Subjective theories of exercise course instructors: causal attributions for dropout in health and leisure exercise programmes

S. Lippke a,*, B. Knäuper b, R. Fuchs c

a Psychologie, Freie Universität Berlin, Habelschwerdter Allee 45, 14195 Berlin, Germany
b Department of Psychology, McGill University, 1205 Dr. Penfield Avenue, Montreal, QC, Canada H3A 1B1
c HTWK Leipzig, Postfach 300066, 04251 Leipzig, Germany

Received 8 January 2001; received in revised form 24 July 2001; accepted 14 November 2001

Abstract

Objectives: Dropout is a major problem in exercise programmes. Investigations have usually focused on exercise participants. The present study examines dropout from the perspective of exercise course instructors.

Design: Course instructors’ cognitions about why participants quit their course were examined. Instructors evaluated a number of possible reasons for dropout and assessed the dropout rate in their courses.

Sample: Instructors of exercise classes (N=343).

Method: Self-reported cross-sectional mailed survey.

Results: Cluster analysis supported three different types of exercise course instructors. Type 1 attribute the participants’ quitting to external reasons (‘self-protecting type’). Type 2 evaluate all potential causes as irrelevant (‘disregarding type’). Type 3 assign equal weight to internal and external reasons, seemingly reflecting an adaptation to situational requirements (‘adaptive type’). Type 3 exercise course instructors report the highest increase in number of participants. They were therefore identified as successful in motivating and attracting participants to their programmes.

Conclusion: Exercise course instructors’ subjective theories about reasons for dropout may influence their ability to motivate individuals to remain in their programmes or attract them to programmes.

© 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Exercise course instructors; Dropout; Subjective theories; Attributions; Cluster analysis; Motivation
Introduction

Even though many people manage to initiate a regular exercise or physical activity programme, only few succeed in maintaining this activity over extended periods of time. Almost half of those who begin a supervised exercise programme quit within the first six months (Dishman, 1991). Apparently, it is very difficult to motivate participants to maintain an activity for the long-term (Brawley & Rodgers, 1993). In fact, most exercise course instructors find it much easier to attract people to an activity programme than to keep them in (Willis & Campbell, 1992).

Numerous studies have identified risk factors for dropout from physical activity programmes. These studies have usually examined course participants’ motivational and volitional dispositions for exercise involvement (for reviews see Dishman, 1994; Fuchs, 1996; Smith & Biddle, 1995). According to the findings determinants of exercise adherence can be grouped into three categories: personal attributes, environmental or social factors, and characteristics of the physical activity itself (Dishman, 1993). Recent investigations emphasised the exercise course instructor’s behaviour as particularly important for keeping participants in exercise programmes (Laitakari & Asikainen, 1998; Nupponen & Laukkonen, 1998; Remers, Widmeyer, Williams, & Myers, 1995; Rinne & Toropainen, 1998; Vuori, Paronen, & Oja, 1998). Results of these studies show that participants’ rating of perceived competence of their exercise course instructors, in particular their sensitivity and supportive behaviour, are crucial determinants of programme satisfaction and adherence (Duncan, Duncan, & McAuley, 1993; Willis & Campbell, 1992). Hence, course instructors seem to play a major role in motivating participants to continue the exercise programme (Amorose & Horn, 2000; Marinelli & Plummer, 1999; Williams & Lord, 1995).

To further understand the processes of adherence and dropout in exercise, it seems necessary to take a closer look at cognitions and behaviours of exercise course instructors. Three general questions guide the analyses reported in the present paper. First, what are the subjective theories that exercise instructors have about reasons for dropping out of the programme? Second, can different types of instructors be distinguished according to their preference for subjective theories on dropout? Third, what is the relationship between subjective theories and the ability to retain participants in the programme? The methodology employed was to ask exercise instructors for their explanations for dropout occurring in their course. This approach provides insights into what degree instructors are sensitive to motivational problems of their participants and whether they are aware of their own critical role in keeping participants in the programme. Being aware of reasons for dropout and recognising participants at risk for dropping out may be a major precondition for taking action to prevent it (Williams & Lord, 1995).

Subjective theories

The notion of subjective theory is closely linked to attribution research in social psychology. How people explain events can affect how they behave in the future (Groeben, 1990). The ensemble of these explanations or attributions is called ‘subjective theories’, sometimes labelled as everyday theories, naive theories, or implicit theories. People develop such theories about the occurrence and causes of events and use them to explain events and act upon them. Similar to scientific theories, subjective theories can be conceptualised as enduring cognitive structures (Groeben, Wahl, Schlee, & Scheele, 1988). Subjective theories influence the planning of behaviour
as well as enabling persons to draw inferences and structure their experiences. They are relatively stable mental structures, and people can be more or less conscious of their existence (Groeben, 1990).

Within the domain of physical exercise there are only a few investigations into the role of subjective theories of participants. Kasimatis, Miller, and Marcussen (1996) focused on the impact of subjective theories on students’ persistence in a novel exercise task. Two different subjective theories were experimentally induced. One group were told that athletic coordination was mostly learned (incremental theory) while the other group were advised that athletic coordination was genetically determined (entity theory). Participants with the incremental theory reported greater motivation and self-efficacy and less negative affect in the face of difficulty than those with the entity theory. In drawing practical implications from their findings the authors state, “...instructors should keep in mind that some people might have an entity theory that would affect students’ reaction to the class or exercise programme” (Kasimatis et al., 1996; p. 515).

