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Psychological Characteristics and Their Development in Olympic Champions

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This study was designed to examine psychological characteristics and their development in Olympic champions. Ten U.S. Olympic champions (winners of 32 Olympic medals) were interviewed, as were one of their coaches ($n = 10$), and a parent, guardian, or significant other ($n = 10$). A battery of psychological inventories was also administered to the athletes. It was found that the athletes were characterized by: (a) the ability to cope with and control anxiety; (b) confidence; (c) mental toughness/resiliency; (d) sport intelligence; (e) the ability to focus and block out distractions; (f) competitiveness; (g) a hard-work ethic; (h) the ability to set and achieve goals; (i) coachability; (j) high levels of dispositional hope; (k) optimism; and (l) adaptive perfectionism. Results also revealed that a number of individuals and institutions influenced the athletes' psychological development including the community, family, the individual himself or herself, non-sport personnel, sport environment personnel, and the sport process. Coach and family influences were particularly important. Ways in which these sources influenced the athletes were both direct, like teaching or emphasizing certain psychological lessons, and indirect, involving modeling or unintentionally creating certain psychological environments. Psychological characteristic findings verified current sport psychological research on psychological characteristics associated with peak performance (Williams & Krane, 2001). They also suggest that adaptive perfectionism, dispositional hope, and high levels of optimism are new variables to consider. Results are also discussed relative to Bloom's (1985), Côté's (1999) and Csikzentmihalyi, Rathunde, Whalen, and Wong's (1993) talent development research. Practical implications focus on implementing parenting and coaching practices related to the development of psychological characteristics associated with athletic success.

When people think of the psychology of excellence, images of outstanding athletic performances often come to mind. Legendary athletes like Bonnie Blair, Carl Lewis, Mary Lou

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Retton, and Ian Thorpe are remembered for their memorable performances in the Olympic Games. It is not surprising, then, that sport psychology researchers have been interested in identifying what "psychologically made these athletes great." In addition to determining the psychological characteristics of these athletes, in the last several years investigators like Csikszentmihalyi et al. (1993), Hanton and Jones (1999), and Durand-Bush and Salmela (2001) have begun to examine how athletes developed these attributes. This study is designed to extend this research by examining the psychological characteristics of 10 of the United States most successful Olympic champions as well as to determine how these athletes developed their psychological characteristics.

Psychological Characteristics of Outstanding Athletes

A number of approaches have been taken to examining the psychological characteristics of outstanding athletes and considerable progress has been made in our understanding of this area. Morgan and his colleagues (e.g., Morgan, 1978, 1980) conducted some of the earliest investigations in the area, studying the personality characteristics of national and Olympic runners, rowers and wrestlers using the Profile of Mood States. Support was found for a mental health or iceberg profile model where more versus less successful athletes exhibited greater positive mental health (vigor is above the mean for the population while the negative moods of tension, depression, anger, fatigue and confusion are below).

Other researchers (e.g., Gould, Weiss, & Weinberg, 1981; Mahoney & Avenier, 1977) have taken a different approach, looking at cognitive strategy differences between more and less successful athletes. For example, Smith, Schultz, Smoll, and Ptacek (1995) developed the Athletic Coping Skills Inventory-28, a multidimensional measure of sport specific psychological skills (coping with adversity, peaking under pressure, goal setting and mental preparation, concentration, freedom from worry, confidence and achievement motivation, and coachability) and found that it discriminated between more and less successful professional baseball players. Specifically, more successful players and players who remained in the league longer demonstrated higher psychological skills scores.

Finally, other investigators (Gould, Eklund, & Jackson, 1992a, 1992b; Gould, Guinan, Greenleaf, Medbery, & Peterson, 1999; Greenleaf, Gould, & Dieffenbach, 2001; Orlick & Partington, 1988) have examined psychological variables affecting the performance of Olympic athletes, chiefly through qualitative interviews. For example, Orlick and Partington (1988) found that (a) the ability to focus attention, (b) control of performance imagery, (c) a total commitment to the pursuit of excellence, (d) the setting of practice goals, (e) competition simulation, (f) mental preparation, (g) detailed competition plans, and (h) having distraction plans were common variables characterizing the successful athletes. Those Olympic athletes who did not perform up to their potential reported not being prepared to deal with distractions, changing things that worked, experiencing late team selection, and not being able to focus after distractions.

After carefully reviewing this research, Williams and Krane (2001) concluded that a number of specific mental skills and psychological characteristics, such as (a) having a well developed competitive routine and plan, (b) high levels of motivation and commitment, (c) coping skills for dealing with distractions and unexpected events, (d) heightened concentration, (e) high levels of self-confidence, (f) self-regulation of arousal, (g) goal setting, and (h) visualization, were associated with peak performance. One would expect, then, that highly successful Olympic athletes would exhibit these mental skills and characteristics.

Although considerable research has been conducted on the psychological characteristics of more versus less successful elite athletes, this does not imply that our knowledge is complete



in this regard. A number of factors found to be important predictors of a variety of behaviors in the general psychological literature have not been examined, such as optimism (Seligman, 1990), perfectionism (Antony & Swinson, 1998), and hope (Snyder, 2000).

Dispositional optimism has been shown to influence physical and psychological well-being in a variety of areas (Scheier & Carver, 1992; Schneider, 2001; Seligman, 1990). Optimism is a relatively stable personality disposition characterized by a general expectancy that good things will happen (Scheier & Carver, 1992). Optimistic individuals differ from pessimistic individuals in several important ways—most importantly how they approach problems and the success that they have coping with adversity. Specifically, when confronted with a challenge, optimists tend to take a posture of confidence and persistence while pessimists are doubtful and hesitant. One would think, then, that highly successful Olympic champions would be characterized by high dispositional optimism. A related variable that might be expected to characterize champion athletes is high dispositional hope.

Hope as a construct was developed by psychologist Charles Snyder (2000), and is defined by Snyder and colleagues as a “thinking process in which people have a sense of agency and pathways for goals” (Snyder, Cheavens, & Michael, 1999, p. 207). It is a reciprocally derived sense of successful goal-directed determination (agency) and planning of ways to meet goals (pathways). Hence, it can be viewed as a characteristic way an individual sets, seeks out, and achieves goals. Evidence has shown that hope is positively related to psychological adjustment, achievement, problem solving and health (Snyder, 2000; Snyder et al., 1999). Moreover, initial sport psychology research reveals that athletes who are higher in hope perform better academically and athletically, after controlling for other possible influences such as self-esteem (Curry & Snyder, 2000). It is highly likely, then, that champion athletes would be characterized by a high sense of hope.

A third unexplored variable in the research literature on elite athletes is perfectionism. Although perfectionism has been associated with athlete burnout (Gould, Udry, Tuffey, & Loehr, 1996), anxiety (Hall, Kerr, & Mathews, 1998), and preoccupation with mistakes (Frost et al., 1997), positive aspects of perfectionism have not been examined. This is important because psychological researchers have made an important distinction between adaptive and maladaptive perfectionism (Hamachek, 1978; Rice & Mirzadeh, 2000; Terry-Short, Owens, Slade, & Dewey, 1995). Both adaptive and maladaptive perfectionists set high personal standards and demonstrate a high preference for organization. However, maladaptive perfectionists exhibit an excessive concern about mistakes, strong self-doubts, and perceive parents as being critical and expecting much of them. Furthermore, adaptive or normal perfectionism is positively associated with achievement while neurotic or maladaptive perfectionism is negatively associated with it. Thus, one would expect that Olympic champions would exhibit adaptive versus maladaptive perfectionism tendencies. However, this issue has not been examined.

Thomas, Murphy, and Hardy (1999) recently developed the Test of Performance Strategies (TOPS), a measure of eight psychological skills such as goal setting, relaxation, activation, imagery, self-talk, attentional control/negative thinking, emotional control, and automaticity. The TOPS represents an important new development in the area because unlike previous measures it assesses mental skills in both practice and competition contexts. Initial scale-development work revealed that male and female elite athletes differed from their less elite counterparts on a number of TOPS subscales. Based on the work of Thomas and colleagues, it is expected that Olympic champions would demonstrate scores equal to or exceeding those of the elite athletes studied.

Thus, based on research in other areas of psychology one would predict that champion athletes would be characterized by high levels of dispositional optimism, hope, and adaptive perfectionism. They should also score high on the TOPS scale.



It should also be noted that most of the previous studies have examined psychological characteristics associated with athletic success using one particular instrument or theoretical approach. Batteries of assessments have not been administered to provide a holistic profile or map of the psychological characteristics or attributes of champions. Finally, it is unlikely that instruments are available to measure all the attributes of champions, so interviewing champions, as well as significant others and coaches who know them very well, will allow us to identify potentially new variables of importance to their psychological make-up.

Psychological Characteristic Development Research

Although research has been conducted on the psychological characteristics of more versus less successful elite athletes, less is known about how these skills are cultivated and developed. Specifically, longitudinal studies examining the process of psychological characteristic development in elite athletes have not been conducted. However, several large-scale studies (Bloom, 1985; Csikszentmihalyi et al., 1993) on talent development across a variety of domains (e.g., music, art, science, sport) have provided a beginning to knowledge development in this area.

Bloom (1985) was one of the first to study talent development in world-class performers. Specifically, 120 individuals (renowned artists, academicians, musicians, mathematicians, swimmers, tennis players) at the top of their fields were studied. A good deal of consistency was found across domains in terms of the investments of tangible and intangible resources found to be essential in nurturing promising individuals with talent. In addition to financial support and transportation to numerous competitions and performances, parents found ways to provide social emotional support—facilitating disciplined involvement while avoiding excessive expectations and pressure. The parents also served as models for disciplined independence and fostered disciplined independence in their talented children. Bloom's results, then, clearly show that talent development is a long-term process that involves more than just the talented person, but also a strong support system. A finding that parallels the increased importance placed on social support by psychologists in recent years (Sarason, Sarason, & Pierce, 1990).

