

A Typology of Marathon Runners Based on Cluster Analysis of Motivations

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Despite significant personal and financial costs many people participate in marathon races each year. Since the level of fitness and endurance required to complete a marathon far exceed the minimum requirement for cardiorespiratory fitness, many investigators have studied the motives of long-distance runners. Due to instrumental and methodological difficulties, however, previous studies were not able to provide statistically derived groupings of marathon runners based on motives. In this study, it was hypothesized that marathon runners are heterogeneous in terms of their motives for running and that definable subgroups could be identified. Multivariate cluster analysis showed that the 1519 participants formed 5 definable groups that were named: Running Enthusiasts, Lifestyle Managers, Personal Goal Achievers, Personal Accomplishers, and Competitive Achievers. Differences among these groups were discovered on several demographic, training, and performance variables, confirming the significance of the groupings. Personal rather than social or competitive reasons were endorsed most often across all groups.

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It is not inherently obvious why anyone engages in marathon running, yet each year in the United States thousands participate in these events. An analysis of the costs of marathon participation reveals many factors that seem to pose serious obstacles to the completion of a marathon. First, training for a marathon is a significant undertaking. Months of day in and day out running with sometimes lengthy individual training sessions are required to prepare for a marathon. Numerous hours and miles of training are necessary, especially if the participant anticipates running the entire distance. This level of training is clearly beyond what is necessary to acquire the basic health benefits of regular exercise (Blair et al., 1996; Blair et al., 1995; Blair et al., 1989; "Physical Activity", 1995) and necessitates that work, meal, family, and social schedules be organized to accommodate the regimen. Additionally, other recreational activities are missed and time with family and friends is likely to be reduced. All of this is particularly significant when considering the difficulty that many, perhaps most, people have with maintaining minimal aerobic exercise routines.

Though the monetary costs of marathon running are not onerously high compared to other activities, there are numerous expenses including shoes, running attire, race entry fees, and often travel. The physical and psychological costs are also noteworthy. Runners may, particularly in the initial stages, experience fatigue following training runs. This may interfere with work or other important activities. Additionally, while logging numerous miles, runners increase the probability of sustaining an injury and thus enduring the subsequent complicating sequelae (e.g., medical bills, pain, time and energy for rehabilitation, etc.). Psychologically, the hours of training may be boring, lonely, and monotonous. Even if the runner survives the training ordeal in good psychological and physical condition, there is no guarantee of a satisfactory performance in the marathon itself. Nervousness about the race, a disagreeable meal, lack of sleep, illness, travel to a distant city, an injury during the marathon, or simply a poor performance may all contribute to a negative experience. In fact, few human activities have potential costs of this magnitude with such uncertain outcomes. Yet, many people voluntarily engage in marathon running on a regular basis! This paradox generates an interesting and provocative psychological research question - What motivates individuals to endure the apparent punishment of training for and participation in a marathon?

Several previous investigators (e.g., Carmack & Martens, 1979; Clough, Shepherd, & Maughan, 1989; Curtis & McTeer, 1981; Gill et al., 1996; Johnsgard, 1985a, 1985b; Masters & Lambert, 1989; Ogles & Masters, 2000; Summers, Machin, & Sargent, 1983; Summers et al., 1982; Thornton & Scott, 1995; Vitulli & DePace, 1992; Ziegler, 1991) have studied this topic as it pertains to running in general and marathon running in particular. Several motivating reasons for marathon running have been identified such as mood control, self-concept enhancement, fitness/health, challenge, psychological well-being, competition, weight control, social

status, etc. In short, a variety of potential motivational explanations have been generated for marathon runners.

Given this rather impressive list of possible reasons for marathon running, it seems unlikely that marathon runners are a motivationally homogeneous group. Instead, individual marathon runners may be characterized by different motives for running. For example, some runners may be driven by a need to compete against other participants whereas other runners are driven to improve their own performance (i.e., goal orientation). Similarly, health concerns may be of primary importance to some while social considerations could be preeminent for others. In addition, marathon runners may have multiple reasons for running. As a result, patterns or profiles of motivations may be examined to identify differences among runners using a combination of motivational variables.