As far as we know, no study exists that examines the effects of instructors’ subjective theories on their performance as instructors. This will therefore be the focus of the present research. Specifically, our research is based on the assumption that subjective theories may also be a critical determinant of exercise course instructors’ behaviour, which in turn might affect participants’ motivation and compliance. Subjective theories held by exercise course instructors might assist or handicap them in supporting enduring motivation in their participants. It is hypothesised that subjective theories are dysfunctional when they are not in accord with the actual circumstances or needs of participants. For example, a participant might not feel emotionally supported by the course instructor when trying challenging exercises and discontinue the course for this reason.

Attributions as ingredients of subjective theories

A theoretical model useful for describing the content and functions of exercise course instructors’ subjective theories about participants’ dropout is Weiner’s (1985) attribution model. It attempts to explain an individual’s interpretation of achievement outcomes and to understand how that interpretation may influence his or her future behaviour. Attributions are explanations for everyday actions. Subjective reasoning employed by an individual to explain and understand achievements are commonly referred to as causal attributions. Empirical research has consistently reported the existence of at least three causal dimensions: Locus of causality, controllability, and stability (Biddle, 1993; McAuley, 1992).

Exercise course instructors can seek reasons for dropout predominantly in the environment (external locus of causality; e.g. laziness of participants) or within their own person (internal locus; e.g. my lack of competence to motivate people). Furthermore, instructors can assume dropout reasons which are controllable (e.g. specific components of the exercise programme) or not controllable (e.g. the location). These causal dimensions have important consequences for subsequent expectancies, emotions, and behaviours as illustrated in Fig. 1.

The present study focuses on the dimensions of location (external vs. internal) and control (controllable vs. not controllable). As McAuley (1992) pointed out, these dimensions are particularly relevant for the regulation of emotions. Emotion regulation, in turn, appears to be crucial for successful leadership performance as an exercise instructor as they may determine whether the instructor will engage in motivating behaviour or not. For instance, the attribution of a failure
(e.g. seeing several participants dropping out of the programme) to internal factors such as one’s personality may lead to resignation, and this may then result in a lower motivation to put effort into motivating participants to stay in the programme. We therefore focus on the dimensions of location and control in the present study.

**Behavioural consequences of attributions**

Making attributions can have various effects. It can induce emotions, raise expectancies, and may induce certain behaviours (McAuley, 1992). The focus here will be on behavioural consequences of attributions as we are interested in how the attribution of dropout affects instructors’ future performance in motivating participants. In an experimental study with students, Offermann, Schroyer, and Green (1998) analysed instructors’ attributions for the causes of subordinates’ performance. Study participants were assigned roles in a two-person assembly and had to work on a construction task. It was shown that attributions affected the way in which an instructor interacted with a subordinate. The authors noted that instructors may build up erroneous attributions for subordinate’s performance which, in turn, result in subsequent maladaptive reactions that may then hinder further improvement in performance (Offermann et al., 1998).

Studies in the domain of sport show that particular circumstances trigger typical attribution patterns (for a review see Biddle, 1993). In general, winners tend to make dispositional attributions for outcomes, whereas losers identify situational causes for outcomes. Success triggers internal attributions (e.g. ability), thereby enhancing one’s self-esteem, and failure triggers attributions that protect self-esteem (e.g. I did not try hard enough). This so-called ‘self-serving bias’ or ‘self-enhancement tendency’ (Willimczek & Rethorst, 1995) has been found frequently in sport attribution research. Though no studies have been conducted on self-serving biases in course instructors, the results on self-serving biases of athletes demonstrate the general principle underlying these self-protective cognitions.

A self-serving attributional bias can be maladaptive in the long run because the enduring neglect of one’s own responsibility for failure may inhibit attempts to optimise behaviour. Investigations on athletes show that such attributional biases may have negative consequences for future performance (Orbach, Singer, & Price, 1999) and exercise adherence (Biddle & Ashford, 1988; Brawley and Rodgers, 1993; McAuley, Poag, Gleason, & Wraith, 1990; Smith & Biddle, 1994). Similarly, exercise course instructors’ attributions may have positive or negative consequences for participants’ adherence and compliance to the programme depending on their attributions. Exercise course instructors may, for example, put more or less effort into preparing for the next meeting and this may then affect participants’ motivation to continue with the course.
Weiner (1985) notes that it would be too simplistic to believe that there are only unidirectional influences between attributions and behavioural consequences. Rather, attributions and behaviours can be assumed to influence one another. Specifically, consequences of behaviour most likely present a stimulus for new subsequent attributions (Boutcher, 1993). In this sense, dropout can be both the cause as well as the consequence of an instructor’s behaviour. Dann (1990) concluded that “subjective theories do not only serve a justifying function for otherwise guided behaviour, together with emotional processes they also fulfil important regulating of action. However, teachers’ actions and their consequences will introduce changes in subjective theories as well” (p. 240). The assumed interaction between cognitions and behaviour is shown in Fig. 2. The present study focuses on the relation between participant behaviour (i.e. dropout) observed by the exercise instructor and attributions of these to internal or external and controllable or uncontrollable reasons (see dotted arrow in Fig. 2).

An example might serve to illustrate the processes displayed in Fig. 2. For instance, an exercise instructor might notice that a number of participants are no longer coming to the course (observed participant’s behaviour). He or she begins searching for reasons for the dropout (course instructor’s attribution). This might lead to the conclusion that it can be attributed to particular features of the participant over which he or she has no control (e.g. their lack of will-power). Since this is an external and uncontrollable cause, the instructor might infer that all attempts to motivate this type of participant are useless; they see no need to critically reflect on his or her own instructional behaviour. For this reason, didactical shortcomings that could have contributed to the dropouts are not recognised and the exercise course instructor will not change their own behaviour (course instructor’s behaviour). This, in turn, could further decrease the motivation of the remaining participants (motivating effects on the participant) and result in even more participants leaving the programme. If this is noticed by the exercise course instructor, the circle is closed.

