed in the second training workshop. Subsequently, instructors reported becoming more confident phrasing this

strategy in a need-supportive way: 'I think towards the end [of the programme] I found a better balance with giving them [exercisers] that choice still, but that choice where they want to work harder.' (I5, interview).

Breaking old habits

Instructors reported finding '…breaking old habits to starting to adopt new, more effective ones!' (I12, self-reflection) particularly challenging. When interviewed, an instructor (I26) explained: 'It just took quite a few weeks for me to- to um…put some of the strategies into place, because my automatic... um... way of doing it was just different. And yeah, it's just- just learning it and training yourself to say things in a different way or do things in a different way, so yeah.' One instructor reported that planning when and how they were going to incorporate the strategies into their classes helped: 'I think scripting what I was going to say in my action plan was key' (I2, self-reflection).

Facilitators

Two main facilitators to implementing the strategies in the group exercise context were reported by instructors: establishing a connection and understanding SDT.

Establishing a connection

Instructors explained that to begin with, when directly asking for input, questions or feedback they did not get much response from exercisers. However, over time, as they made themselves more available to talk to exercisers before and after class and proactively engaged in more meaningful conversations, they began to receive more questions and feedback from class members. Thus, developing a prior connection was critical to the successful implementation of motivationally adaptive strategies, such as, *encouraging questions and feedback from exercisers about their goals, problems or preferences*:

> Because I'm creating a conversation with them when they walk in they feel more inclined to give me that feedback at the end. Whereas before [the training] I asked for feedback but people wouldn't come up and talk and I think that was because I wasn't approachable at the start so they thought oh I won't talk to her (I5, interview).

Some instructors stated that without developing that prior interaction/connection, the other strategies were not as powerful. One of the instructors (I5) in her self-reflection noted a time when she was asked to take a class at late notice.

> I was happy to help but I had not prepared myself mentally to teach and had no prior opportunity at all to mix with the class. I jumped on stage, hit the music and started. I struggled to find the connection that I had with my previous classes where I had implemented the strategy. There was no prior relationship established. No chance for me to communicate with my participants prior to the class to relax myself. It was a weird feeling. Even though I had tried to implement the choice strategy, creating a group effort culture and explaining how it should feel, I really noticed the effect of not having that connection. I felt the other strategies weren't as powerful.

Understanding SDT

Instructors believed that having an understanding of SDT helped add more depth to their instruction, 'Whenever I was considering my strategies it made me think about the purpose behind it' (I5, interview). Instructors mentioned that understanding how and why the strategies worked (the underlying theory) helped them to implement the strategies in a motivationally supportive way: "Um...through the training, I was sort of learning how the supportive strategies work. It sort of puts the workout into the participant, rather than just being like the drill sergeant. Um... so definitely understanding that component made a big difference" (I1, interview).

Discussion

The purpose of this qualitative study was to explore: 1) group exercise instructors' perceptions of how they operationalised the motivational strategies within classes, 2) exercisers' views on instructors use of motivational strategies and any impact on exercisers' basic psychological needs and motivation, and 3) the main challenges and facilitators reported by instructors when implementing the strategies in the group exercise context. Findings are discussed in relation to the theoretical, practical and research implications.

Theoretical implications

In line with SDT, previous literature (e.g., Edmunds *et al.* 2008, Ng *et al.* 2012, Teixeira *et al.* 2012), and the projects quantifiable results on the effects of training group exercise instructors to adopt a motivationally adaptive communication style (reported in Ntoumanis *et al.* 2016), our qualitative findings revealed the motivationally adaptive strategies to generally be associated with positive responses from exercisers' and reports of basic need satisfaction and intentions to continue. These findings suggest that the way in which the instructors operationalised the strategies was need-supportive, and that the SDT-informed motivational strategies are beneficial with regards to promoting exercisers' positive experiences and self-determined motivation within indoor group cycling classes.