If marathon runners can be differentiated on the basis of their motives for running, they may also differ in their training patterns or on demographic variables. For instance, certain clusters of motivational factors may characterize older as opposed to younger runners, men versus women, those who train harder, etc. However, many of the previous studies have methodological difficulties that prevent more sophisticated multivariate analysis or the identification of subtypes of runners using profiles. For example, several studies did not use samples of marathon runners. Others relied upon responses to open-ended questions about reasons for running. Finally, some studies utilized questionnaires of unknown psychometric quality. As a result, no study has provided a statistically based clustering of the motives for marathon running that empirically determines groups or types of marathon runners.

In part to solve this problem, Masters, Ogles, and Jolton (1993) developed the Motivations of Marathoners Scales (MOMS). The test was based on the earlier research findings mentioned above and includes nine scales grouped within four broad categories of motives for participating in a marathon. The items and scales were rationally developed and then supported by empirical analyses including assessments of retest reliability and internal consistency along with demonstrations of factor and construct validity (Masters & Ogles, 1995; Masters, Ogles, & Jolton, 1993; Ogles, Masters, & Richardson, 1995). Since the MOMS is comprehensive in scope, of adequate psychometric quality, and yields nine different motivational scale scores, it is legitimate to incorporate it into studies that utilize multivariate analyses, such as cluster analysis. These techniques may then be able to reveal types of marathon runners distinguishable by their motivation profiles.

This study was designed to statistically group marathon runners based on their MOMS profiles. It was hypothesized that marathon runners are not a homogeneous group in terms of their motives for running and that definable and interpretable subgroups could be identified using cluster analysis. Further, once definable clusters were identified they would be com-

pared on the basis of demographic and training variables to determine how cluster membership relates with these characteristics.

Method

Participants

Marathon runners participating in one of six Midwestern marathons were recruited during marathon pre-race registration. While registering they were asked to take home and complete a training and demographic questionnaire along with the MOMS and to return both in the mail. The final sample consisted of 1242 men and 277 women for a total of 1519 participants. They ranged in age from 15 to 79 years and were predominately Caucasian (95%). Their average running career was 9.37 years ($SD=6.09$) and ranged from 0 to 35 years. Best finishing times in previous marathons averaged 3 hours and 33 minutes ($SD=35.32$ minutes) and ranged from 2 hours 15 minutes to 7 hours and 4 minutes. Prior to the marathon, runners were training an average of 44.11 miles per week ($SD=17.26$). About 20% of the runners were participating in their first marathon.

Instruments

Demographic and training questionnaire. The demographic and training questionnaire inquired regarding age; gender; miles, hours and days of training per week; years of running; percent of time running alone; number of previous marathons; and best and average finish times in previous marathons.

Motivations of Marathoners Scales (MOMS; Masters, Ogles, & Jolton, 1993). The MOMS consists of 56 items that are rated using a 1 to 7 scale as to the degree to which the runner considers them a reason for training and running a marathon. The items are further divided into nine internally consistent scales representing four broad categories of motives. The broad categories, scales, and example items are presented in Table 1. As indicated above, adequate evidence for the internal consistency (alphas range from .80 to .93), test-retest reliability (r 's range from .71 to .90), factorial and construct validity of the scales has been presented elsewhere (Masters & Ogles, 1995; Masters, Ogles, & Jolton, 1993; Ogles, Masters, & Richardson, 1995).

Table 1.
General categories, Scales and Sample Items for the Motivations of Marathoners Scales.

General Category Scale	Sample Items
I. Physical Health Motives Health Orientation	to improve my health, to prolong my life, to become more physically fit, to reduce my chance of having a heart attack, to stay in physical condition
Weight Concern	to look leaner, to help control my weight, to reduce my weight
II. Social Motives Affiliation	to socialize with other runners, to meet people, to visit with friends, to share a group identity with runners
Recognition	to earn respect of peers, people look up to me, brings me recognition, to make my family or friends proud of me
III. Achievement Motive Competition	to compete with others, to see how high I can place, to get a faster time than my friends, to beat someone I've never beaten before
Personal Goal Achievement	to improve my running speed, to compete with myself, to push myself, to beat a certain time, to try to run faster
IV. Psychological Motives Psychological Coping	to become less anxious, to distract myself from daily worries, to improve my mood, to concentrate on my thoughts, to solve problems
Self-Esteem	to improve my self-esteem, to feel more confident, to feel proud of myself, to feel a sense of achievement, to feel mentally in control of my body
Life Meaning	to make my life more purposeful, to make myself feel whole, to feel a sense of belonging with nature, to feel at peace with the world