Course instructors may search for reasons for participants’ dropout from different perspectives.

![Fig. 2. Circle of interaction: course instructor’s cognitions and participant’s behaviour.](image-url)
On the one hand, they might ask as a spectator “What caused this participant to drop out?” This is an attribution to causes within other persons (Weiner, 1985). The course instructor might see his or her own importance — the instructors’ role — in this process. But as a spectator, the instructor’s behaviour is an external cause for the participant. On the other hand, the instructor might ask “How did I fail to motivate the participant?” In this case he or she asks from the self-perspective. The potential causes in their own behaviour as instructors would be an internal cause here, referred to as a self-attribution (Weiner, 1985). In the attribution literature, self and other attributions are distinguished. Self-referenced attributions refer to attributions a person makes to him or herself. Other-referenced attributions refer to attributions a person makes to other persons as a spectator. We are focusing in the present research on course instructors’ self-attributions for dropout as we assume these to have the strongest consequences for the quality of instructional or motivating behaviour. That is, the nature of the self-attributions should have especially strong effects on how course instructors try to motivate their participants and, in turn, how effective they will be at preventing dropout and attracting new participants to the programme. Self-attributions are assessed when asking, for example “How do you explain to yourself if participants do not come back to your programme?” This assesses reasons for dropout from the instructors’ perspective, and these types of attributions will be called self-attributions. Everything in the instructors’ own power and control is an internal cause (e.g. instructor’s capability). Reasons for dropout which lie within the participants (e.g. too inert participants) are, from the instructors’ perspective, external reasons as they are not in the instructors’ control. In sum, all causes within the instructor are defined as internal causes and all other causes (including causes within the participants) as external causes.

Based on Weiner’s theoretical assumptions (Weiner 1985, 1986) and empirical evidence from various areas of research (Biddle & Ashford, 1988; Kasimatis et al., 1996; McAuley et al., 1990; Smith & Biddle, 1994), it can be assumed that attribution patterns for dropout are related to the amount of future dropout. It is postulated that exercise course instructors who attribute dropout mainly to external and uncontrollable reasons (self-protecting attribution style) have higher dropout rates in their courses than exercise course instructors who attribute dropout to internal causes. This should be the case because course instructors who attribute dropout to external-uncontrollable reasons should be less likely to engage in active strategies to avoid it. In contrast, instructors who attribute dropout to internal-controllable reasons should report less dropout. This should be the case because they believe that they can positively affect participants’ motivation to stay in the programme, and are therefore more likely to work to participants. This should also pay off in their ability to attract new participants to the programme. The present study examines these hypotheses.

Method

Sample and procedure

A cross-sectional questionnaire study was conducted in collaboration with the State Sports Association of Berlin [Landessportbund Berlin]. Data on dropout are based on self-reports by the course instructors. No data from records (e.g. course lists) were available. As there are possibilities of reporting biases with self-reported dropout rates, results are interpreted with caution. Parti-
Participants were course instructors of recreational and health exercises groups. Exercise course instructors were contacted by mail (N=711). Of these, 343 responded (48.2% response rate). The final sample consists of 246 females (71.7%) and 91 males. Six respondents did not report their gender. Dropout analyses show that respondents do not differ with respect to gender distribution from non-respondents. The average age of the instructors was 41.6 years (SD=11.7, range=19–76). The sample has a comparably high educational status with 158 (46.1%) having a college degree [Fachhochschule/Universität] and an additional 140 (40.8%) have completed a professional education programme [Berufsfachschule] or an university-preparatory curriculum [Gymnasium].

Participants had been exercise professionals for an average of 11.5 years (SD=8.92). The individual variation for this item was high, ranging from just a few months to 47 years. On average, exercise course instructors offer 5.5 courses per week (SD=4.78) with a range from 0 (due to pregnancy) to 29 (professional exercise course instructors) classes per week. Almost half of the exercise course instructors (46.7%) have acquired the ‘second license’. This certificate represents a special instructional degree of the Federal or State Sports Association [Deutscher Sportbund/Landessportbund] for health/exercise programmes. Another 40.8% acquired the first license with less (8.8%) having no license at all.

**Questionnaire material**

The questionnaire consisted of eleven blocks of items with a total of 66 items asked about different domains of subjective theories. Specifically, questions were asked about the following areas: (a) subjective theories of exercise course instructors towards reasons for dropout of their participants; (b) subjective theories about motivational strategies and motivational mistakes; (c) expectations regarding their own self-efficacy; (d) evaluations of the importance of different exercise course instructor competencies; and (e) further evaluations of themselves. All but two questions were asked with closed response formats.

**Measures**

**Attributions**

In order to develop attributions for dropout that had high external validity for the domain of exercise, semi-structured interviews with exercise professionals were conducted. From the interviews statements were extracted that were mentioned most often by the exercise professionals and which corresponded with the two attributional dimensions. For the final list of attributions, items were selected such that half of the reasons described external and half internal reasons, and half described controllable and half uncontrollable reasons.