Competition which encourages comparison between individuals was found to be associated with negative reports from exercisers with regards to their feelings of competence and motivation. Although this intervention was not developed from Achievement Goal Theory (AGT; Ames 1992, Nicholls 1989) this finding supports the theoretical proposition that individuals are more likely to feel competent if they are operating within an achievement setting with a prevailing task-involving, as opposed to ego-involving, goal climate. Thus, the findings provide support for an integrative approach to intervention design, underpinned by both SDT and AGT (e.g., Duda 2013). Such an approach may create a more comprehensive

picture of the social-environmental features which may hold implications for exercisers' basic psychological needs and, in turn, motivations to continue.

Practical implications

The present study makes an important contribution to the literature by advancing understanding of the practicalities of translating motivational principles into practice in the 'real world'. Our findings have implications for the application of SDT to the specific context of group exercise classes and the development of future motivation focused training programmes more generally. Collaboration with, and learning from, those participating in SDT-based training programmes is crucial if we are to advance knowledge and understanding of how to most effectively train need-supportive behaviours. This is the first study with fitness instructors to identify examples based on real life experiences of operationalising need-supportive strategies within the context of group exercise. These real life examples can be used to improve SDT-based training with group exercise instructors. For example, the provision of specific examples of what to say and how to say it will help those being trained to know how to most effectively phrase instructions in a need-supportive way. Quotes from exercisers (e.g., 'If an instructor gives you options then you're more likely to want to…come back and challenge yourself for next week') could be used to illustrate the impact that the strategies can have on exercisers' motivation and engagement. Such information may help to educate instructors on the benefits of the motivationally supportive strategies and increase their motivation to utilise them.

The present study aimed to explore the challenges reported by instructors when implementing the strategies in the group exercise context. The findings can be used to improve the current training programme by incorporating the identified challenges as key points/topics for discussion within future training workshops (e.g., how can instructors work

within the structure of the group exercise class, initiate meaningful one-to-one conversations, phrase instructions in a need-supportive way, and break old habits?). The findings of the present study could also be used to inform the design and training content in other future SDT-based interventions in this context and other similar settings. For example, findings revealed the main challenge reported by instructors when implementing the strategies in the group exercise context to be the design of the classes, which inadvertently limited instructors' opportunities to create meaningful one-to-one interactions during class. The results suggest that when operationalising SDT in contexts in which interaction is generally one-sided (e.g., lectures, large group training sessions), with limited opportunities for individual interaction between authority figures (e.g., teachers, instructors) and participants (e.g., students, workshop participants), those in positions of authority need to actively seek out opportunities to engage in need supportive, two-way dialogue, outside of the large group setting (e.g., by individually interacting with participants before, after or during breaks within sessions). Although not always feasible, it is recommended that where possible future interventions factor in time for leaders in learning settings to interact on a one-to-one basis with participants.

All of the other challenges expressed by instructors are considered modifiable and feasible to address within future SDT-based training programmes. For example, breaking old habits and developing new ones, was identified as another key challenge experienced by instructors when trying to implement the motivational strategies into practice. Incorporation of behaviour change techniques (Abraham and Michie 2008), such as, goal setting, action planning and habit formation, within SDT-based programmes can be used to support behaviour change.

Within the group exercise context, instructors reported the use of inclusive language to be the easiest strategy to implement. This strategy only required instructors to make a

slight change in the language that they used (e.g., replacing 'you' with 'we'). A recent study by Reeve and Cheon (2016) found that teachers become more autonomy supportive after they believe it is easy implement. Therefore, future interventions encouraging instructors/teachers to try implementing a few strategies at a time may want to start with strategies which are perceived as easier to implement, such as using inclusive language.

Implications for future research

The findings of the present study suggest that an understanding of SDT helped instructors to deliver the strategies in a more need-supportive way. A meta-analysis (Su and Reeve 2011) found theory-based and non-theory based SDT training programmes to be equally effective. However, the theory-based interventions had narrower confidence intervals and produced more consistent results. Thus, it has been argued that a sufficient level of understanding of the theory underpinning the design of the intervention is necessary in order to effectively translate methods into practice (Kok *et al.* 2012, Schaalma and Kok 2009). Without an understanding of the theory, and in particular the basic needs which the strategies were trying to promote, instructors may have found it more difficult to be authentic in their actions and work out how to deliver the strategies in a way which is truly need-supportive. Although it appears that an understanding of SDT is important for successful implementation of need-supportive strategies, we do not know this for sure. Future research employing a factorial design and comparing 3 groups of health practitioners: 1) those taught SDT theory only, 2) those taught SDT strategies only, 3) those taught both SDT theory and strategies, would help to clarify whether an understanding of the principles of SDT is necessary in order to be optimally need-supportive. Such information is important for knowing whether time in training is effectively spent by teaching instructors the theoretical principles of SDT.