Analysis

To discover natural groupings of runners based on their endorsement of motives for running, a cluster analysis was performed using the nine scales of the MOMS. As a method of assessing the robustness of the cluster solution, the sample was randomly divided into halves and each half was analyzed separately. The entire sample was then cluster analyzed followed by statistical comparisons of the solutions for the half samples with the whole sample solution. The cluster groups were described graphically based on the average rating on each of the scales. Then a multivariate analysis of variance (MANOVA) was conducted using the cluster solution as the independent variable (cluster group membership) and the nine motives as the dependent variables to describe motivational differences among the clusters. Additional evidence of cluster validity was obtained by examining differences in demographic and training variables that coincide with the motivational profiles for each of the clusters.

Table 2.
Means and Standard Deviations for the Nine MOMS Scales by Cluster Group Membership.

<u>MOMS' Scale</u>	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Running		Lifestyle		Goal		Personal		Competitive	
	Enthusiasts		Managers		Achievers		Accomplishers		Achievers	
	<i>n</i> = 238		<i>n</i> = 380		<i>n</i> = 187		<i>n</i> = 418		<i>n</i> = 256	
	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>
Competition	4.46	1.38	2.19	0.95	2.08	1.23	2.31	1.17	3.99	1.36
Personal Goal										
Achievement	5.80	0.76	4.64	1.16	3.96	1.44	4.46	1.24	5.53	0.89
Psychological										
Coping	4.85	1.19	4.66	1.08	1.50	0.58	2.72	0.92	3.71	1.28
Self-esteem	5.84	0.79	5.29	0.89	3.26	1.28	4.04	1.12	5.40	0.82
Life Meaning	4.82	1.15	4.14	1.07	1.60	0.69	2.34	0.90	4.03	1.22
Health										
Orientation	6.10	0.68	5.56	1.05	2.70	1.13	4.91	1.20	4.55	1.13
Weight										
Concern	5.37	0.97	5.00	1.26	1.86	0.90	3.82	1.63	2.70	1.03
Recognition	4.37	1.20	2.87	1.40	2.02	1.07	2.39	1.15	3.91	1.19
Affiliation	4.69	1.14	2.46	1.02	2.13	0.97	2.50	1.20	3.92	1.15

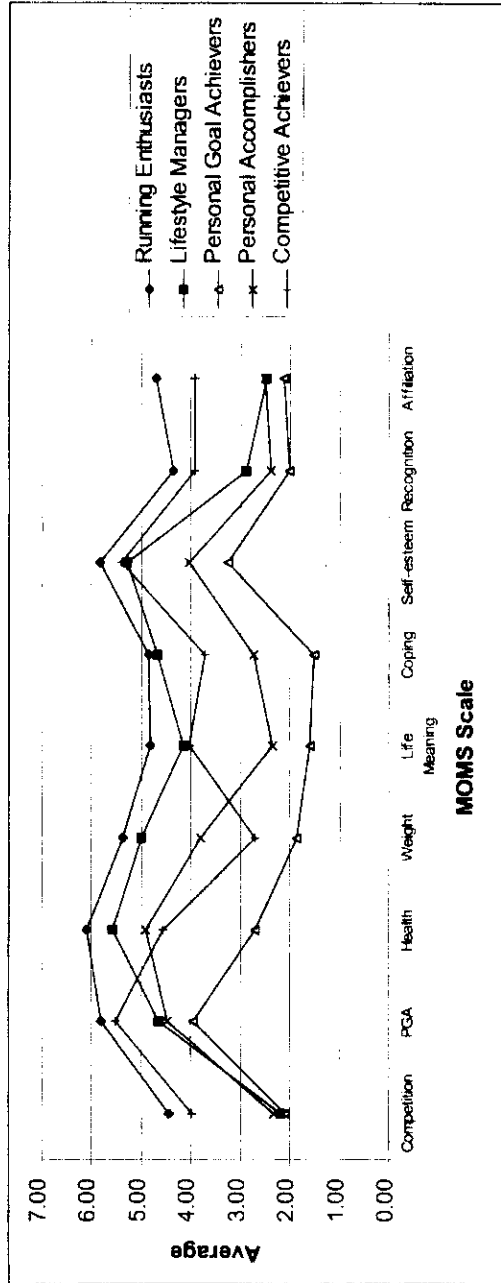
Table 3.
Names and Characteristics for the Cluster Groups.