To assess these attributions, participants were asked: “How do you explain to yourself if participants do not come back to your programme? For each of the following statements please assess how much you agree with them”. A list of eight different explanations was then presented and assessed on a 5-point rating scale ranging from ‘does not apply at all’ (1) to ‘completely applies’ (5). Three of these items belong to the external-uncontrollable dropout causes group of attributions (“This is chance, and there is nothing one can do about it”, “These participants are too inert; this is beyond our control” and “These participants simply do not fit in this group; this cannot be changed”). External-controllable items were not included because it was not possible to come up
with plausible examples for this combination. Therefore, differentiation between controllable and uncontrollable reasons was only possible for internal reasons. Two items referred to internal-uncontrollable causes (“I am not capable of working with such people” and “I was not always at my best, but that’s how it is”). Finally, three items served to assess internal controllable attributions for dropout (“The location of the exercise facility is inconvenient for participants; I could have organised a better location”, “I did not try hard enough to give instructions that are easy to understand” and “I did not try hard enough to support these participants according to their needs”). Table 1 presents the items and descriptive statistics. Corrected item — total correlation coefficients ($r_{it}$=0.21–51) indicated moderate reliability.

**Development of course size**

To determine the development of the number of participants in the class in the past two to three months two estimates are used: (a) the base rate (“How many participants came to the first few sessions of your course after the summer break [August]?”) and (b) the current number of participants (“How many people participate regularly in your programme at present?”). This number, which results from subtracting the base rate from the present participant rate, is the size $K$ and is used to identify two different groups of exercise course instructors: those instructors who report an increase in participants ($n=155$) and those for whom the number of participants remained the same ($n=86$) or decreased ($n=84$). $K$ is not used as a continuous measure because the influence of a tendency to give socially desirable responses to the question is probably strong.

Table 1: Characteristics of items assessing reasons for dropout. Total sample (note: $M$=mean; $SD$=standard deviation, $r_{it}$=corrected item — total correlation. Items are ordered by average degree of endorsement (means). This order does not reflect the order in which the items were presented in the questionnaire).

<table>
<thead>
<tr>
<th>Item wording</th>
<th>$M$ (SD) ($n$=316)</th>
<th>$r_{it}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. These participants are too inert; this is beyond our control</td>
<td>2.50 (1.25)</td>
<td>0.42</td>
</tr>
<tr>
<td>2. This is chance, and there is nothing one can do about it</td>
<td>2.43 (1.29)</td>
<td>0.21</td>
</tr>
<tr>
<td>3. These participants simply do not fit in this group; this cannot be changed</td>
<td>2.31 (1.20)</td>
<td>0.45</td>
</tr>
<tr>
<td>4. I did not try hard enough to support these participants according to their needs</td>
<td>1.87 (0.89)</td>
<td>0.51</td>
</tr>
<tr>
<td>5. The location of the exercise facility is inconvenient for the participants; I could have organised a better location</td>
<td>1.78 (1.10)</td>
<td>0.24</td>
</tr>
<tr>
<td>6. I was not always at my best, but that’s how it is</td>
<td>1.76 (0.91)</td>
<td>0.48</td>
</tr>
<tr>
<td>7. I am not capable of working with such people</td>
<td>1.63 (0.88)</td>
<td>0.50</td>
</tr>
<tr>
<td>8. I did not try hard enough to give instructions that are easy to understand</td>
<td>1.46 (0.68)</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Sample sizes vary slightly because of missing values; the reported values apply to the smallest sample size respectively. 5-point rating scale: ‘1’= does not apply at all’ to ‘5= applies completely’.

---

1 Time of assessment was November 1998.
2 18 instructors did not report participant numbers. Therefore they are not included in the following analyses.
A continuous variable would convey more precision than probably exists. For the most part, the course size measure can be regarded as a reflection of the attractiveness of the course.

It may be surprising that about 48% (155–325) of the exercise course instructors reported an increase in number of participants because it is usually found that course size of exercise programmes decreases with time. The explanation for this is found in the specific structure of the health and leisure exercise programmes examined. These programmes remain ‘open’ to further participants even after the course has officially started after the summer break. Often participants join a programme that has already been running for several weeks. They may hear about it from friends who participate in the course or learn about it in another way. It should be kept in mind that the course size data are self-reported, with the possibility of self-presentation biases. This possibility will be discussed in more detail later.

**Results**

**Analyses on single items**

Table 1 shows how exercise course instructors explain to themselves why participants do not return to their programme. The table also shows corrected item — total correlations. The higher the values, the more the instructors agreed with the respective dropout reason. The means tend to be in the lower part of the 5-point scale, indicating that none of the dropout reasons received particularly high endorsement.

Overall, the reason for dropout “The participants are too inert; against that we are powerless” received the most support. The explanation “I did not try hard enough to give instructions that are easy to understand” got least endorsement. Altogether, external attributions (Items 1–3) received more endorsement than internal attributions (Items 4–8).

Table 2 also presents the descriptive statistics for the various reasons for dropout separately for men and women. Men were more likely to endorse internal reasons and women external reasons. Younger instructors tended to endorse all reasons for dropout to a larger extent than older instructors. Attributions were unrelated to the length of experience.

**Construction of attribution indices**

As outlined above, the eight attributions can be organised according to the dimensions of ‘external/internal’ and ‘uncontrollable/controllable’. Based on this classification, three indices were constructed by combining the respective items. The index ‘external causes’ is based on the means of items 1, 2, and 3 (see Table 1). Its internal consistency was $\alpha=0.55$. Items 6 and 7 were combined to form the index ‘internal-controllable causes’ ($\alpha=0.54$). The remaining three items (4, 5, and 8) formed the basis for the index ‘internal-controllable causes’ ($\alpha=0.60$). The internal consistency coefficients reflect, in part, the low number of items available for each of the indices. Table 3 shows the descriptive statistics for the attribution dimensions.

