Association of Exercise Identity with Measures of Exercise Commitment

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Association of Exercise Identity with Measures of Exercise Commitment and Physiological Indicators of Fitness in a Law Enforcement Cohort

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Role-identities are integral parts of the concept of self. Sociological traditions suggest that they serve to give meaning and importance to past behavior as well as providing direction for future behavior. This investigation examined the relationship of Exercise Identity with: age of subject, three measures of exercise commitment, and three physiological indicators of fitness. Data were collected from 448 of the 531 (84%) law enforcement personnel of a state department of public safety during annual physical exams at the university fitness clinic. Ninety-eight percent of the subjects self-identified as Caucasian and 96% were male (mean age = 39, range 21-63). Exercise Identity was measured by the sum of nine Likert-scaled items designed to measure the extent to which exercise was descriptive of their concept of self (α = .94). Stepwise regression analysis indicated that the behavioral measures (minutes per week of exercise, number of weeks of exercising, and level of perceived exertion) and physiological indicators (muscular endurance, percent body fat, and VO₂peak all standardized for age and gender) and age were significantly associated with Exercise Identity (overall $R^2 = .54$). The contribution of total cholesterol/HDL ratio was non-significant. This evidence supports the theory of reciprocal determinism between exercise behavior and Exercise Identity, while suggesting the possibility of an identity-reinforcing role for physical fitness. These data provide insight into the sociopsychological process underlying maintenance and expansion of exercise activities.

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Contemporary health and lifestyle promotion efforts continue to emphasize the importance of regular physical exercise. In spite of the documented benefits of participation in exercise, research continues to show that only one-fourth or less of United States and Canadian adults regularly participate in vigorous exercise (Oldridge, 1984; Powell, Spain, Christenson, & Mollenkamp, 1986; Stephens, Jacobs, & White, 1985). This high level of inactivity results in considerable economic and social costs to both individuals and businesses—most notably as a risk in CHD (“Coronary Heart Disease Attributable,” 1990; Kaman, 1995; Keeler, Manning, Newhouse, Sloss, & Wasserman, 1989; Wood, Collins, Halaney, Workinger, Olmstead, & Craig, 1986; Baum, Bernacki, & Tsai, 1986; Iverson, Fielding, Grow, and Christenson, 1985; Martin & Dubbert, 1986; Steinhardt & Corrier, 1989; Wilson, 1986). Low participation and persistence in exercise programs has led researchers to explore a number of theoretical models including social cognitive theory, personal investment theory, the health belief model, and the theory of reasoned action or theory of planned behavior as a basis for explaining the process of adopting exercise as part of one’s lifestyle. To date, this research has met with only limited success (Dishman, 1990).

This investigation explored the relationship between role-identities and adherence to exercise behavior. Some behavioral scientists suggest that, as integral parts of one’s concept of self, role-identities help individuals give meaning and value to their past behavior as well as provide direction for future behavior. Thus, role-identities motivate or stimulate behaviors that have meanings consistent with the identity. By their very nature, however, role-identities accommodate the social nature of past experience. As social objects, role-identities are necessarily shared, are socially recognized, and are defined by action. In this manner a role-identity serves as a link between a person’s concept of self and society. Becker (1960), Blumer (1969), Goffman (1963), Stryker and Serpe (1982), and Stone (1970), along with many others, have discussed how the social nature of identities leads past behavior to constrain and restrict future actions.

Based upon these ideas, it is hypothesized that, as people perform rituals associated with their role-identities acting out some aspect of the role of exerciser, and display positive changes in their fitness, they may, through social interaction, have their identity as exerciser reinforced and validated. Simultaneously, this validation of the role-identity could increase the likelihood of exercise-related behaviors in the future. Once behaviors associated with a role-identity such as exerciser have been initiated or mobilized by a person and are recognized and reinforced by others, they are poised to become important to one’s concept of self. If, through behavioral involvement and social interaction, the role-identity of exerciser becomes a valued aspect of one’s concept of self, it may also become important in directing
future exercise behavior. Although these ideas have generated some interest within the sport context (Adler & Adler, 1989; Curry & Weaner, 1987; Donnelly & Young, 1988; Leonard, 1991; Prus, 1984), only recently have researchers started to examine the possible link between role-identities as part of one’s concept of self and participation in the fitness or exercise context (Anderson & Cychosz, 1995). This investigation examined the relationship of Exercise Identity with age of subject, three dimensions of exercise behavior, three physiological indicators of fitness, and total cholesterol/HDL ratio.