Cluster	Name	Motivational Characteristics	Training and Demographic Characteristics
1.	Running Enthusiasts (16%)	Endorse all 9 motives	Older, more marathon participation, more likely to run with other runners and disproportionately female
2.	Lifestyle Managers (25%)	Personal Goal Achievement; Self-esteem; Health Orientation; Psych. Coping; Weight Concern; Life Meaning	More likely to train alone, run slower marathons, train fewer miles and days, less likely to train twice in one day, disproportionately female
3.	Personal Goal Achievers (12%)	Personal Goal Achievement	Somewhat younger, faster times, training more miles, disproportionately male
4.	Personal Accomplishers (28%)	Personal Goal Achievement; Self-esteem; Health Orientation	Rated near the middle on most variables ("average"), disproportionately male
5.	Competitive Achievers (17%)	Personal Goal Achievement; Self-esteem; Health Orientation; Competition; Life Meaning	Younger, faster marathon times, train more days, more likely to train twice in one day, disproportionately male

Table 4.
Means And Standard Deviations For One Demographic And
Six Training Variables By Cluster Group Membership.

	Cluster 1 Running Enthusiasts <i>n</i> = 238	Cluster 2 Lifestyle Managers <i>n</i> = 380	Cluster 3 Personal Goal Achievers <i>n</i> = 187	Cluster 4 Personal Accomplishers <i>n</i> = 418	Cluster 5 Competitive Achievers <i>n</i> = 256
<u>Variable</u>	<u><i>X</i> (SD)</u>	<u><i>X</i> (SD)</u>	<u><i>X</i> (SD)</u>	<u><i>X</i> (SD)</u>	<u><i>X</i> (SD)</u>
Age	40.9 (10.89)	38.8 (9.06)	37.3 (8.31)	38.9 (9.43)	35.8 (9.47)
Average finish time	220.5 (33.37)	235.6 (33.77)	219.2 (37.06)	225.18 (35.47)	208.12 (29.84)
Days run per week	5.4 (1.10)	5.0 (1.20)	5.4 (1.13)	5.0 (.31)	5.6 (1.23)
Miles per week	44.6 (15.68)	40.2 (14.88)	47.3 (17.15)	44.1 (17.94)	47.7 (18.23)
% training alone	70.1 (30.73)	85.4 (23.37)	78.6 (26.30)	78.3 (28.01)	76.5 (27.21)
Number of marathons	9.9 (25.03)	5.1 (15.37)	4.9 (7.25)	5.1 (10.20)	7.8 (15.32)
Years running	9.3 (7.20)	9.2 (6.15)	9.8 (6.23)	8.5 (5.38)	9.7 (5.26)

Figure 1.
Profiles on the Motivations of Marathoners Scales for each Cluster Group



Results

Cluster Solutions

Cluster analysis (Ward's method), for each half and the entire sample resulted in similar solutions. When choosing solutions based on the increase in error sum of squares and the interpretability of the solutions, all three samples (the two halves and whole sample) yielded five cluster solutions with the clusters labeled Running Enthusiasts, Lifestyle Managers, Personal Goal Achievers, Personal Accomplishers, and Competitive Achievers (see Figure 1). A chi-square analysis comparing the cluster classification of individuals using the half sample solutions with the whole sample solution was significant, $X^2(16, N = 1479) = 1999.38, p < .0001$. Two-thirds of the subjects were assigned to the same cluster group in both the half sample and whole sample solutions. Further, the Kappa for the frequency table was .57 which is also statistically significant and demonstrates good agreement between classifications based on the half and whole sample solutions. Therefore, subsequent analyses are based on the whole sample solution.