Exercise instructors were more likely to endorse external causes than internal ones. Internal-uncontrollable and internal-controllable causes were assigned comparable importance. Men and younger people tend to use more internal causal attributions than women and older people. Course
Table 2
Means (and standard deviations) of the assessed reasons for dropout

<table>
<thead>
<tr>
<th>Item wording</th>
<th>Gender</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (n^a=84)</td>
<td>Female (n=329)</td>
</tr>
<tr>
<td>1. These participants are too inert; against that we are powerless</td>
<td>2.21* (1.18)</td>
<td>2.59* (1.25)</td>
</tr>
<tr>
<td>2. This is chance, and there is nothing one can do about it</td>
<td>2.44 (1.31)</td>
<td>2.42 (1.29)</td>
</tr>
<tr>
<td>3. These participants simply do not fit in this group; this cannot be changed</td>
<td>2.43 (1.19)</td>
<td>2.26 (1.20)</td>
</tr>
<tr>
<td>4. I did not try hard enough to support these participants according to their needs</td>
<td>2.07* (1.08)</td>
<td>1.78* (0.94)</td>
</tr>
<tr>
<td>5. The location of the exercise facility is inconvenient for the participants; I could have organised a better location</td>
<td>1.88 (1.13)</td>
<td>1.74 (1.10)</td>
</tr>
<tr>
<td>6. I was not always at my best, but it is like it is</td>
<td>1.87 (0.97)</td>
<td>1.71 (0.89)</td>
</tr>
<tr>
<td>7. I am not capable to work with such people</td>
<td>1.81* (0.96)</td>
<td>1.56* (0.85)</td>
</tr>
<tr>
<td>8. I did not try hard enough to give instructions that are easy to understand</td>
<td>1.63** (0.80)</td>
<td>1.39** (0.62)</td>
</tr>
</tbody>
</table>

\(a\) Sample sizes vary slightly because of missing values; the reported values apply to the smallest sample size respectively. Significant differences between means: \(*p<0.05; **p<0.01; 5\)-point rating scale: ‘1= does not apply at all’ to ‘5= applies completely’.

Instructors have the tendency to give less internal controllable attributions the more experience they have \((p<0.10)\). Individuals who have been course instructors since 1990 attributed causes of dropout more often to internal uncontrollable reasons than other reasons \((p<0.05)\).

Attributions and changes in course size

Table 4 presents the correlation matrix for the three attribution indices. As expected, the two internal attribution dimensions correlate most highly with each another while the lowest corre-
Table 3
Means (and standard deviations) of the attribution indices (note: change as above: the items are ordered by size (means on average); this sequence is not according to the one in the course instructor’s questionnaire)

<table>
<thead>
<tr>
<th>Index</th>
<th>Gender</th>
<th>Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total (n=313)</td>
<td>Male (n=83)</td>
<td>Female (n=226)</td>
<td>19–35 years (n=107)</td>
</tr>
<tr>
<td>External causes</td>
<td>2.39 (1.02)</td>
<td>2.30 (0.97)</td>
<td>2.41 (1.03)</td>
<td>2.49 (1.02)</td>
</tr>
<tr>
<td>Internal-controllable causes</td>
<td>1.69 (0.66)</td>
<td>1.87** (0.74)</td>
<td>1.62** (0.62)</td>
<td>1.82** (0.67)</td>
</tr>
<tr>
<td>Internal-uncontrollable causes</td>
<td>1.69 (0.76)</td>
<td>1.83* (0.84)</td>
<td>1.63* (0.72)</td>
<td>1.76* (0.73)</td>
</tr>
</tbody>
</table>

* The sizes of sample varies slight because of missing values; the reported values apply to the smallest sample size respectively; significant differences between means *p<0.05; **p<0.01.

A relationship is found between the indices for external and internal-controllable reasons. This supports the notion of relative independence of the examined causal attributions for dropout.

As shown in Table 4, there is no relationship between the three attribution dimensions and the dichotomous index of change in course size. Neither the hypothesis of a negative relation between the preference for external attributions and change in number of participants nor the expectation that internal attributions are more closely related to an increase in number of participants were supported. A simple assessment of possible dropout reasons obviously cannot explain the change in number of participants. Further analyses were therefore conducted to examine whether certain attribution patterns can better explain differences in course size changes. Using cluster analysis, it was first tested whether different types of exercise course instructors can be distinguished according to the attributions they use.

Classification of exercise course instructors as a function of preferred attribution patterns

It was hypothesised that three different types of exercise course instructors can be distinguished: (1) instructors who mainly attribute dropout to external-uncontrollable causes; (2) instructors who

Table 4
Intercorrelations (Pearson) of the attribution’s indices and correlations (Kendall’s Tau) between attribution indices and the dichotomous measure of the change in number of participants

<table>
<thead>
<tr>
<th></th>
<th>External causes</th>
<th>Internal-uncontrollable causes</th>
<th>Internal-controllable causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>External causes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal-uncontrollable causes</td>
<td>0.37**a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal-controllable causes</td>
<td>0.27**a</td>
<td>0.52***a</td>
<td></td>
</tr>
<tr>
<td>Increase in number of participants (yes=1; no=0)</td>
<td>-0.05b</td>
<td>-0.10*b</td>
<td>-0.03*b</td>
</tr>
</tbody>
</table>

* Pearson’s correlation; N=309–313; **p<0.01.

b Kendall’s-Tau; N=301–305; *p<0.10.
mainly attribute dropout to internal-uncontrollable causes; and finally (3) instructors who mainly attribute dropout to internal-controllable causes. A cluster analysis was conducted to test this hypothesis. Cluster analysis allows the classification of individuals into groups. The aim is to partition groups such that the differences between participants within one group are minimised and differences between participants of different groups are maximised.