Methods

Subjects

Data were collected from law enforcement personnel of the State of Iowa’s Department of Public Safety. Complete information was obtained from 448 of the 531 (84%) employees eligible for evaluation. Data were collected when they received their required annual physical examination at the university fitness clinic. Although the physical examination was mandatory, completion of the questionnaire was voluntary. Ninety-eight percent of the subjects were Caucasian and 96% were male. Mean age for subjects was 39 years with a range of 21 to 63 years.

Instruments

Exercise Identity was measured by the sum of nine Likert-scaled items designed to measure the extent to which exercise was descriptive of the concept of self. These items were scored on a scale from strongly disagree (1) to strongly agree (7). Item reliability for Exercise Identity with this sample was $\alpha = .94$ and item-to-total correlations for the nine exercise identity items ranged from .67 to .86, with a mean of .78. Additionally, a principal components factor analysis yielded a single factor with an eigenvalue of 6.16, which accounted for 68.4% of the total variance. Factor loadings ranged from .74 to .89. The mean score on the exercise identity scale was 34.4 ($SD = 14.3$) for this sample. The one-week stability of measures including exercise identity was examined in a separate study of 51 college students (Anderson & Cychosz, 1994). The stability coefficients were (a) exercise identity (.91), (b) number of weeks of exercise (.93), and (c) minutes per week of exercise (.85).

Using a 30-day recall, subjects reported their number of weeks of exercising, number of exercise sessions per week, minutes of exercise per session and their perceived level of exertion. The format for these questions is consistent with methods of several large-scale epidemiologic investigations (Gionet & Godin, 1989; Godin, Jobin, & Bouillon, 1986; LaPorte,
Montoye & Casperson, 1985; Siconolfi, Lasater, Snow, & Carleton, 1985; Slater, Green, Vernon, & Keith, 1987; Washburn, Adams, & Haile, 1987; Washburn & Montoye, 1986). Perceived Exertion was self-reported for subject's "average exercise session" ranging from (a) breathless, sweating, (b) breathing heavily, sweating, (c) energetic but able to talk, often sweat, (d) energetic but able to talk conversationally, rarely sweat, (e) rarely or never sweat, (f) not much different from other parts of my daily routine. This format results in three behavioral indicators of exercise. The sample means were 34 weeks of exercise, (SD = 45.4), 78 minutes per week of exercise (SD = 94.9), and 3.2 for level of perceived exertion (SD = 2.0).

Standardized muscle endurance was inferred from the number of bent-knee situps performed in 60 seconds (percentile rank from age/gender norms in Golding, Meyers, & Simming, 1989). The mean number of situps was 68.5 (SD = 24.7). Standardized % fat was estimated by skinfolds at three sites (percentile rank from age/gender norms in Pollock, Schmidt, & Jackson, 1980). The mean was 52.4 (SD = 25.6). Standardized VO\textsubscript{2peak} was peak oxygen uptake on a symptom-limited maximal graded exercise test (Bruce protocol, percentile rank from age/gender norms in Golding et al., 1989). For this sample, the mean value was 75.1 (SD=15.4). TC:HDL Ratio was calculated and categorized as follows: (a) ratio < 3.0, (b) ratio < 4.0, (c) ratio < 4.5, (d) ratio < 5.2, (e) ratio > 7.0.

Results

Stepwise regression analysis (Table 1) indicated that the behavioral measures (minutes per week of exercise, number of weeks of exercise, and perceived exertion; \(R^2 = .48\)) and physiological indicators (muscular endurance, percent body fat, and VO\textsubscript{2peak}; \(R^2\) increment = .05) and age (\(R^2\) increment = .01) were significantly associated with Exercise Identity (Overall \(R^2 = .54\)). The contribution of total cholesterol/HDL ratio was non-significant.

When variance accounted-for is examined among the various groups of variables, the behavioral measures (minutes per week of exercise, number of weeks of exercise, and perceived exertion) had an independent \(R^2 = .48\), the physiological measures (muscular endurance, percent body fat, and VO\textsubscript{2peak}, all standardized for age and gender) had an independent \(R^2 = .23\), and age had an independent \(R^2 = .32\) (Table 2).

