EMOTIONS AND ACHIEVEMENT GOALS IN PHYSICAL ACTIVITY: A META-ANALYSIS

Nikos Ntoumanis
School of Education, University of Exeter, Exeter, U.K.

INTRODUCTION

The context of physical activity is characterised by a great variety of affective reactions which vary in hedonic tone and degree of activation. For this reason, affect (emotion) has become an increasingly popular topic in the sport psychology literature. Although Lazarus (1991) has maintained that affect and emotion have subtle differences, in the physical activity literature the two variables have been referred to and measured synonymously. An influential model of affect that categorises emotions into higher order dimensions is that by Watson and Tellegen (1985). In this model there are two higher order unipolar factors (positive affect and negative affect) each portrayed on a dimension ranging from low to high. Although Lazarus (1991) has argued that emotions should be examined as discrete variables and not be reduced to a small number of dimensions, both the discrete and dimensional analyses of emotions are useful depending on the focus of a study (Diener, Smith, & Fujita 1995).

Emotion is closely linked with the area of motivation. In the recent past, social cognitive theories (e.g. Nicholls, 1989) have been used to examine the relationships between motivational processes and emotional outcomes in physical activity. Specifically, these theories argue that individuals who base their ability on normative standards (ego-oriented) are likely to experience high negative and low positive affect, especially those who hold perceptions of low competence. In contrast, individuals who judge their ability with personal criteria (task-oriented) are likely to experience high positive and low negative affect. In the literature there are several studies which have confirmed these hypothesised links between achievement goals and affect, while many other studies have not offered such support. The purpose of the present study was, therefore, to shed light on this conflicting evidence by statistically synthesising, through the use of meta-analysis, research findings from studies that have examined the relationships between achievement goals and affect (emotion) in physical activity settings.

METHOD

The relevant studies were identified by means of both computer and manual searches. From an original pool of 53 studies, 32 studies (a total of 35 samples; N=7009) with the appropriate statistical information were subjected to meta-analysis. A list of these studies can be obtained from the author on request. For each study the following information was coded: number of participants, gender, age, nationality, publication status, questionnaire used to measure achievement goals, types of positive and negative affect, physical activity setting, and whether affect was measured independent of context or after an athletic event. The analysis was carried out according to Hunter and Schmidt's (1990) procedures for meta-analysis. Specifically, these emphasise that there are many kinds of error or "artifacts" in the results of primary studies which can attenuate the magnitude of the population or "real" correlation between two variables, and artificially increase its variance. The present study, in line with recent meta-analyses in other areas of psychology, has corrected for sampling error and measurement error, the two major artifacts in primary studies, using artifact distribution analysis (Hunter & Schmidt, 1990). Population correlations were judged to be homogeneous when their credibility interval was small, or when the corrected variance accounted for at least 75% of the observed variance (75% rule).
RESULTS

Our interest was on four correlations: task orientation-positive affect (PA), task orientation-negative affect (NA), ego orientation-positive affect, and ego orientation-negative affect. The Table below presents the following information for the four correlations that were meta-analysed: total sample size (N), number of independent samples (K), mean correlations corrected for sampling error (r) and measurement error (p), corrected variances, credibility and confidence intervals, and the 75% rule.

<table>
<thead>
<tr>
<th>Correlation</th>
<th>N</th>
<th>K</th>
<th>r</th>
<th>p</th>
<th>Variance</th>
<th>Cred. Int.</th>
<th>Conf. Int.</th>
<th>75%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task-PA</td>
<td>5244</td>
<td>27</td>
<td>.37</td>
<td>-.56</td>
<td>.019</td>
<td>.95</td>
<td>.17</td>
<td>.42 to .31</td>
</tr>
<tr>
<td>Task-NA</td>
<td>5922</td>
<td>30</td>
<td>.10</td>
<td>.17</td>
<td>.015</td>
<td>.22</td>
<td>.06 to -.15</td>
<td>.06 to .15</td>
</tr>
<tr>
<td>Ego-PA</td>
<td>5244</td>
<td>27</td>
<td>.06</td>
<td>.09</td>
<td>.005</td>
<td>.38</td>
<td>.20</td>
<td>.10 to .02</td>
</tr>
<tr>
<td>Ego-NA</td>
<td>5922</td>
<td>30</td>
<td>.03</td>
<td>.04</td>
<td>.002</td>
<td>.17</td>
<td>.09</td>
<td>.05 to 0</td>
</tr>
</tbody>
</table>

Drawing on the responses of a sample size that was larger than in many other meta-analyses, this study found that the links between achievement goals and emotions are small (with the exception of the task orientation-positive affect relationship) and heterogeneous (with the exception of the ego orientation-negative affect relationship). A subsequent moderator analysis on the heterogeneous correlations showed that the task orientation-negative affect relationship was greater when low arousal (e.g. boredom) rather than high arousal (e.g. tension) negative affect was experienced. Furthermore, the task orientation-positive affect relationship was higher in school physical education than in recreational settings. Also, when negative and positive affect were measured independent of context as opposed to post-exercise emotional experiences, they correlated more highly with achievement goals. A full matrix of the meta-analysed correlations between achievement goals and affect was inserted into a structural equation modelling analysis in order to examine whether the relationship between any two variables would change in the presence of the other variables in the model. This was not the case since the path coefficients had quite similar values to those of the meta-analysed correlations. DISCUSSION

The findings showed that, with the exception of the task orientation-positive affect relationship, the impact of achievement goals on emotional experiences of physical activity participants is smaller than has sometimes been suggested. Furthermore, the moderator analysis indicated that in order to better understand the links between achievement goals and emotions, research should take into account the felt arousal of negative emotions, the different settings of physical activity, and the time frame that affect is measured. An important limitation of the primary studies is that they did not examine Nicholls's (1989) predictions regarding how perceptions of competence influence the experience of positive and negative affect by ego-oriented individuals. Furthermore, if more primary studies had employed goal profiles analysis, the impact of different combinations of task and ego orientations on affect could have been meta-analysed. In order to have a more comprehensive view of the emotion-achievement motivation relationship from a social cognitive perspective, future meta-analyses should synthesise findings on the links between motivational climates and emotions.

REFERENCES