A $k$-means cluster analysis was pursued because a certain number of clusters were theoretically predicted. This method starts with a stated number ($k$) of fixed clusters and allows each individual to be moved from its current cluster to another cluster. Subjects are moved between clusters until it becomes impossible to improve the clustering (Taylor, 1999).

A $k$-means cluster analysis was compiled, with $k=3$ clusters. The cluster analysis groups individuals using an algorithm for performing the $k=3$ groups (iterate and classify). This is done until an optimum grouping is reached, using a maximum of 10 iterations per grouping trial. The cluster solution reached after 10 iterations for each trial is reported below. The maximum distance by which any centre has changed is 0.05, the minimum distance between initial centres is 6.48. Cluster memberships were saved, and cases were excluded listwise.

Data from 38 individuals had to be excluded from the analysis because of missing data on one or more of the items. These individuals did not differ according to gender, level of education, experience as course instructors, or kind of licence from the rest of the sample. The only meaningful difference was found for age: Exercise instructors with missing data were, on average, 4.3 years older than the remaining participants ($p=0.03$).

The cluster analysis revealed three meaningful clusters of exercise course instructors. Distances between final cluster centres were 2.56 (clusters 1 and 3), 2.99 (clusters 1 and 2) and 3.21 (clusters 2 and 3). Table 5 presents the mean estimates of causal attributions separately for the three clusters. It can be seen that people belonging to cluster 1 evaluate external reasons (Items 1–3) as more important for the explanation of dropout than people belonging to one of the other two clusters. Individuals from cluster 2 provide low endorsements for all dropout reasons. Finally, people from cluster 3 give medium-level endorsement to the reasons for dropout. Fig. 3 illustrates the results for the items aggregated into three indices according to the three clusters.

Fig. 3 shows that exercise course instructors of Type 1 attribute dropout more to external causes

Table 5
Cluster analysis: mean estimations (and standard deviations) of causal attributions separately for the three clusters

<table>
<thead>
<tr>
<th>Items (abbreviated)</th>
<th>Cluster 1 ($N=77$)</th>
<th>Cluster 2 ($N=134$)</th>
<th>Cluster 3 ($N=94$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Participants too inert</td>
<td>3.61 (1.04)</td>
<td>1.54 (0.70)</td>
<td>2.82 (0.99)</td>
</tr>
<tr>
<td>(2) Chance</td>
<td>3.34 (1.25)</td>
<td>1.87 (1.03)</td>
<td>2.33 (1.10)</td>
</tr>
<tr>
<td>(3) Participants do not fit in this group</td>
<td>2.96 (1.16)</td>
<td>1.51 (0.74)</td>
<td>2.76 (1.08)</td>
</tr>
<tr>
<td>(4) I did not try hard enough</td>
<td>1.60 (0.73)</td>
<td>1.28 (0.60)</td>
<td>2.79 (0.80)</td>
</tr>
<tr>
<td>(5) I could have organised a better location</td>
<td>1.40 (0.85)</td>
<td>1.43 (0.85)</td>
<td>2.47 (1.13)</td>
</tr>
<tr>
<td>(6) I was not always at my best</td>
<td>1.79 (0.86)</td>
<td>1.26 (0.50)</td>
<td>2.35 (0.98)</td>
</tr>
<tr>
<td>(7) I am not capable</td>
<td>1.32 (0.57)</td>
<td>1.19 (0.44)</td>
<td>2.53 (0.94)</td>
</tr>
<tr>
<td>(8) I did not try hard enough</td>
<td>1.31 (0.54)</td>
<td>1.18 (0.44)</td>
<td>1.97 (0.77)</td>
</tr>
</tbody>
</table>
than the other two types of instructors. This group difference is statistically significant (index ‘external causes’: $F(2,302)=195.07, p<0.01$). Hence, this group represents the postulated externally attributing type of instructor who shows the typical self-serving bias. Therefore, this type will be called the ‘self protecting type’. Exercise instructors of Type 2 evaluate all reasons to be of lower importance than do the other two clusters of instructors. This type is labelled the ‘disregarding type’. Exercise instructors from cluster 3 evaluate both external and internal causes as having moderate importance. Members of this group attribute dropout more to internal reasons than members of the other two groups. They evaluate controllable and uncontrollable reasons as similarly important (internal-controllable: $M=2.41$, $SD=0.55$; internal-uncontrollable: $M=2.44$, $SD=0.70$). Hence, this group tends to attribute dropout more to internal causes than the others. However, they also regard external reasons as important. In sum, members of this group are not strictly engaging in one versus the other type of attribution. Rather, they might attribute differently depending on the context and the specific situation of each participant. Consequently, individuals in this cluster are called the ‘adaptive type’.

In summarising the results of the cluster analysis, 77 exercise course instructors (22.5%) represent the external/self-protecting type, 94 (27.4%) belong to the adaptive type, and 134 (39.1%) to the disregarding type (Table 5). Table 6 shows how the three types differ in terms of gender and age. There are clear differences in the gender distribution among the three groups. More women belong to the disregarding type while men are distributed equally between the disregarding and adaptive type. Furthermore, the proportion of women in the self-protecting type is high. There are no systematic differences in terms of age or length of experience as course instructor.