Motivational Differences Among Clusters

To verify differences among the clusters on the nine MOMS scales and to provide descriptive data concerning the clusters, a MANOVA with cluster group membership as the independent variable and the nine MOMS scales as the dependent variables was conducted. As expected, the MANOVA, approximate $F(36, 5858) = 98.95, p < .001$, and all of the univariate tests were significant ($ps < .001$; see Table 2). Post hoc tests to identify specific differences among cluster groups for each of the nine MOMS scales were then conducted. On the Health Orientation, Weight Concern, and Recognition scales, all five cluster groups were significantly different from each of the remaining cluster groups - that is, every pairwise comparison was significant. On the remaining scales only those clusters that were not significantly different from one another will be described. Lifestyle Managers and Personal Accomplishers did not differ on the Affiliation scale. Lifestyle Managers and Competitive Achievers did not differ on the Life Meaning or Self-esteem scales. Lifestyle Managers and Running Enthusiasts did not differ on the Psychological Coping scale. Personal Accomplishers did not differ from Lifestyle Managers, and Competitive Achievers did not differ from Running Enthusiasts on the Personal Goal Achievement scale. Finally, Lifestyle Managers, Personal Goal Achievers, and Personal Accomplishers did not differ from one another on the Competition scale.

To aid in the interpretation of the cluster profiles, all scales that had an average at or above the midpoint (4.0) were considered primary motives endorsed by the cluster group. These scales are found in Table 3 under the "motivational characteristics" heading. Table 3 also describes the clusters based on the training and demographic analyses to be presented below.

Demographic and Training Differences Among Clusters

In order to further assess the validity of the five cluster groups, we conducted two chi-square analyses (gender by cluster group membership and endorsement of training twice in one day by cluster group membership) to consider differences among the clusters in terms of gender and training intensity. In addition, seven one-way analyses of variance (followed by post hoc Scheffe tests when appropriate) using the cluster groups as the independent variable and demographic and training characteristics as the dependent variables were conducted. These analyses were conducted to ascertain differences among cluster groups using the following variables: age, years running, miles and days per week in training, percent of time training alone, average marathon completion time, and number of previous marathons.

Both the gender by cluster group and the training twice in one day by cluster group chi-square analyses were significant, $\chi^2(4, N = 1476) = 25.59, p < .0001$; $\chi^2(4, N = 680) = 22.49, p < .0001$. Examination of the 2 \times 2 contingency tables revealed an interesting pattern of differences among the cluster groups in terms of proportion of men/women in the groups and proportion of individuals who sometimes train twice in one day in the groups. The gender by cluster group contingency tables revealed that Running Enthusiasts and Lifestyle Managers did not differ in terms of the proportion of men and women. Similarly, there were no differences in the proportion of men (women) among Personal goal Achievers, Personal Accomplishers, and Competitive Achievers. Running Enthusiasts and Lifestyle Managers, however, were significantly different from Personal goal Achievers, Personal Accomplishers, and Competitive Achievers in every comparison. Men were more likely to be Personal goal Achievers, Personal Accomplishers, or Competitive Achievers while women were disproportionately represented in Running Enthusiasts and Lifestyle Managers.

An examination of all possible 2 \times 2 contingency tables for the training twice in one day by cluster group analysis indicated that Competitive Achievers were more likely to train twice in one day than any of the other cluster groups. In addition, Lifestyle Managers were less likely to train twice in one day than Running Enthusiasts and Competitive Achievers. There were no other differences among the groups.

Means and standard deviations for the seven one-way analyses are presented in Table 4. Only number of years running was not significantly different among the groups. Omnibus F-tests were significant for the remaining six dependent variables suggesting differences among the motivational clusters in terms of their age, $F(4, 1472) = 10.04, p < .001$; average marathon completion time, $F(4, 1051) = 19.62, p < .001$; number of days training, $F(4, 666) = 7.01, p < .001$; miles per week of training, $F(4, 1460) = 9.55, p < .001$; percent of time training alone, $F(4, 1470) = 12.29, p < .001$; and number of previous marathons, $F(4, 1432) = 5.34, p < .001$. Post-hoc tests at the $p < .05$ level indicated that competitive Achievers were significantly younger than