A strength of the present study was the use of multiple types of qualitative data (interviews and self-reflection diaries). The use of a self-reflection diary method was a novel approach to collecting data on instructors' experiences of implementing the need-supportive strategies and enabled us to capture instructors' experiences of operationalising the strategies closer to the time at which they occurred. However, the present study was limited to only exploring instructors' and exercisers' experiences after the practical application of need-supportive strategies within exercise classes. Future research, comparing and contrasting: before instructors were trained by the workshop, after training, and after trying to apply the strategies, would provide valuable insights into the how instructors change their knowledge, beliefs, and strategies on how to most effectively motivate exercises during classes, following participation in an SDT-based training programme. Analysis of the instructors' learning experiences would give deeper understanding regarding why some strategies may be easier and others more challenging to operationalise, whether the quality of operationalisation had to do with individual instructors' differences or other systematic factors, and eventually, how SDT could be better operationalised in general.

Findings are based on self-reports from instructors and exercisers, thus, we do not know the exact language that instructors used and how interactions unfolded on a moment-to-moment basis. A possible avenue for future research could involve using observations to shed greater light on the specifics of the language use and interaction (verbal and non-verbal) between instructors and exercisers. Such research can help to examine in detail how SDT can be most effectively operationalised in practice.

Conclusions

The findings advance our understanding of what it means to be supportive (and unsupportive) of individuals' basic needs by providing practical recommendations and

744 examples taking into account the context of group exercise. Instructors reported establishing
745 a connection with exercisers and understanding theoretical principles to facilitate the
746 implementation of need-supportive strategies. Challenges to operationalising the motivational
747 strategies within group cycling classes included: the structured nature of the group exercise
748 class, initiating meaningful one-to-one conversations, phrasing instructions in a need-
749 supportive way, and breaking old habits. The findings of the present study could potentially
750 be used to improve the design and training content of SDT-based training programmes in
751 group exercise contexts and other similar group activity settings within education, sport and
752 healthcare settings.

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Table 1. Motivational strategies as detailed in Author et al. (2015).

Category	Motivational Strategy
Motivationally Adaptive Strategies (LARS)	
Listening to your exercisers	1. Taking time to listen and be responsive to your exercisers' needs 2. Encouraging questions and feedback from your exercisers about their goals, problems or preferences
Advising your exercisers	3. Giving meaningful and appropriate explanations 4. Giving specific and constructive feedback 5. Using inclusive language (e.g., 'we could try…')
Relating to your exercisers	6. Acknowledging the exercisers' feelings and responding appropriately 7. Offering meaningful praise which is unconditional
Structuring your class	8. Create opportunities for exercisers to have input and make decisions about the workout 9. Offering choice and variety which are realistic and relevant to your exercisers' needs 10. Find opportunities to interact with all exercisers
Motivationally Maladaptive Strategies (PEAS)	
Pressuring language	1. Using commands and directives ('must', 'should', 'need you to') or inducing guilt and shame 2. Criticising, belittling, devaluing or dismissing exercisers
Empty communication	3. Imposing goals and rules with no explanations, or explanations which are confusing , inappropriate or pressuring 4. Offering no specific feedback/praise, or talking in ways that are

	motivationally ‘empty’ (e.g., ‘keep going’)
Appearing ‘cold’	5. Appearing cold and indifferent to your exercisers’ positive and negative feelings; appearing to talk to a ‘camera’
	6. Appearing unresponsive to or discouraging your exercisers’ preferences, opinions and feedback
	7. Using ‘no pain-no gain’ language
Structuring your class	8. Offering little variety and/or choices that are not meaningful
	9. Not mixing with your exercisers
	10. Comparing exercisers against each other or being overly competitive