Attribution types and changes in course size

The dichotomous variable ‘change in number of participants’ was used to test for differences between the three groups of instructors in terms of changes in group size. It tells whether an exercise course instructor reported an increase in the number of participants or not. Of the self-protecting type, 41% reported an increase of participant numbers, while for the group of disre-
Table 6
Characteristics of the course instructor types

<table>
<thead>
<tr>
<th>Type</th>
<th>Gender (Number)</th>
<th>Age in years M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (self-protecting)</td>
<td>12 (SD=76)</td>
<td>41.10 (10.64)</td>
</tr>
<tr>
<td>2 (disregarding)</td>
<td>37 (n=132)</td>
<td>42.04 (12.13)</td>
</tr>
<tr>
<td>3 (adaptive)</td>
<td>33 (n=93)</td>
<td>39.88 (11.33)</td>
</tr>
<tr>
<td>Total (N=301)</td>
<td>82 (n=219)</td>
<td>41.61 (11.68)</td>
</tr>
</tbody>
</table>

* Sample sizes vary slightly because of missing values; the reported values apply to the smallest sample size respectively. Bold printed numbers indicate a significant association ($\chi^2 (2, N=301)=8.26, p<0.05$).

Regarding instructors the figure was 45%. On the other hand, 56% of the adaptive type instructors reported an increase in participant numbers. Contrast analyses for frequency data (Rosenthal and Rosnow, 1985) revealed a significant difference between the disregarding and adaptive exercise course instructors ($Z=-1.56, p<0.06$). Specifically, adaptive instructors were more likely to report an increase in the number of participants than disregarding instructors. In addition, adaptive instructors were more likely to report an increase in the number of participants than self-protecting instructors ($Z=1.92, p<0.03$). However, the difference between self-protecting and disregarding exercise course instructors was not statistically significant ($Z=0.58, p=0.28$).

Fig. 4 illustrates the change in number of participants for the three groups of exercise instructors. Self-protecting instructors were least likely to report an increase in course size while adaptively attributing exercise instructors were most likely to report an increase.

![Bar graph](image-url)  

**Fig. 4.** Amount of instructors who reported an increase in number of participants as a function of type of course instructor.
Discussion

The present study examined causal attributions of exercise course instructors using Weiner’s (1985) attribution model hypothesising that course instructors’ subjective theories about dropout reasons are related to their motivated behaviour. Therefore, instructors of health and leisure exercise courses were questioned about their subjective theories of dropout, and the relationship between dropout theories and attrition rates was examined.

Overall, the findings provide answers to the following three questions: (1) What are the prominent subjective theories that exercise course instructors use to explain dropout? (2) Can different types of exercise course instructors be distinguished according to their preference for certain attribution styles? and (3) How successful are different types of exercise course instructors in increasing the number of participants in their classes? The findings regarding each of these questions will now be discussed.

What are the prominent subjective theories that exercise course instructors use to explain dropout?

Our results confirm what has been found in various areas of attribution research that critical or negative events tend to be attributed to external causes. Exercise course instructors attributed the negative event of ‘dropout’ mainly to external, uncontrollable reasons. This can be regarded as a ‘self-serving bias’ and is typical for the attribution of negative events (Willimczek & Rethorst, 1995). Hence, attributional strategies that protect or enhance self-esteem also operate in the area of exercise programmes (see also Biddle, 1993).

Attributions and control beliefs play an important role in the motivational and volitional processes of action regulation (Armitage & Conner, 2000; Brawley & Rodgers, 1993). In the short-term, self-serving attributions might help the individual to cope with immediate negative events that impede the accomplishment of tasks (McAuley et al., 1990; Orbach et al., 1999). In the long run, however, self-serving biases eventually lead to inadequate perceptions of reality and can reduce optimal functioning. Realising that dropout from exercise programmes can have many different causes is of critical importance for adaptive instructional behaviour (Marcus et al., 1997).

Our results show that exercise course instructors prefer external explanations of participants’ dropout. This suggests that instructors are often not sufficiently aware of their mediating role in the processes that create enduring exercise adherence. Extended information on motivational factors and possible strategies that instructors could use to successfully keep their clients in their programmes should be more explicitly provided in the education of instructors (Rinne & Toropainen, 1998; Smith & Biddle, 1995). In sum, exercise course instructors’ subjective theories about dropout are biased towards an external attributional style. A more self-critical appraisal of one’s own contributions to participant dropout may help improve exercise adherence.

What types of exercise course instructors can be distinguished according to their attribution styles?

According to their preference for a certain attribution style, three types of exercise course instructors were distinguished: (a) the self-protecting type, characterised by attributing dropout
mainly to external causes; (b) the adaptive type, who considers internal as well as external causes to the same extent as possible explanations for dropout; (c) and the disregarding type, who seeks reasons neither in internal nor in external causes.

The label ‘disregarding’ was chosen to illustrate that these instructors disagreed with most of the supplied reasons for dropout. One explanation might be that these are instructors who have low expectations regarding their ability to motivate and keep participants in their programme. This is in accord with Weiner’s (1985) assumption concerning causal explanation after an evaluation of consequences. People will seek attributions if a consequence is unexpected or negative (Weiner, 1985). In addition, course instructors of the ‘disregarding type’ may not perceive dropout as a personal failure. This could be the case either because they simply do not notice the dropout or because it does not make them feel particularly harmed. Because of this they do not seek explanations. In comparison, course instructors of the adaptive and self-protecting type may perceive dropout to a greater extent as an event that requires an active search for explanations. They are more likely to recognise internal and/or external reasons as possible causes for the dropout. How this might be connected to self-reported dropout will be discussed below.