Interestingly, Bloom (1985) also found that these talented individuals' careers fell into three distinct stages: the early years or, based on the work of Whitehead (1929), what has been labeled the Romance phase; the middle years, labeled the Precision phase; and, the later years or the Integration phase. In the Romance phase, the child developed a love for the activity, had a great deal of fun, received encouragement from significant others, was free to explore the activity, and achieved a good deal of success. Parents also instilled the value of hard work and doing things well. In the Precision phase, a master coach or teacher promoted long-term systematic skill learning in the talented individual. The focus was on technical mastery, technique, and excellence in skill development. Finally, in the Integration phase, an individual continued to work with a master teacher (coach), practiced many hours a day to turn training and technical skills into optimal performance, and other activities were sacrificed for the sake of the main activity. There was a realization that the activity was significant in one's life. These phases occurred over a 15- to 20-year time period and each person moved through each phase in a developmental sequence, without skipping phases.

More recently, Csikszentmihalyi et al. (1993) chronicled the development of 208 outstanding high school students who were identified by their teachers as having strong talent in art, athletics, mathematics, music, or science. These students were tracked from their first to final years of high school for the purpose of determining how they differed from their peers whose talents were more ordinary. These investigators also wanted to determine why some of the



students developed their talent and others failed to do so. Based on their findings, it was concluded that talent must be viewed as a developmental process rather than an all-or-nothing phenomenon and cannot be developed unless it is valued by society and recognized and nurtured by parents, teachers, and coaches. Specifically, these investigators suggested that for talent to develop, information or knowledge relative to the tools of the domain must be provided. Motivation is also needed and is greatly influenced by support and encouragement of those in the field and family members. Finally, discipline is needed that allows the talented teen to study his or her domain long enough to acquire the skills necessary for superior performance.

Most relevant to the present study were Csikszentmihalyi and colleagues' (1993) finding that talent development involves the acquisition of a mature personality during the teenage years—a personality that allows the individual to cope with all the opportunities and obstacles that he or she will face in his or her chosen endeavor. To nurture his or her gift, the talented teen must have discipline, as well as talent. Talented individuals were also found to spend more time practicing the activity, less time working outside of school, less time socializing with friends, more time on hobbies, and less time doing chores than their less talented counterparts. The investigators also concluded that: 1) teenagers cannot develop talent unless they are intrinsically motivated and enjoy the activities of their domain while working hard to achieve their goals; 2) conflicts inherent in the development of talent (e.g., making difficult choices and coming to terms with the implications of their individuality) cannot be avoided; and 3) no child succeeds unless he or she is supported by caring adults. Talented teens were also very attuned to the quality of teaching in their talent area, giving very specific details about positive and negative behaviors of their most and least favorite teachers and coaches. Lastly, talent development came easier to youngsters who learned habits conducive to talent development.

Finally, in one of the first sport psychological studies on the topic, Hanton and Jones (1999) examined the development of cognitive skills and strategies that formed the basis of elite swimmers precompetitive facilitative anxiety. Specifically, 10 elite male swimmers who consistently maintained facilitative anxiety interpretations in competition were interviewed. Results revealed that these athletes traced the development of their psychological skills to natural learning experiences and various educational methods. Parents, coaches, and more experienced swimmers all played a role in helping them learn to perceive anxiety as facilitative versus debilitating. They also developed goal setting and imagery skills that helped them productively manage their anxiety. Thus, these swimmers developed cognitive skills and strategies over an extended period of time in both formal and informal ways.

In a related study on the development and maintenance of expert performance in sport, Durand-Bush and Salmela (2001) interviewed 10 champion athletes. In addition to identifying the personal attributes of these athletes (enjoyment/love of sport, confidence, strong work ethic, perseverance, natural talent, and determination), they found that the ability to focus on the process of performance rather than the outcome was critical to the maintenance of athletic success. Most important to the present study was the finding that coaches and parents played an important role in helping the athletes focus on the process of training and competing. Specifically, parents did not pressure the athletes and de-emphasized the importance of winning, while coaches found ways to challenge athletes on a daily basis and celebrated small improvements. Coaches also incorporated interesting activities into practices.

Given the above contentions, it is surprising that other than Hanton and Jones (1999) and Durand-Bush and Salmela (2001) sport psychology researchers have not conducted more studies of athletic talent development and its relationship to psychological characteristics, skills, and habits. Moreover, although considerable research has been conducted on the psychological



characteristics of more versus less successful elite athletes (See Hardy, Jones, & Gould, 1996, and Williams & Krane, 2001, for detailed reviews) little is known about how these skills are cultivated and developed.

Need for and Purpose of the Present Study

This study was designed to examine psychological talent and its development in Olympic champions. Given the exploratory nature of the topic, the primary method used was qualitative interviews. Ten current or former U.S. Olympic champions with outstanding performance records over time (winners of 28 Olympic gold medals, three silver medals, and one bronze medal) were interviewed, as were one of their coaches ($n = 10$), and a parent, guardian, or significant other ($n = 10$). A battery of psychological tests was also administered to the athletes for the purpose of identifying their psychological characteristics. Open-ended interviews with the athletes themselves, as well as coaches and significant others, helped identify potentially new characteristics of importance, as well as allowed the exploration of the psychological talent development process. In addition, the interviews provided a way of triangulating the quantitative findings.

METHOD

Sample and Procedures

Ten U.S. Olympic champions representing nine different Olympic sports (e.g., skiing, wrestling, swimming, ice hockey, speed skating, track and field) served as participants. These athletes had competed in one or more Olympic Games between the years of 1976 and 1998 with an average of 2.4 Olympic games each (range 1 to 4). They were chosen based on an analysis of Olympic Games performance records and participant availability. Between them these athletes had won 32 Olympic medals (28 gold, 3 silver, 1 bronze), with an average of 3.2 Olympic medals per participant (range 1 to 6). Four of the athletes participated in winter Olympic games, while the remaining six athletes were summer games participants. Six male and four females athletes comprised the final sample. At the time of the interview, the average age of the participating athletes was 35.1 years with a range of 24 to 42 years old. These athletes had competed at an international level for between 5 and 22 years with a mean of 11.7 years of international-level competition. Eight of the athletes participating in the study had retired from elite competition in their sport while the remaining two were still training and competing at the elite level.

The primary method used for the overall project was in-depth qualitative interviews, ranging from 60 to 150 minutes in length. Interviewing 10 athletes allowed the investigators to draw conclusions about the medallists as a group while at the same time allowing the interviews to be carried out with the depth needed to richly describe each athlete's unique psychological characteristics and his or her psychological development. Ten interviews were also considered to be the maximum number that could be conducted while still making it feasible to conduct corroborating interviews with coaches and the parents/guardians/significant others (30 interviews in all) and to conduct the content analysis across sources.

Participating athletes were selected based on the first author's contacts with them or via United States Olympic Committee/National Sport Governing Body (USOC/NGB) staff contacts. Emphasis was placed on seeking out individuals who had not only won Olympic gold medals, but who also had been "consistent" outstanding performers in their chosen sports over a number of years (e.g., placing in the World Championships several years in a row). Consistent top performers were sought because we wanted to insure that these indivi-



duals had the psychological skills and characteristics to excel across time and not just on one occasion.

Once athletes agreed to participate in the study, a packet containing a study introduction letter, a written consent form, paperwork necessary to receive the \$200 participation stipend provided by the USOC, the battery of psychological assessments, and a stamped addressed return envelope for the consent form and survey was mailed. Additionally, each athlete was asked to identify and provide contact information for a coach and a parent, sibling, or significant other who would be familiar with his or her career and development.

In all, 10 coaches (one coach identified by each of the athletes) were interviewed. Specifically, the athletes recommended the coach who was most familiar with his or her career, one who they felt knew him or her the best. All coaches suggested by the athletes agreed to participate in the study. Of the 10 coaches, nine were males and one was female. Seven of these individuals coached the athlete in Bloom's (1985) elite phase of his or her career, one in both the elite and middle phases, one in the middle phase, and one in the early phase.

Finally, 10 parents, siblings, or significant others were interviewed, one for each athlete. Eight of these individuals were parents (5 mothers, 3 fathers), one a sibling, and one a significant other. All parents/sibling/significant others recommended by the athletes agreed to participate in the study.

Interview Guides¹

Interview guides were used to help standardize all interviews across participants and to minimize bias. The interview guides used in this study were designed based on the talent development related literature and were evaluated by USOC sport psychology staff as well as other sport psychology colleagues for face validity, appropriateness, and clarity. The athlete interview began with general questions about the athlete's career (e.g., when the athlete began participating in the sport, competing, what support he or she received from parents and coaches). Next, the focus of the interview questions turned to the athlete's mental skill strengths. Finally, questions focused on how the athlete developed these strengths relative to each of Bloom's (1985) career phases; the early, middle and later years, as well as specific questions focusing on issues identified in the Csikszentmihalyi et al. (1993) talented teen research.

Coach and parent/sibling/significant other interviews were always completed after the corresponding athlete interview had been conducted. In general, the coach and parent interviews followed the same interview format by asking the same questions as those posed to the athletes and relevant to the career phase of which each individual had knowledge (e.g., the elite coach was not asked about the athlete's early development unless he or she knew the athlete prior to coaching him or her; parents were asked about the athlete's entire career). Additionally, based on the results from the athlete interviews and surveys, specific questions about each particular athlete's characteristics and development were posed (e.g., if an athlete mentioned a specific illness or injury and the impact it had on him or her, this was mentioned to the coach and parent/sibling/significant other if they didn't bring it up during their respective interviews).

Interviewer and Interview Procedure

The same interviewer performed all 30 interviews in this study. She was a 30-year-old female, in the advanced stages of her doctoral degree work in sport psychology. Training for the interview portion of this study included reading qualitative interviewing technique books

¹Complete interview guides are available by request from the first author.



(e.g., Lincoln & Guba, 1985; Miles & Huberman, 1994; Patton, 1990) and conducting several pilot interviews. Pilot interviews conducted by the interviewer were tape recorded and critiqued by the principal investigators and colleagues.