Running Enthusiasts, Lifestyle Managers, and Personal Accomplishers. In addition, Personal Goal Achievers were significantly younger than Running Enthusiasts. In short, Competitive Achievers and Personal Goal Achievers tended to be younger runners whereas the oldest runners were Running Enthusiasts. In addition to being younger, Competitive Achievers also had faster finishing times in previous marathons. Post-hoc tests indicated that Competitive Achievers were significantly faster than Running Enthusiasts, Lifestyle Managers, and Personal Accomplishers. On the other hand, Lifestyle Managers were significantly slower in previous marathon times than all other groups. Competitive Achievers also ran more days per week than Lifestyle Managers and Personal Accomplishers. Lifestyle Managers trained significantly fewer miles per week than the remaining groups. They were also more likely to train alone. Their percentage of time training alone was significantly higher than Running Enthusiasts, Personal Accomplishers, and Competitive Achievers. In contrast, Running Enthusiasts trained more frequently with other runners when compared to Lifestyle Managers, Personal Goal Achievers, and Personal Accomplishers. Running Enthusiasts had participated in more marathons than Lifestyle Managers, Personal Goal Achievers, and Personal Accomplishers. Finally, there were no differences among the groups in terms of the average number of years training.

Discussion

Marathon runners are indeed a heterogeneous group when considering their motives for running a marathon. Their motives are sufficiently diverse that the runners can be statistically clustered based on their self-report motives for marathon running. Cluster analysis of motivational profiles for this large sample of runners produced five distinct groups or clusters of marathon runners. Although five clusters do not account for all the variation among motivational profiles, it is clear that five broad categories of runners provide sufficient evidence that marathon runners are a heterogeneous group. These five groups are not only distinguishable by their pattern of endorsement of motives for running but also by training and demographic variables. In addition, the duplication of findings across random samples lends preliminary evidence for the reliability of the cluster findings. A brief description of each cluster will more clearly demonstrate the various types of marathon runners groups by motives.

Cluster #1 was labeled Running Enthusiasts. This group accounted for 16% of the sample and endorsed all nine of the MOMS scales as reasons for running. Perhaps this group simply responded with an affirmative response set, the so-called "yea sayers." Alternatively, the data also support an interpretation indicating that these runners are veteran disproportionately female, marathoners who may have come to value many aspects of the running experi-

ence. They ranked health orientation, self-esteem, and personal goal achievement as their highest motives. However, they were also the only cluster to rate affiliation and recognition motives above the midpoint. Additionally, their training profile shows that they were more likely to run with other runners. It may be that it is their general endorsement of running motives, including the social aspect, that has enabled them to continue running these long distances over the years. On the other hand, there could be a cohort effect showing that older, disproportionately female, runners are positively influenced by many reasons for marathon running. At any rate, they appear to find many aspects of the running experience to be reinforcing.

Cluster #2 we labeled Lifestyle Managers and they accounted for 25% of the sample. They endorsed health orientation, self-esteem, weight concern, psychological coping, personal goal achievement, and life meaning motives. They generally appear to be motivated by an interest in improving their physical and psychological well-being. This pattern suggests that, at least to some extent, running for these individuals may also be a method of handling negative emotions. At the same time, they are not motivated by social and competitive reasons for running. As might be expected based on their motive profile, this group runs slower and trains less intensively. They are more likely to train alone and to be female.

Cluster #3 we labeled the Personal Goal Achievers and they accounted for 12% of the sample. These runners are primarily influenced by improving their running speed and performing up to the best of their capabilities. It is important to note, however, that their pursuit of goals is ipsative, i.e., they are not motivated by competition with other runners, only with themselves. They tended to be younger and faster males who trained more miles per week than other groups.

Cluster #4 we labeled the Personal Accomplishers and they accounted for 28% of the sample. These runners endorsed health orientation, personal achievement, and self-esteem as primary motives. They are similar to Lifestyle Managers except that they do not endorse weight concern, life meaning, and psychological coping motives. This group is more concerned with accomplishment, perhaps best thought of in a general sense as positive participation. Whereas Lifestyle managers seems to have a strong element of managing negative aspects such as weight or troubling emotions, this is not found with the Personal Accomplishers. Their training and performance profiles tended to be very average, and they accounted for the largest percentage of runners in the sample.