How successful are the different types of exercise course instructors in terms of increase in the number of participants?

It was expected that an instructor’s explanation for dropout would influence his or her ability to motivate participants to stay in the programme or to encourage additional individuals to join the programme. The findings support this hypothesis. Self-protecting course instructors are least likely to report an increase in course size, and adaptively attributing instructors are most likely to report an increase. These results should be interpreted with caution as the measure of course size development is self-reported and may be biased by self-presentational tendencies. Future research using more objective measures of dropout or changes in course size will reveal whether this finding is reliable. Nevertheless, it is in accord with results in other areas. Offermann et al. (1998) found that instructors’ attributions for causes of performance of their subordinates affected how they subsequently interacted with them. In particular, failures of subordinates attributed to internal causes were more likely to be punished than failures due to external causes.

In the case of exercise course instructors, it can be assumed that instructors who attribute dropout to external-uncontrollable causes (‘self-protecting type’) are less able to motivate participants to stay in the programme or to attract new ones. This was assumed because course instructors who attribute dropout to external-uncontrollable reasons should be less likely to engage in active strategies to motivate participants. These instructors do not believe that they can prevent participants from dropping out by their own behaviour.

It was found that the ‘adaptive type’ of instructor was most likely to report an increase in participants. Adaptive instructors are most successful in attracting and keeping participants. This might be because they manage to recognise individuals at risk of dropping out and to successfully approach and resolve the problems or concerns of these participants. Such instructors tailor their motivational behaviour to the individual needs of their participants. For example, they could come to realise that some participants may be best motivated by creating opportunities for experiencing pleasure and satisfaction in the process of exercising while others are more driven by receiving
feedback about their performance (Ingledew, Markland, & Medley, 1998). They may then act accordingly by enabling such experiences during their programme (Laitakari & Miilunpalo, 1998).

There were no exercise instructors in the sample who predominantly attributed dropout to internal reasons. Such a negative attributional style would likely result in negative emotions and unfavourable cognitions about one’s capabilities as an exercise course instructor. It can therefore be assumed that course instructors who experience these negative affects either change their attributions (e.g. begin to externalise reasons for dropout) or quit their job as course instructors (Kelley, Eklund, & Ritter-Taylor, 1999; Orbach et al., 1999). In sum, not finding instructors with a predominantly internal attribution style could be the result of a selective dropout of such instructors.

Since the present study used a cross-sectional design, it is not possible to determine to what extent the exercise course instructors’ attributions caused the participants’ behaviour (e.g. dropout). Furthermore, it is unclear to what extent the participants’ behaviour influenced the instructors’ preferences of attribution (see Fig. 2). However, it is likely that both causal processes do operate, maybe at different times within the same social context. The theoretical focus of this paper is on the causal effects of exercise instructors’ attributions on participants’ behaviour. Nevertheless, it remains unexamined whether a particular attribution style of an instructor may itself be the result of the behaviour of his or her participants (cf. Biddle, 1999). Only following up course instructors and their participants over time will allow insights into the causality of these dynamics.

Moreover, it must be taken into account that the subjective measure ‘number of course participants’ may be biased by the exercise course instructors’ attributional style. It can be argued that instructors who report mainly external reasons for dropout (self-protecting type) have the least problems in admitting dropout in a questionnaire. After all they do not seek reasons for the dropout in their own performance as instructors. Hence, it could be assumed that the reports of these instructors are comparably more valid than those of the other two types (adaptive and disregarding). The latter two types of instructors may systematically underestimate the number of participants who drop out of their programme and overestimate the number of newly attracted participants.

In sum, the reliability of the course size measure at this point is unknown, and the reported results should be replicated in future research using more objective measures of dropout or changes in course size. In addition, we cannot be sure whether the reported subjective theories reflect what exercise course instructors truly think in their everyday life as instructors. To what extent endorsements of presented reasons in a questionnaire actually measure attributions instructors would spontaneously use remains an open question (Biddle, 1993; Möller, 1997).

Our findings are from exercise instructors working with groups of participants. The results cannot readily be generalised to other types of exercise instruction, for example to instructors working with individuals (e.g. personal trainers in fitness clubs). Working one-on-one with an individual may increase the general tendency to form attributions about the client’s behaviour. After all, the feedback the instructor receives is much more direct and it is more likely that internal reasons are sought when a client decides to stop the personal training. Hence, data in other areas of exercise instruction have to be collected before our results can be generalised.

To summarise, the findings suggest that attributions of exercise course instructors are important for motivating participants to stay in the programme. Therefore, instructors should be trained to
attribute participant dropout in a realistic and flexible manner (adaptive style). Attribution research suggests that exercise course instructors can admit internal reasons for dropout easiest if they see possibilities to change these internal (personal) shortcomings (McAuley, 1992). Educating instructors to motivate their participants individually is therefore of critical importance. Instructors should be supported in becoming more sensitive to identifying participants at risk of dropping out and helping them to overcome motivational difficulties. This means that the phenomenon of dropout in exercise programmes is not only a motivational problem of participants but also a function of adequate training and education of course instructors.

Acknowledgements

We would like to thank all the people who assisted us in realising this study. Particular gratitude is extended to the State Sports Association of Berlin [Landessportbund] for their technical support and to all exercise course instructors who participated in the study.

References