Athlete interviews were scheduled after their consent form and surveys had been received and scored. Coach and parent/sibling/significant-other interviews were scheduled and conducted only after the athlete interview was complete.

The interviewer had the opportunity to review the participant's psychological characteristics survey results prior to conducting each athlete interview. Additionally, the athlete interview was reviewed by the interviewer prior to conducting the coach and parent/sibling/significant other interviews. For all interviews, although the interviewer followed a structured interview guide, she was free to proceed in the direction dictated by the natural flow of the conversation. However, by the end of the interview all participants were asked all of the major questions from the interview guide.

Finally, in the general introduction to the interviews, participants were assured of complete confidentiality and anonymity of their remarks (e.g., efforts have been made to disguise sports and athlete genders whenever possible). It was emphasized that participants should feel free to voice both their positive and negative opinions.

Mental Skill and Attribute Assessments

To help determine components of the athlete's mental skills and attributes thought to be key to elite performance, a series of psychological tests were administered to each athlete prior to his or her interview. These tests were selected based on their previous use in research with elite athletes and/or for their potential to identify new variables likely to be associated with athletic success. The instruments administered included the following.

Trait anxiety. The Sport Anxiety Scale (SAS; Smith, Smoll, & Schutz, 1990) was used to measure somatic trait anxiety, worry, and concentration disruptions, as well as an overall anxiety score. The SAS has been subjected to rigorous psychometric testing and has been shown to demonstrate good psychometric properties (Smith et al., 1990).

Multidimensional perfectionism. Frost, Marten, Lahart, and Rosenblate (1990) developed the Multidimensional Perfectionism Scale (MPS) that has been successfully employed to study athletes. This 35-item scale yields an overall perfectionism score, as well as six subscale scores: (a) concern over mistakes; (b) personal standards; (c) parental expectations; (d) parental criticism; (e) doubts about actions; and (f) organization. The MPS has been shown to have good internal consistency and convergent validity.

Optimism. The revised Life Orientation Test (LOT-R; Scheier, Carver, & Bridges, 1994) is a 10-item scale that assesses individual levels of optimism. An optimism score ranging from a low of 6 to a high of 30 is determined by the LOT-R. Scheier et al. (1994) have demonstrated both acceptable reliability and validity for the LOT-R.

Hope. The Adult Trait Hope Scale (Snyder et al., 1999; Snyder et al., 1991) is a 12-item measure of hope defined as an individual's reciprocally derived sense of successful agency and pathway. It consists of two subscales: agency (the will; the perceived ability to begin as well as to continue along a selected pathway to a goal) and pathway (the way; the perceptions of being able to produce one or more workable routes to goals). Respondents are asked to use an 8-point Likert scale to indicate how false or true each of 12 statements are for them (e.g., "I energetically pursue my goals"; 1 = definitely false to 8 = definitely true). Subscale scores for agency and pathway range from 4 to 32, while overall scores range from 8 to 64. The validity and reliability of the Adult Trait Hope Scale has been demonstrated by Snyder et al. (1999).

Task ego orientation. Duda (1989) developed the 13-item Task Ego Orientation Scale



Questionnaire (TEOSQ) to examine individuals' task and ego orientation in sports. Two subscale scores, task involvement and ego involvement, can be determined from the TEOSQ with scores ranging from 1 to 5 on each subscale. The TEOSQ has been found to have acceptable psychometric properties (Duda, 1989).

Test of performance strategies. The Test of Performance Strategies (TOPS; Thomas et al., 1999) consists of 64 behavior-based statements that athletes assess using a 4-point Likert scale rating to indicate how frequently they use eight mental skills (e.g., "I visualize my competition going exactly the way I want it to go"; 1 = never to 5 = always) for practice and competition. The eight TOPS practice psychological skills assessed include goal setting, relaxation, activation, imagery, self-talk, attentional control, emotional control, and automaticity. Competition TOPS skills assessed include goal setting, relaxation, activation, imagery, self-talk, negative thinking, emotional control, and automaticity. All subskill scores range from 1 (never use this skill) to 5 (always use this skill). Using 472 athletes competing in a range of performance levels and sports, Thomas et al. (1999) found good initial support for the proposed factor structure of the TOPS.

Athletic Coping Skills Inventory-28. The Athletic Coping Skills Inventory-28 (ACIS-28; Smith et al., 1995) is a 28-item scale measuring seven classes of sport-specific psychological coping skills including coping with adversity; peaking under pressure; goal setting and mental preparation; concentration; freedom from worry; confidence and achievement motivation; and coachability. The seven subscales are summed and averaged to provide a total personal coping resource score. Psychometric properties of the scale have been demonstrated with high school athletes and professional baseball players (Smith et al., 1994; 1995).

Data Analysis

All interviews were tape recorded and content analyzed by three investigators following procedures recommended by Miles and Huberman (1994) and successfully employed in previous qualitative studies (Gould et al., 1992a, 1992b; Gould et al., 1999). Specifically, each investigator studied tapes of the interviews and read and reread verbatim transcripts. Raw data responses (quotes or paraphrased quotes representing a meaningful point or thought) were individually identified and consensually validated in 300 hours of group meetings with the three investigators present. The raw data responses were then organized into patterns of like responses in the data (e.g., "confidence to try new things," "believed in self," "never doubted self") to create larger more inclusive meaningful groupings (subthemes then higher order themes, then the most global grouping umbrella category) and summary labels were determined for each grouping level (e.g., the previously listed raw data themes were grouped into a more general subtheme called self-confidence). Athlete, coach, and parent responses were summarized for each medal winner and an integrated profile of each case was comprised.

Descriptive statistics were used to examine the quantitative data. Psychological strengths and limitations were determined by examining the magnitude of the participant's own responses on the psychological instruments administered. In cases where elite athlete norms exist (e.g., TOPS), participant scores were compared to existing norms for elite athletes. Results were also compared with findings from other studies that assessed elite athletes.

RESULTS

Quantitative Assessment Psychological Characteristics Results

Sport Anxiety Scale. The Olympic champions in this study had a mean somatic trait anxiety subscale score of 16.7 ($SD = 4.52$), ranging from 11 to 23. The mean worry subscale score for



these medal winners was 11.2 ($SD = 3.43$), with a range of 8 to 19. Concentration disruption scores for participants in this study ranged from 5 to 12 with a mean score of 7.0 ($SD = 2.58$). Finally, the overall SAS score ranges from 24 to 49 with a mean score of 34.9 ($SD = 8.57$).

In a study by Smith and colleagues (1991) using the SAS, 123 college football players demonstrated a mean trait somatic anxiety scale of 18.98 ($SD = 5.48$), a mean trait worry score of 14.17 ($SD = 4.47$), a mean concentration disruption score of 7.71 ($SD = 2.21$) and an overall mean of 40.86 ($SD = 9.99$). In contrast, the Olympic athletes surveyed in this study demonstrated lower mean anxiety scores on all three anxiety subscales (16.7, 11.2, and 7 respectively) and for the overall score (34.9).

Multidimensional Perfectionism Scale. The concern over mistakes subscale had a possible range of 9 to 45. For these Olympians the mean score for this subscale was 17.6 ($SD = 7.01$) with a range of 10 to 29. The second subscale, personal standards of achievement, has a possible range of 7 to 35. The participants in this study had a range of 17 to 35 and a mean score of 28 ($SD = 5.25$). Scores on parental expectations, the third subscale, had a potential range of 5 to 25. The scores for participants in this study ranged from 5 to 16 ($M = 11.8$, $SD = 3.74$). On the parental criticism subscale scores could potentially range from 4 to 20. These athletes had a range of 4 to 13 and a mean score of 6.2 ($SD = 2.66$). The doubts about actions subscale had a potential range of 4 to 20. These gold medallists had a range of 4 to 15 for this subscale with a mean score of 8 ($SD = 3.92$). The last subscale, organization, had a range of 6 to 30. These Olympians had a range of 18 to 30 ($M = 23.9$, $SD = 4.01$). Finally, adding the subscales together yielded a total perfectionism score, with a potential score ranging from 35 (low perfectionism) to 175 (high perfectionism). These participants had a scoring range of 72 to 113 and a mean score of 95.5 ($SD = 16.55$). Currently there are no available norms of elite athletes on the MPS.

Life Orientation Test-Revised. Athletes in this sample had LOT-R scores, measuring dispositional optimism, ranging from low of 13 to high of 22 ($M = 18.7$, $SD = 2.54$). This mean score of almost 19 was much higher than the mean score of 14.33 ($SD = 4.28$) of 2055 college students as reported by Scheier et al. (1994). It is interesting to note that in this sample of elite athletes the majority of the scores were between 17 and 22, with only one athlete reporting a score lower than the mean score reported by Scheier et al., (1994).

Task Ego Orientation Scale Questionnaire. For the task orientation subscale the participants had a scoring range of 3.86 to 4.86 with a mean of 4.36 ($SD = 0.37$). On the ego orientation subscale, the Olympians' scores ranged from 1 to 3.83 with a mean of 2.87 ($SD = 0.81$).

Athletic Coping Skills Inventory-28. Each of the six subscales of ACSI-28 has a potential range of 0 (low) to 12 (high). Additionally, the average score of the subscales yields an overall personal coping resource score. Table 1 contains the ACSI-28 means and standard deviations for the 10 Olympic champions sampled. The athletes' average scores were highest on confidence, concentration, freedom from worry, and coachability. Lowest scores came on the coping with adversity and peaking subscales, although both of these were 8 or above on the 12-point scale.

Table 1 also provides a comparison of the coping skills of professional minor league baseball players, as reported by Smith and Christensen (1994), to the findings of this study. This comparison reveals that the Olympic champions scored higher than the baseball players on coping with adversity, peaking under pressure, goal setting and mental preparation, concentration, freedom from worry, and confidence subscales. The baseball players scored higher on the coachability subscale.