Finally, Cluster #5 was labeled the Competitive Achievers and it accounted for 17% of the sample. These runners primarily endorsed personal goal achievement, self-esteem, health orientation, life meaning and competition, as their motives. They tended to be younger males who ran faster and trained more days per week. They were also more likely to train twice in one

day. In fact, 60% of the runners in this group indicated that they sometimes ran twice a day. They differ from Personal Goal Achievers in several ways, but perhaps most significantly is their relative endorsement of competition with others as a motive.

It is interesting that Running Enthusiasts and Lifestyle Managers tended to be disproportionately female (ca. 25% female - when the proportion of women in the sample was 18%) while Personal Goal Achievers, Personal Accomplishers, and Competitive Achievers were disproportionately male (ca. 87% male and 13% female). In both cases, these findings are consistent with previous research. For example, the Running Enthusiasts and Lifestyle Managers endorsed a wide variety of motives for running. Several previous studies have suggested that women perceive more benefits from marathon running than men perceive (e.g., Ogles, Masters, & Richardson, 1995). Benefits cited in the literature include improvements in self-esteem, greater opportunities to meet people and improved social lives, relief from depression, feeling less shy, better weight control, increased commitment to running, more relaxation and energy, and greater physical attractiveness (Clough, Shepherd, & Maughan, 1989; Curtis & McTeer, 1981; Gill, et al., 1996; Masters & Lambert, 1989; Ogles, Masters, & Richardson, 1995; Porter, 1985; Summers, Machin, & Sargent, 1983; Ziegler, 1991).

One difference between the Running Enthusiasts and the Lifestyle Managers is the degree to which social reinforcers were characteristic of their motivational profile. Specifically, the Running Enthusiasts were more strongly influenced by affiliation and recognition motives than were the Lifestyle Managers and, correspondingly, were more likely to train with someone than were the Lifestyle Managers. This finding demonstrates that while for some marathon runners the social aspects of running are important, such is certainly not the case for all of them. Consequently, characterizations of social motivations, particularly for female marathon runners, must be made cautiously. Certainly statements indicating that they are motivated by social reasons would be overly simplistic.

The Personal Goal Achievers, Personal Accomplishers, and Competitive Achievers tended to be male. These clusters differ in several ways but have in common at least a mild endorsement of either goal achievement (i.e., competition with oneself) or competition with others. Many researchers have noted (Gill, 1986; Gill & Deeter, 1988; Gill et al., 1996; Ziegler, 1991) that males tend to score higher on measures of competitiveness than do females. Thus, it is not surprising that motivational clusters containing some type of competition include a disproportionate representation of males.

Overall, however, the cluster groups were similar in their relative under emphasis of competitive and social motives when compared to health, personal achievement, and self-esteem reasons. Although the rank order of the latter three reasons differed among clusters,

they were consistently ranked as the most important. The psychological motives were likewise viewed as slightly more important than the competitive and social motives for all five clusters. This suggests that although marathon events are large, ostensibly competitive, social gatherings, most of the "competitors" are motivated to participate for personal life enhancing reasons that are not externally competitive, or even social, in nature. Further supporting this is the finding that 53% of the sample was classified as either Lifestyle Managers or Personal Accomplishers. Both groups are clearly more motivated by personal accomplishment or psychological factors than competing with others, achieving recognition, or finding social affiliation.

As more is learned about the motivation of marathon runners we come to a better understanding of why it is that so many individuals endure the costs in order to participate in these events. Hopefully this knowledge will be useful in encouraging participation in all types of exercise, not just marathon running. It is recommended that researchers continue investigating the motivation of endurance exercisers by studying specific samples in specific events. For example, knowledge of the differences between elite versus non-elite runners is important. Similarly, are the motivational patterns of marathon runners similar to those who participate in triathlons or longer running or cycling races? Longitudinal studies of motivations, while they are difficult to conduct, will help us to learn more about what, if any, changes there are in motivational patterns across the exercise/life cycle. This finding could have significant practical implications. Finally, more research investigating the motivational types displayed in this study is also important. For example, we hypothesize that the lifestyle Managers may experience more psychological and emotional difficulty than do the Personal Accomplishers. The degree to which running and training is used to cope with negative emotions may also differ among the groups. Further investigation of how the motivational profile types compare on standard psychological assessments would add to our understanding of the psychological aspects of marathon running and marathon runners.

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