Discussion

This evidence suggests that an identity-reinforcing role exists for both participation in physical activity and one's level of physical fitness. Participation in exercise displays a substantive association with exercise identity. Degree of fitness also contributes to this relation-
Table 1
Stepwise Regression Effects on Exercise Identity

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>t</th>
<th>p &lt;</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>(In order entered)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minutes of exercise/week</td>
<td>.27</td>
<td>6.71</td>
<td>.001</td>
<td>.35</td>
</tr>
<tr>
<td>Perceived exertion</td>
<td>.25</td>
<td>6.25</td>
<td>.001</td>
<td>.44</td>
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<tr>
<td>Weeks of exercise</td>
<td>.21</td>
<td>4.91</td>
<td>.001</td>
<td>.48</td>
</tr>
<tr>
<td>Standardized Muscle</td>
<td>.12</td>
<td>3.86</td>
<td>.001</td>
<td>.51</td>
</tr>
<tr>
<td>Endurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standardized % fat</td>
<td>.09</td>
<td>2.66</td>
<td>.008</td>
<td>.53</td>
</tr>
<tr>
<td>Standardized VO2PEAK</td>
<td>.11</td>
<td>2.49</td>
<td>.013</td>
<td>.53</td>
</tr>
<tr>
<td>Age</td>
<td>-.09</td>
<td>2.53</td>
<td>.010</td>
<td>.54</td>
</tr>
<tr>
<td>Constant</td>
<td>3.88</td>
<td></td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>HDL Ratio</td>
<td></td>
<td>.500</td>
<td>NS</td>
<td></td>
</tr>
</tbody>
</table>

F(7,396) = 66.47, p < .0001, R² = .54

ship. These findings suggest that both participation in physical activity and improvements in fitness contribute to the process (role-identity evolution) underlying maintenance and expansion of exercise.

Results of the regression analysis suggest that the Exercise Identity construct may be useful in explaining the social psychological process of being an exerciser. This perspective proposes that there is a mutually reinforcing relationship between the role of exerciser and one's behavior as an exerciser and possibly, one's level of fitness. Be-

Table 2
Variance Accounted for by Physiological Variables, Behavioral Variables, and Age

<table>
<thead>
<tr>
<th>Variable</th>
<th>F</th>
<th>p &lt;</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>(In order entered)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiological variables</td>
<td>39.11</td>
<td>.000</td>
<td>.23</td>
</tr>
<tr>
<td>Behavioral variables</td>
<td>122.17</td>
<td>.000</td>
<td>.48</td>
</tr>
<tr>
<td>Age</td>
<td>95.56</td>
<td>.000</td>
<td>.32</td>
</tr>
</tbody>
</table>
cause role-identities arise and evolve out of social interaction, a person may engage in behaviors that they see as important to their role-identity as an exerciser. A variety of behaviors may be explored but only some of these are recognized and reinforced by others. Recognition and reinforcement by others clarifies as well as validates a person’s identity as an exerciser. Validation of a person’s identity as an exerciser places pressure upon one to continue to exercise and perhaps even reaffirm the identity through additional exercise behavior as well as related rituals and displays of symbols associated with being an exerciser. The public display of additional exercise behaviors and symbols congruent with the identity of exerciser such as T-shirts, shoes, or gym bag may result in social interaction that continues to strengthen the role-identity as an exerciser and make it more salient in one’s concept of self.

If the exercise identity is sufficiently strengthened, a person’s behavior may become constricted in the sense that the person will adopt changes in lifestyle that are congruent with the identity of exerciser. This is important because the reinforcing aspect of the reciprocal relationship between exercise behavior and the role-identity of an exerciser may be an important point of intervention. A measure of Exercise Identity may identify persons least likely and most likely to continue and maintain participation in an exercise program. In addition, a better understanding of the behavior/fitness level/role-identity relationship may aid in the identification and development of intervention strategies that can more effectively foster the development and validation of an exercise identity among clients and, thus, may increase the possibility of long-term adoption of exercise as a part of their lifestyle.

This social process, particularly the reciprocal determinism, is difficult to model with traditional quantitative methods (Bollen, 1989). Nonetheless, Exercise Identity may lead one to continue, or even increase, participation in activities and behaviors that validate and reaffirm the concept of self as an exerciser as well as improve one’s level of fitness.

References


Medicine, 28, 18-22.