The Adult Trait Hope Scale. In this sample, the athletes' agency scores yielded a mean score of 29.1 ($SD = 2.13$) with a range of 24 to 31. The mean pathway subscale score for this sample was 26.8 ($SD = 2.35$) with a range of 23 to 31. Combined, these subscales yielded an



Table 1
ACSI-28 Subscale Scores for This and Comparison Studies

	This Sample		Pro Baseball (Smith & Christensen, 1994)		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
ACSI-28					
Coping	8.2	1.23	7.55	2.48	0-12
Peaking	8.8	2.35	8.66	2.29	0-12
Goal/ Prep	8.9	2.51	6.56	2.84	0-12
Concentration	9.7	1.77	8.40	2.10	0-12
Worry	9.4	1.58	7.24	2.72	0-12
Confidence	9.9	1.66	9.51	1.95	0-12
Coachability	9.3	2.16	10.28	1.72	0-12
TOTAL	9.19	1.89			0-12

overall hope score mean of 55.9 ($SD = 3.48$) with a range of 51 to 61.

Test of Performance Strategies. The TOPS yields 16 subscale scores, assessing eight psychological skill performance strategies in both practice and competition contexts (See Table 2). Means and standard deviations for all competition subscales are contained in Table 2 and show that the Olympians exhibited the highest scores for goal setting, activation, relaxation and emotional control. For the practice context, highest scores were obtained for goal-setting and attentional control.

Comparisons of the Olympians' practice and competition TOPS scores to those of 65 international athletes contained in the original scale development work of Thomas et al. (1999) are also contained in Table 2. An inspection of this table reveals that the Olympic athletes in this study scored substantially higher in the competition context on emotional control, automaticity and relaxation, and lower than the international athletes on negative thinking. Relative to practice strategies the Olympians scored higher on goal setting and attentional control and lower on imagery.

Qualitative Psychological Characteristics Results

The athletes, coaches, and parents/siblings/significant others were all asked the general question, "what were the psychological characteristics of the Olympic athlete that helped him or her succeed?" Four hundred forty-four raw data responses resulted from the answers to this general question. These raw data responses were content analyzed through a consensual procedure with the three researchers discussing and coming to consensus on the grouping of the raw data responses into meaningful subcategories and larger groupings. Like raw data responses were grouped first into subthemes, like subthemes were grouped into higher-order themes, and related higher-order themes were combined to create the largest groupings, the umbrella categories. This procedure resulted in 44 subthemes that were grouped into 39 higher-order themes that were then summarized into eight overall psychological characteristics umbrella categories: 1) General Personality Characteristics and Values; 2) Performance Enhancement Skills and Characteristics; 3) Motivational Issues and Orientations; 4) Overall Handling of Adversity and Pressure; 5) Psychological Characteristics to Overcome; 6) Good Morals/Sportspersonship; 7) Self-Awareness; and 8) Having a Sense of Balance between Sport and



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Table 2
Test of Performance Strategies Scores for This and Comparison Studies

	This Sample		International Athletes (Thomas et al., 1999)		Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
COMPETITION STRATEGIES					
Self Talk	3.63	0.67	3.71	0.87	1-5
Emotional Control	4.08	0.50	3.77	0.59	1-5
Automaticity	3.65	0.65	3.10	0.76	1-5
Goal-Setting	4.23	0.84	4.11	0.66	1-5
Imagery	3.80	1.32	3.98	0.74	1-5
Activation	4.18	0.64	4.11	0.56	1-5
Relaxation	4.10	0.21	3.82	0.62	1-5
Negative Thinking	1.63	0.56	1.93	0.65	1-5
PRACTICE STRATEGIES					
Self Talk	3.53	0.63	3.58 *	0.70	1-5
Emotional Control	3.63	0.60	3.47	0.68	1-5
Automaticity	3.30	0.81	3.35	0.52	1-5
Goal-Setting	4.15	0.52	3.59	0.77	1-5
Imagery	3.20	1.12	3.52	0.71	1-5
Activation	3.18	0.44	3.15	0.66	1-5
Relaxation	2.78	1.01	2.92	0.66	1-5
Attentional Control	4.00	0.46	3.63	0.59	1-5

Life (see Figure 1). Each of these umbrella categories and the higher-order themes and sub-themes comprising them are discussed below.

General Personality Characteristics and Values. The first umbrella category was general personality characteristics and values, which contained responses from all 30 interview participants. Fifteen higher-order themes within this umbrella category are depicted in Figure 1 and included subthemes such as *Emotionally guarded/Quiet*, *Intelligent*, *Optimistic/Positive*, *Organized/Detail-oriented*, and *Manipulative*. The higher-order themes of *Optimistic/Positive* and *Healthy psychological characteristics* were the largest. These themes had responses from more than half the participants with 83.3% and 63.3% respectively.

The subtheme category and corresponding higher-order theme *Emotional*, was comprised of raw data responses indicating strong emotions, such as passion, for one's sport. *Emotionally guarded/Quiet* was comprised of raw data responses such as quiet, shy, and introvert. Only one athlete statement fell into this category, while five parents/siblings/significant others and six coaches made statements indicating that they felt the athlete was emotionally guarded/quiet. One coach created the image of his athlete as emotionally guarded/quiet by explaining how his athlete was during practice, particularly difficult ones: "he just went about his business. You never saw him complain. He just listened . . . he just plugged through it in a quiet way."

The *Headstrong/Self-centered* subtheme category and corresponding higher-order theme (cited by 1 athlete, 2 significant others, and 1 coach) was comprised of raw data responses such as having a lack of respect for authority and being stubborn. A sense of general, overall confidence in multiple areas of ones life was included in this subtheme (cited by 2 athletes, 2



UMBRELLA CATEGORY	HIGHER-ORDER THEME	SUBTHEMES	
General Personality Characteristics and Values	Emotional	Emotional	
	Emotionally guarded/quiet	Emotionally guarded/quiet	
	Headstrong and self-centered	Headstrong and self-centered	
	General confidence	General confidence	
	Healthy psychological characteristics	Healthy psychological characteristics	
	Intelligent	Intelligent	
	Optimistic/positive	Optimistic/positive	
	Organized/Detail-oriented	Organized/Detail-oriented	
	Realistic	Realistic	
	Speak mind	Speak mind	
	Temperamental	Temperamental	
	Manipulative	Manipulative	
	Knew value of money	Knew value of money	
Performance Enhancement Skills and Characteristics	Need for/sought parental support	Need for/sought parental support	
	Good with people/Nice person	Good with people/good social skills Nice person/likeable/personable	
	Ability to maximize resources	Ability to maximize resources	
	Ability to plan and prepare	Ability to plan and prepare	
	Methodical/Routine-oriented	Methodical/Routine-oriented	
	Ability to set goals	Ability to set goals	
	Coachable	Coachable	
	Mental toughness	Mental toughness	
	Good imagery ability	Good imagery ability	
	Good teammate	Good teammate	
	Competition attitude/Competitive		Killer instinct Intense Competitive
		Productive training attitude & approach	Productive training attitude & approach
		Pain tolerance	Pain tolerance
	Sport confidence	Sport confidence	
	Sport intelligence	Sport intelligence	
	Positive self talk	Positive self talk	
	Willing to try new things	Willing to try new things	
	Ability to focus		Ability to automatize Ability to focus on what you can control Ability to focus/not easily distracted
		Goal dedication	Goal dedication
		Drive	
Overall Handling of Adversity & Pressure Psychological Characteristics to overcome	Ways to cope with setbacks		Ways to cope with setbacks
	Ability to deal with anxiety		Ability to deal with anxiety
Good morals/Sportspersonship Self-Aware	Psychological characteristics to overcome	Psychological characteristics to overcome	
	Good morals/Sportspersonship	Good morals/Sportspersonship	
Sense of balance between sport & life	Good person	Good person	
	Self-awareness	Self-awareness	
Sense of balance between sport & life	Sense of balance	Sense of balance	
	Sense of balance between sport & life	Sense of balance between sport & life	

Note: The table does not include the smallest unit of data, the raw data responses given by participants.

Figure 1. Psychological characteristics umbrella categories and the higher-order themes and subthemes.



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significant others, and 1 coach). However, having a more selective sense of confidence in regards to one's ability to perform in sport was considered separate and was included in the umbrella category Performance Enhancement Skills and Characteristics.

Another large higher-order theme that fell within the General Personality Characteristics and Values umbrella category was *Healthy psychological characteristics*, cited by 4 athletes, 7 parents/siblings/significant others, and 8 coaches. This higher-order theme and corresponding subtheme were comprised from raw data responses that were seen as stable healthy psychological characteristics, including having no entitlement attitude, having patience, pride, a sense of responsibility, a sense of humor, being serious, being well-rounded, being humble, independent, courageous, emotionally even, and calm.

Intelligent was a higher-order theme and a corresponding subtheme cited by 2 athletes, 3 significant others, and 2 coaches. For the higher-order theme and corresponding subtheme of *Organized/Detail-oriented*, four athletes had raw data responses indicating that they felt they were organized/detail-oriented individuals. This subtheme was also listed by four parents/siblings/significant others and four coaches.

Interestingly, all 10 athletes interviewed, as well as 8 parents/siblings/significant others and 7 coaches, felt that the athlete in question was *Optimistic/Positive*. Hence, it emerged as a subtheme and higher-order theme. However, it should be noted that all participants were asked about athlete's optimism based on the quantitative results.

Another higher-order theme within the General Personality Characteristics and Values umbrella category was *Good with people/Nice person*. While no athletes interviewed made raw data responses that were classified into this category, 6 parents/siblings/significant others and 5 coaches did evaluate the athlete in such a positive light. This higher-order theme was further subdivided into 2 similar but subtly different subthemes of *Good with people/Good social skills* and *Nice person/Likeable/Personable*. One parent indicated that her son was good with people, had good social skills, and was able to lead others. She stated that her son was able to: "infect his teammates with his drive and intensity [and] he gained a great deal of respect from his players as team captain." In describing the athletes, 5 coaches used words such as personable, nice, well-mannered, warm, and likeable to describe the athletes as they knew them.

Performance Enhancement Skills and Characteristics. The second psychological characteristics umbrella category was *Performance Enhancement Skills and Characteristics* and it also contained responses from all 30 participants. Subthemes created from the raw data responses were coalesced into 16 higher-order themes (see Figure 1). The contents of this umbrella category were psychological characteristics deemed by the interview participants as having helped the athlete achieve performance success. Specifically, higher-order themes within the Performance Enhancement umbrella category included the *Ability to maximize resources*, the *Ability to set goals*, being *Coachable*, having a *Productive training attitude and approach*, and the *Ability to focus*. The ability to focus was further subcategorized into the subthemes of the *Ability to automatize*, the *Ability to focus on what you can control*, and the *Ability to focus/not easily distracted*. The largest higher-order themes included *Focus* (cited by 73.3% of respondents), *Mental toughness* (73.3%), *Competition attitude/Competitive* (63.3%), *Sport confidence* (60%), *Sport intelligence* (53.3%), and being *Coachable* (50% of respondents).

The largest higher order theme in the Performance Enhancement Skills and Characteristics umbrella category, *Focus*, was comprised of three subthemes, the *Ability to automatize*, the *Ability to focus on what you can control*, and the *Ability to focus/not easily distracted*. The majority of responses were categorized within the subtheme the ability to focus/not easily distracted with 7 athletes, 6 parents/siblings/significant others and 7 coaches making raw data responses that fell into this category. Raw data responses within the ability to focus/ not easily



distracted included “the ability to dial in” and “the ability to intensely focus and quiet the mind.” As one athlete described it: “I can get very focused. It is almost like where you get so focused time stands still.”

A significant other described the athlete’s ability to focus: “as she has the uncanny ability to, no matter what the situation is to . . . focus in on the task at hand.” Other components of the focus category included the subtheme ability to automatize skills, the ability to focus on what one can control, and the ability to focus on one’s self, not on others. An example of the latter subtheme can be seen in this coach’s quote regarding the athlete’s ability to remain focused on his own race, “It didn’t matter what anyone else was doing. They were not running his race. It only mattered how he was doing and I think that is how he looked at it.”

The *Mental toughness* higher-order theme was comprised of raw data responses such as mentally tough, perseverance, resilient, and persistent. Eight athletes, 8 parents/siblings/significant others, and 6 coaches indicated that the athlete was mentally tough.

The higher-order theme *Competition attitude/Competitiveness* (cited by 8 athletes, 6 significant others, and 5 coaches) was made up of descriptions by interview participants that were subcategorized into three subthemes—intense, killer instinct, and competitive. The subtheme *Competitive* was comprised of raw data responses such as competitive spirit, fighter, didn’t give up, and competitive. Raw data themes in the intense subtheme were those that described the athlete as intense or said the athlete had an “aggressive go for it attitude.”

Finally, further inspection of Figure 1 shows that eight other higher-order themes comprised this umbrella category. These included themes such as *Sport confidence*, being *Coachable*, *Ability to set goals*, *Good imagery ability*, *Sport intelligence*, *Pain tolerance*, being a *good teammate*, and *Positive self-talk*. Of these, *Sport confidence* (cited by 8 athletes, 5 significant others, and 5 coaches), being *Coachable* (cited by 5 athletes, 5 significant others, and 5 coaches), the *Ability to set goals* (cited by 4 athletes, 3 significant others, and 1 coach), *Good imagery ability* (cited by 6 athletes, 1 significant other, and 1 coach), and *Sport intelligence* (cited by 6 athletes, 5 significant others, and 5 coaches) were most often mentioned. While most of these themes parallel previous research in the area, sport intelligence was a new concept that emerged. It consisted of raw data responses such as the ability to analyze, being innovative, being a student of the sport, making good decisions, understanding the nature of elite sport, and being a quick learner. One coach commented on his athlete’s ability to learn by filtering out poor and focusing on useful information in the following way: “The greatest thing about her was she could really filter out what would work for her and what would not. So she could take input from everybody and she would only take 5% from one person and 95% from another.”

Motivational Issues and Orientations. The third psychological characteristics umbrella category was Motivational Issues and Orientations (96.7% of participants provided responses in this category—10 coaches, 10 significant others, and 9 coaches) and it consisted of two higher-order themes (See Figure 1). The higher-order themes included *Goal dedication*, cited by one coach, and *Drive*, cited by 10 athletes, 9 significant others, and 9 coaches. The higher-order theme *Drive* was further subcategorized into three subthemes: being *Driven to meet high expectations/perfectionism*, being *Driven to please others*, and general *Motivation/Dedication/Determination*. Of the subthemes within Motivational Issues and Orientations, *Motivation/Dedication/Determination* and being *Driven to meet personal high expectations/Perfectionism* were the most cited with 86.7% and 53.3% of the participants having responses in each category respectively. Within the *Motivation/Dedication/Determination* raw data responses included motivated, driven, hard worker, and high work ethic. For example, one parent characterized his child’s drive to meet high personal expectations/perfectionism in the following ways, “He pushed himself,” “this kid was driving himself,” and “he kept striving to be better.” Another athlete reflected on his drive and determination as follows:



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I think I worked really hard. There were a lot of athletes that might have been more talented than I was, but I think I was more determined. I wanted to do well and I wanted to reach my goals and I wasn't going to let anything stand in my way.

Ability to Handle Adversity and Pressure and Psychological Characteristics to Overcome. Two umbrella categories, Overall Handling of Adversity and Pressure, and Psychological Characteristics to Overcome, were related yet unique. While both categories considered how athletes dealt with adverse situations, they stood apart based on the context in which they were related. The first umbrella category, Overall Handling of Adversity and Pressure, was cited by 63.3% of the interview participants (7 athletes, 5 significant others, 7 coaches). This category dealt with having the personality characteristics and the psychological capacity to deal with the routine setbacks and anxiety associated with training and competing in developmental and elite levels of competition. Two higher-order themes—*Ways to cope with setbacks* and the *Ability to deal with anxiety*—comprised the Overall Handling of Adversity and Pressure umbrella category. One coach described his athlete's ability to handle pressure in the following way: "He was good under pressure, you know. It almost seemed like the more pressure he had on him the better he did."

The second related umbrella category, Psychological Characteristics to Overcome (cited by 16.7% of respondents—1 athlete, 1 significant other, and 3 coaches) dealt with having the personality characteristics and psychological capacity to handle extreme stress and adversity (e.g., low self-esteem, long-term illness, loss of sense of self/having a sense of self only tied to athletics). This category was comprised of a higher-order theme and subtheme of the same name. One athlete, for example, described her successful struggle to overcome tying her identity to performance in the following way:

I think my personality was totally tied into performance and I couldn't separate the fact that I just played a bad game but I'm still a good player, I just played a bad game, but I'm still a good person.

Other psychological categories. Finally, three remaining umbrella categories round out the responses given regarding the psychological characteristics these Olympic champion athletes possessed, according to the interview participants (see Figure 1). These categories included Good Morals/Sportspersonship (cited by 1 athlete, 2 significant others, and 2 coaches), Self-Awareness (cited by 5 athletes and 3 coaches), and having a Sense of Balance between Sport and Life (cited by 1 significant other). Good Morals/Sportspersonship, with 16.7% of participants responding, included the higher-order themes of being a *Good person* (cited by 1 athlete and 2 coaches) and having demonstrated *Good morals/sportspersonship* (cited by 2 significant others). The final two categories, Self-Awareness and having a Sense of Balance between Sport and Life were each comprised of a higher-order theme and subtheme of the same name and were cited by 26.7% and 3% of the participants respectively.

**PSYCHOLOGICAL CHARACTERISTIC DEVELOPMENT:
SOURCES OF INFLUENCE**

Study participants were asked how they felt these elite athletes developed the psychological strengths and characteristics that helped them achieve success. Specifically, the athletes were asked to identify individuals and situations that assisted their psychological development over time and within each of the three Bloom's stages: the early, middle, and late years. Coaches and parents/siblings/significant others were asked to identify what they did to help assist the



athlete's development. Additionally, they were asked to indicate other individuals and influences they thought may have impacted the athlete's development.

Overall, 634 references (raw data responses) were made to sources of influence (e.g., individuals, institutions) perceived to have an impact on the athlete's psychological development. These specific sources of influence were organized into six summary sources of influence categories. The overall sources included:

- Community
- Family
- Individual development
- Non-sport personnel
- Sport environment personnel, and
- The sport process

"Community," as a summary source of influence, included both the individuals and the general environment that the athlete experienced while growing up (e.g., a wealthy standard of living). The overall source category "family" was comprised of family environment, grandparents (grandmother, grandfather, grandparents), parents (mom, dad, parents), siblings (brothers, sisters, siblings), and significant others. "Individual development" was comprised of genetic factors, maturity (defined as the natural process of time and growing up), and self-development (defined as individual experiences and self-realizations). For example, after several difficult injuries one athlete had the self-realization that she would need to fight through adversity in order to overcome. Another athlete indicated that his confidence grew as a result of his own hard work and the success he experienced. "Non-sport personnel" included friends and teachers. The category "sport environment personnel" included agents, coaches, other/former elite athletes, competitors, sport psychologists, and teammates. The final summary source of influence category was "the sport process" itself. This category included the specific sources of competition, the nature of the sport, sport adversity (e.g., sport frustration, losing, the physical adversity of sport), training, and the sport program/organization.

PSYCHOLOGICAL CHARACTERISTIC DEVELOPMENT: METHODS OF INFLUENCE

Within each of the overall sources of influence categories (e.g., community, family), ways in which each source impacted the athlete's psychological development (e.g., taught, modeled, provided encouragement) were labeled "methods" of influence. Methods of influence included such practices as parents directly teaching, discussing, or emphasizing things (e.g., work ethic, determination, focus) with their child athlete. For example, parents emphasized hard work and discipline with their child/athlete by expecting him to try his hardest and do the best he could which in turn influenced the athlete's work ethic. Finally, it must be noted that methods of influence on psychological development within each summary source of influence category (e.g., family, non-sport personnel) were organized separately due to the fact that the specific methods cited varied across sources (see Figure 2).

Methods within the "Community" Source

Interview participants indicated that athlete's development was influenced by the active community lifestyle in which he or she was brought up and exposure to other achievers within



the community (cited by 10% of the respondents—1 athlete and 2 coaches). That is, the community (the environment and individuals in the environment collectively) helped shape the athlete due to the active lifestyle of the individuals in the community and through the achievement orientation of those in the community. For example, one coach indicated that being a part of a community where effort and achievement were evident all around the athlete helped her make an association between working hard and personal achievement.

Methods within the "Non-Sport Personnel" Source

Teachers and friends were the two specific sources cited that comprised summary source of influence category non sport personnel (mentioned by 20% of the participants—3 athletes and 3 parents/significant others). Teachers were said to influence athletes by emphasizing expectations and standards, by taking interest in the athlete, and through direct teaching of important skills such as imagery. Teachers influenced athletes' academic work ethic, their ability to relax effectively, and helped them separate their sense of identity from sport alone. For example, one athlete indicated that he learned the imagery techniques that he later used in his sport from a teacher outside of the sport environment. Another athlete noted that a teacher was important to his psychological development because the teacher showed an interest in him as an individual beyond his sport involvement. This helped the athlete see himself beyond his sport identity.

Friends, the second specific source of influence within the non-sport personnel source category, influenced athletes' development by directly providing support, providing success in other domains, and indirectly through teasing. One athlete indicated that peer support helped her maintain a sense of normalcy after achieving international elite level success. Another important way friends helped one athlete's development was through the realization that she could create and excel at non-sport-related activities. This helped build her confidence through success in other domains outside of sport. Teasing from friends and peers was cited as helping increase a sense of determination and adversity coping skills of one athlete.

Methods within "the Sport Process" Source

The summary source category "the sport process" (mentioned by 80% of the respondents—9 athletes, 8 coaches and 7 parents/significant others) provided five specific sources of influence including competition, the nature of the sport, sport program/sport organization, training, and sport adversity. These sources of influence impacted athletes' psychological development in a number of ways.

Competition. Competition, as a part of the sport process source of influence summary category, was found to have indirectly taught athletes through demonstrating what elite competition was like, providing success experiences, allowing participation in the competition experience, and the general overall experience of competition. When discussing how competition and success in competition affected the athlete's psychological skills and development, one coach mentioned: "I think in her case it was probably something that she developed along the way [through the competitive experience]. As she got more and more successful she realized that you had to be more and more focused."

Nature of the sport. The nature of the sport in which the athlete was involved was responsible for helping the athlete psychologically develop in a number of ways. These methods of influence included the nature of the competition experience within that sport, the nature of the sport fostering/nurturing/instilling attitudes and development, the general sport experience, having multisport experiences, and the very nature of the sport itself. All of these components taught, influenced, nurtured, fostered, or instilled psychological characteristics such as focus,



work ethic, ability to relax, ability to work effectively with people, and responsibility. In citing the important influence of the nature of his sport on his psychological development, one athlete said,

I guess my ability to relax just came with experience. I have been through so many different competitions that there is really nothing that can surprise me. So I find it pretty easy to be in a relaxed frame of mind even in a big competition.

Another athlete, citing the impact that her experiences in her sport had on her ability to remain humble while achieving great success, stated, "My sport was a relatively unknown sport in the States so it was easy not to get too big of a head."

Sport program/organization. The overall sport program/organization itself influenced the athletes via seven different methods including through the fostering/nurturing/instilling of positive skills, ideals, and attitudes, by providing elite models, by providing a positive environment and opportunities, by providing general support, fostering motivational techniques, through an optimistic/positive attitude, and by direct teaching. The sport programs/organizations were cited as influencing self-challenge, goal setting, confidence, the separation of sense of self from sport, focus, pride, and enjoyment. Local and national clubs and camps were cited by athletes, parents, and coaches as having provided helpful goal-setting meetings and inspirational speeches.

Training. Training for sport was indicated to facilitate athlete development through fostering/nurturing/instilling the psychological characteristics necessary to achieve success. The coach citing the influence of training indicated that the discipline required to train played a role in the development of the athlete's confidence, focus, and her ability to remain emotionally calm during difficult situations.

Sport adversity. The fifth and final source of development within the sport process source of influence summary category was sport adversity. Facing sports adversity such as losing in competition and training frustrations were cited as directly teaching athletes skills and attitudes important to psychological development. The experience of sport adversity taught athletes how to lose with grace, mental strength, determination, the ability to cope with adversity, as well as an understanding that frustration comes with success. In discussing the positive impact that the frustration of losing had on him, one athlete stated,

Two years in a row, I was beat by the same guy. I actually just turned those losses into a positive and by the third year there was no way he was going to beat me. I was prepared mentally and I think, you know, physically I was probably as prepared as I was any time. But mentally I was really sound and I ended up with a time that is still a conference record. I'm positive that getting beat had everything to do with mental preparation and I am positive I wouldn't have run that time if it weren't if I hadn't been put in that situation.

Methods Within the "Individual Development" Source

Individual development (cited by 70% of respondents—7 athletes, 6 significant others and 8 coaches) was another source of influence summary category relative to athlete psychological development. It was broken down into three more specific sources including genetics, maturity, and self-development. Each source within this summary category provided different methods of influence on the psychological development of the athletes.

Genetics. Genetics was viewed as an unalterable factor that the successful athletes made the most of in their development. The athlete who cited genetics as important to his psycho-



logical development indicated that a genetic ability to tolerate the pain of training increased his ability to focus and his general mental toughness.

General maturity. Two respondents, an athlete and an unrelated coach, indicated that the general maturity that comes with time was an important component of the athlete's development. This maturity influenced focus, confidence in making good decisions, the ability to separate self identity from sport identity, the ability to work hard, and overall dedication.

Self-development. Self-development helped individuals grow through a sense of self-awareness, by putting oneself in the right environment, and using other mental skills to help one's own development. Maturity was cited as playing a role in the development of psychological characteristics important to success through maturity and natural development. In explanation of how self-development helped her, one athlete indicated that,

I think my other strong positive qualities developed because I was stubborn and determined. I would work and work and work until I got something. If I wasn't satisfied with something, I would just work at it and work at it and think about it every day and just really dedicate myself to it.

Methods within the "Sport Environment Personnel" Source

The summary source of influence category "sport environment personnel" (cited by 100% of the respondents) included the specific sources of coaches, teammates, sport psychology consultants, other/former elite athletes, competitors, and agents as individuals who played an important role in the athlete's successful psychological development. Each source provided distinct subthemes of psychological development (see Figure 2).

Coaches. As might be expected, coaches played an important role in the development and growth of these athletes and provided many methods of influence on development. As one athlete said,

I think the coaches I had at different times were good for me. The coach I had during my adolescence was good because he was tough and kind of forced me to be tough or tougher than I thought I was. My later coach was nurturing . . . he gave me certain key triggers for me to get focused and keep me in the right frame of mind.

Coaches provided encouragement and support unconditionally and without pressure. They motivated their athletes using motivational techniques and through challenges. The methods coaches used were as different as the athletes themselves. For example, one coach helped maintain his athlete's focus and motivation by ordering her to take time off and go shopping because he knew she was unable to allow herself relaxation time. Another coach uncharacteristically gave the athlete a literal kick in the butt at a practice, a move that was described by both the athlete and the coach as being perfect for the moment.

Influential coaches took the time to individualize programs, provide individual attention, meet individual needs, and understand his or her athlete as a person. Coaches taught athletes both directly (mentoring, teaching psychological skills, planned teaching) and indirectly (fostering/nurturing/instilling important skills, modeling). These coaches emphasized expectations and standards, hard work, discipline, and the attitude that hard work will pay off. One parent, in describing the positive impact a middle-years coach had on her son's psychological development, stated that the coach was stern and meant business. This coach told his athletes that he expected them to be respectable young citizens who stayed out of trouble and kept their grades up.

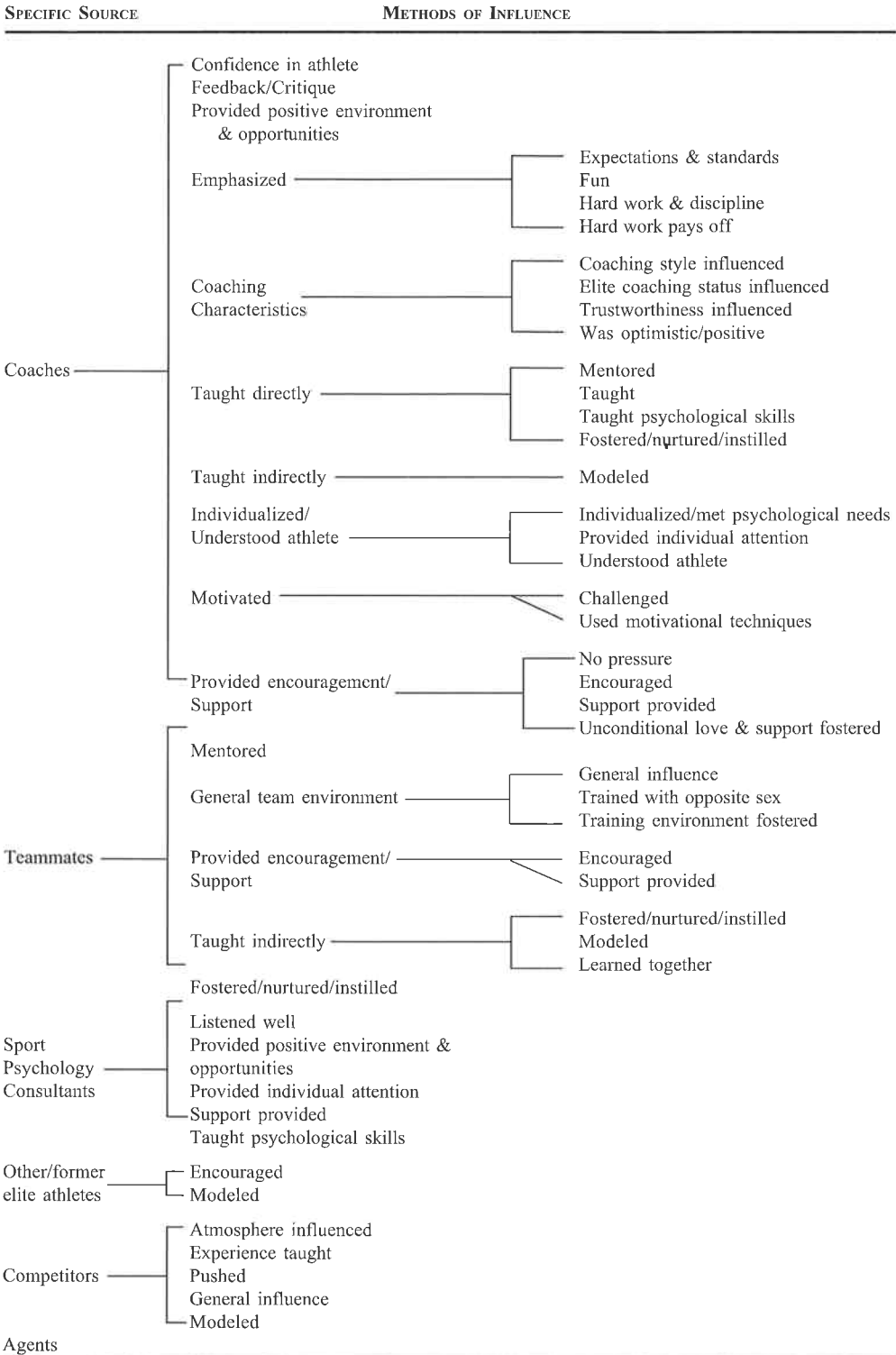


Figure 2. Specific sources of and methods of influence within the sport environment source of influence summary category.



The confidence that these coaches had and displayed in their athletes helped psychological development. As one athlete said, "Coach X, I mean, he just believed in me and that is all it takes. You know, I just feel like he cared about me as a person and he believed in me as an athlete." Coaches provided positive and helpful feedback and critiques that helped guide athlete development as well as provided positive growing environments and opportunities. Additionally, study participants indicated that coaches had many positive characteristics that helped the development of these successful athletes. These characteristics included a positive coaching style, the elite status of the coach (as a former athlete and/or as a current coach), good communication patterns, overall trustworthiness, and a sense of optimism or overall positive attitude.

Teammates. The next source within this summary source of influence category was teammates, including both same- and opposite-sex teammates. These teammates helped each other learn and mentored each other's development. For instance, in describing a paradigm shift regarding understanding the nature of competition and how he perceived it, one athlete said,

What helped me make that shift was a teammate. We were sitting and talking one day and we realized that the sport really stinks because you struggle all the time. You go out every day and you hammer and try harder and try something new, and then something else goes awry. And when you realize that it's not going to go well all the time and you don't [shouldn't] expect it to, it's much easier.

Teammates also provided support and encouragement and taught psychological lessons indirectly through modeling and by fostering, nurturing, and instilling helpful psychological characteristics. The environment created among the members of a team was also cited as useful for general psychological development. For three of the female participants in this study, this environment included training and or competing with male teammates. The importance of this interaction was mentioned by one of the significant others interviewed. This significant other indicated that training with the men really facilitated the athlete's development because if she didn't work hard, keep plugging away, and remain positive and focused she wouldn't have been able to keep up with them. These interactions helped develop these female athletes' confidence as well as provided an overall general positive developmental influence.

Sport psychology consultants. Experiences with a sport psychology consultant facilitated athlete development through a number of avenues. The consultants listened well, fostered/nurtured/instilled a positive mindset and sense of consistency, helped provide the right opportunities and environment for learning, provided individual attention, provided support, and directly taught psychological skills.

Other/former elite athletes. Other elite athletes and former elite athletes, who were not directly involved in the athletes' program or lives (e.g., coaches, teammates) were also cited as having an impact on their psychological development. These elite athletes served as important influences that provided role models and encouragement to the developing athletes. One parent, and the athlete as well, described the important influence of an Olympic gold medallist from another sport. At a young age this athlete was inspired by the Olympic champion's achievements and carried around her picture, declaring that she too would achieve Olympic success.

Competitors. Competitors influenced athletes by creating a competitive atmosphere, the competitive experience, by pushing the athletes to achieve, through behavior modeling, and were also cited as a general influence source.

Agents. For one athlete, his agent was described as fostering/nurturing/instilling characteristics important for success. This athlete's parent felt that through personal involvement, this agent fostered goal setting skills and skill transfer from sport to life in the athlete.



Methods within the "Family" Source

Family, the largest summary source of influence category (cited by 100% of the respondents), included parents, grandparents, siblings, and significant others (boyfriend, girlfriend, or spouse). A large range of methods of influence on psychological development were included within these sub-sources (see Figure 3).

Siblings. Siblings influenced the psychological development of the athletes participating in this study through the methods of teasing, by offering feedback and critique, through sibling rivalry, by providing support, and by teaching both directly and indirectly. Indirect teaching involved fostering/nurturing/instilling positive and healthy values and attitudes as well as modeling.

Grandparents. Grandparents were influential by leading active lifestyles, by being optimistic/positive, and through teaching both directly and indirectly. Indirect teaching included both modeling and fostering/nurturing/instilling positive and healthy attitudes and values. Additionally, grandparents had a positive general influence on their athletic grandchildren's psychological development.

Significant others. Athletes' significant others impacted the athletes' psychological development through indirect teaching (modeling, fostering/nurturing/instilling) and through intentionally teaching important attitudes and skills. Significant others also had a positive/optimistic attitude, provided support as well as helpful feedback and critique. Mentioning the support she received from her significant other during a time she was struggling and performing poorly, one athlete said, "My husband was trying everything he could to be supportive and not get in my way. He was honest and he could see things and talk about things that the coaches weren't brave enough to bring up."

Family environment. The family environment source, within the overall summary of influence category of family, includes things done within the family or due to the nature of the family dynamics that influenced psychological development, but could not be attributed to any one individual in the family alone. Examples included things such as how the nature of having a large family taught an athlete how to work with others, or how family dynamics within a single-parent household allowed the athlete to adopt a hard work ethic by witnessing how hard his mother worked to take care of the family. The methods of influence within the family environment included keeping success in perspective, objective evaluation of performance, an overall understanding of the sport, intentionally teaching psychological skills and characteristics within the family, modeling, and using motivational techniques. One parent, describing the important influence of the family on her child/athlete, cited how everyone in the family was always there for each other and the general supportive atmosphere within the family. The family environment was also cited as emphasizing expectations and standards, hard work and discipline, the importance of follow-through, and the attitude that hard work pays off. Participants indicated that the family environment did not place undue pressure on the athlete, and that instead it provided unconditional support and love.

General family characteristics were also cited as being important in the development of the psychological characteristics associated with success. These methods of influence included an active family lifestyle (everyone active), a healthy competitive environment, good communication skills, the nature of the family itself (e.g., independent, motivated), parenting styles, religiosity, and an optimistic/positive style. It is important to note that a dysfunctional family environment and financial issues were also indicated as being methods of influence on athletes' development within the family environment that helped athletes develop the psychological characteristics that helped them succeed. For example, one athlete indicated that although the stress he experienced as a result of his parents' divorce was difficult, it did help him



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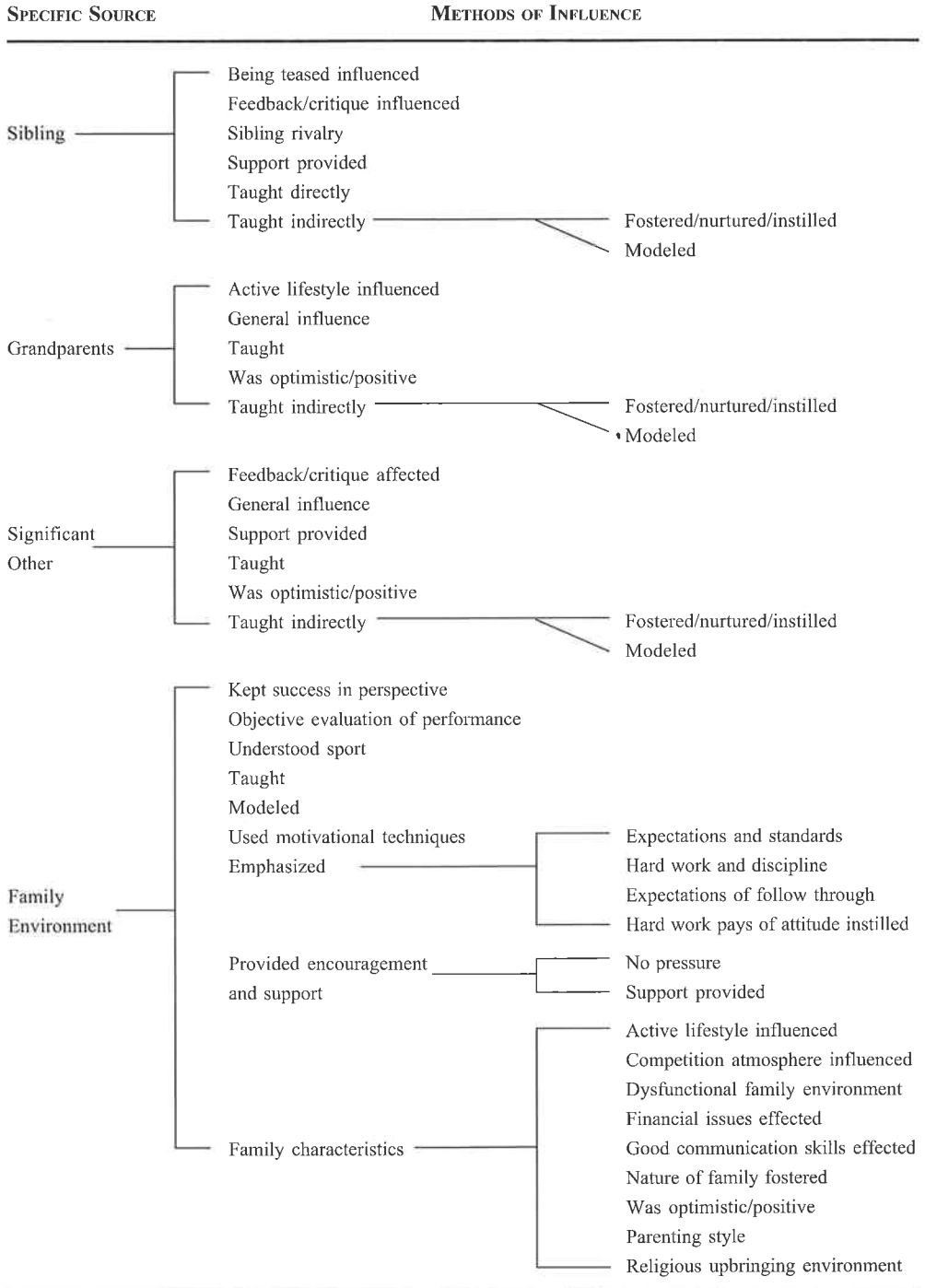


Figure 3. Specific sources of influence and methods of influence within the family source of influence summary category.

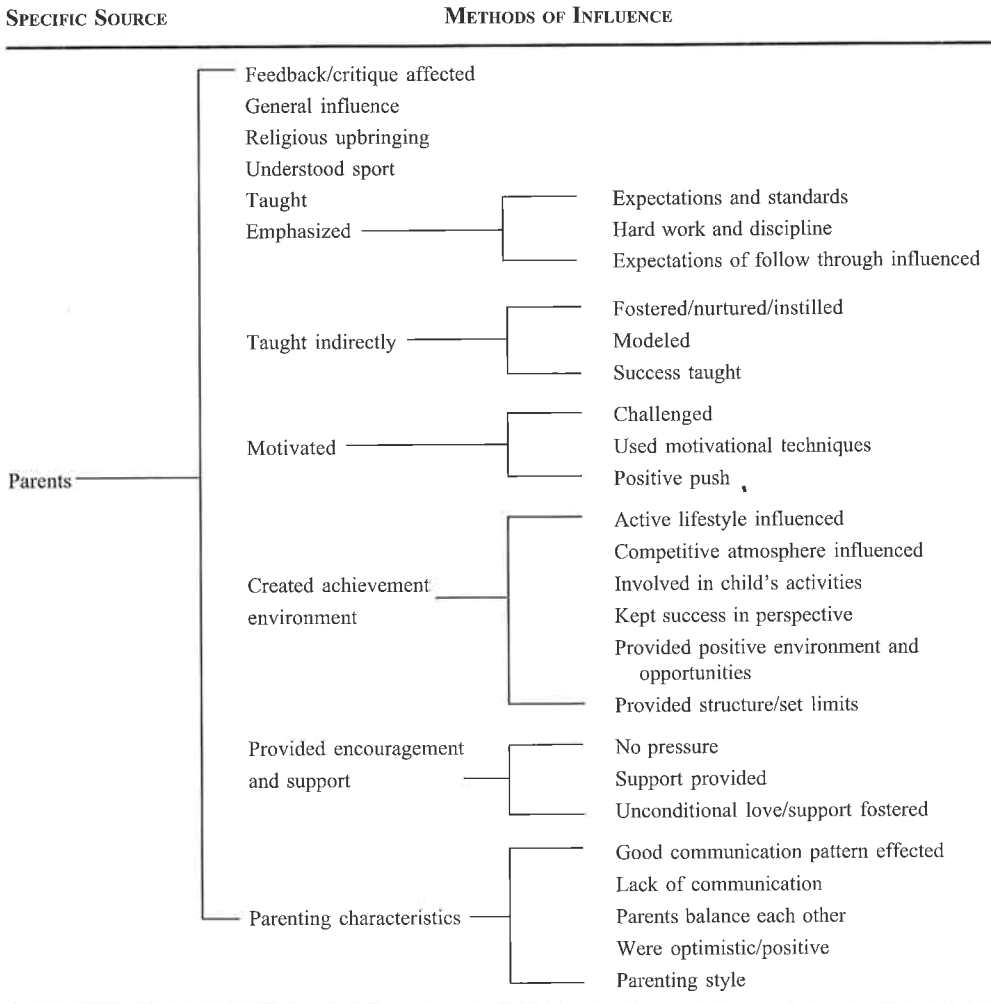


Figure 3. *Continued.*

develop positive, helpful coping skills. Interestingly, the athletes citing these influences indicated that although these events were not easy at the time, challenging circumstances did help them develop their strength and determination.

Parents. Parents, like coaches, were cited as playing a large role in the development of the healthy psychological characteristics of these Olympic champions. Included under the specific source category of parents were things that mothers, fathers, or parents as a unit did that influenced the athletes' psychological development. These methods of influence included providing feedback and critique, providing a religious upbringing, showing an understanding of the sport, and directly teaching. One mother of a gifted athlete, in describing the actions of her spouse, indicated that as a father he had a lot of influence on the athlete's development. She indicated that he pushed all of his children, including their Olympic champion, in positive and never destructive ways. Parents were also found to provide unconditional love and support with no pressure, and to motivate athletes through challenges, motivational techniques, and by



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using positive parental pushing. Examples of positive parental pushing included:

Pushing me enough so it still came from my heart. The times I really needed the motivation, they were right there giving it to me.

I think I had a really good balance between enough discipline and enough good humor that it worked out well.

Other sources of positive support, such as a caring coach, were evident as well.

Although in the minority, there were two cases where one parent was not positively supportive, instead basing or withholding love depending on how the athlete performed or pressuring or pushing their athlete. These behaviors were reported to have negative consequences on the athletes involved. In both these cases, however, the other parent exhibited unconditional love and support that offset many of these negative effects.

Expectations of hard work, discipline, of follow-through, and of upholding standards were subthemes of influence provided by parents, as was indirect teaching using modeling and by fostering and nurturing good skills and characteristics. The hard work ethic subtheme was derived from statements such as,

My people came over from Italy at the turn of the century and they set goals and I used to tell the kids this all the time. They had backbone and guts. They didn't sit down and cry and say poor me, everybody is discriminating against me. They go up and worked hard and excelled over the years. They were successful but they worked.

The emphasizing follow-through subtheme was best epitomized by the following parent statement,

If the children made a commitment, I expected them to follow-through. I would tell them you don't have to do it. You don't have to sign up for it. That is your choice. Once you do make that choice, then they must commit to it. So I expected them to follow through.

Parents were also said to have created a positive achievement environment with an active lifestyle emphasis, a positive competitive environment, and through providing structure and setting limits. The achievement environment was also maintained by keeping success in perspective, through providing opportunities and a positive environment, and through parental involvement in the individual's activities. Relative to keeping success in perspective, one athlete described her mother's response to household chores after she won gold medal as a teenager when she indicated "my mom was like, I don't care if you won X gold medals, you still have your chores and clean your room." Similarly, another athlete described his parents' perspective by stating,

I never felt like if I won a competition they were overly-excited. They were like, that was good, you know, they said that even when I didn't perform well. . . . I knew that they were proud of me but I think I knew they were proud of me whether I won or lost.

Finally, the characteristics of the parents, including good communication skills, lack of communication skills, good parental balance of one another, overall parenting style, and a sense of being optimistic/positive, were methods of influence all cited as having had an impact on the development of the successful individual's psychological characteristics.



DISCUSSION

Psychological Characteristics of Outstanding Athletes

After an extensive review of the literature, Williams and Krane (2001) identified a number of psychological characteristics of highly successful athletes, as well as the mental skills these athletes used to achieve optimal psychological states. Characteristics included: self-regulation of arousal; high confidence; better concentration and focus; an “in control but not forcing it” attitude; positive imagery and self-talk; and high determination and commitment. Skills used to achieve peak psychological states included: imagery; goal setting; thought control strategies; arousal management; well-developed competition plans; well-developed coping strategies; and pre-competitive mental preparation plans. The quantitative and qualitative results collected with these Olympic champions paralleled these results almost exactly. For example, ACSI-28 results showed that these outstanding performers had high confidence, freedom from worry, goal setting and mental preparation, and concentration/focus scores. Similarly, TOPS results showed that these Olympians were high on goal setting, activation, relaxation, emotional control, and automaticity/attention focus. Qualitative results triangulated many of these findings. Hence, we can be very confident that these variables are critical components of the psychology of athletic excellence.

In addition to verifying previous findings in a very selective group of superb performers, this investigation examined several previously unexplored variables that might be related to athletic success. Most notable were the perfectionism, optimism, and hope findings. Results revealed that the Olympians were moderately perfectionistic relative to their overall disposition scores. More interesting, however, was the pattern of the subscale findings. The champions scored moderately high or high on personal standards and organization, but low on concern over mistakes, parental expectations, parental criticism, and doubts about action. This pattern is what one would expect based on the literature regarding adaptive versus maladaptive perfectionism (Hamachek, 1978; Rice & Mirzadeh, 2000). These findings suggest that future researchers should explore both the positive and negative aspects of perfectionistic tendencies in athletes and their relationship to athletic success.

These athletes were also optimistic in their orientations, scoring high on the LOT-R. The qualitative findings also triangulated the fact that these athletes were optimistic and positive in their orientations as all the athletes, nine of the coaches and eight of the significant others identified this as an important characteristic of the Olympians. If this finding is verified in more controlled investigations and linked to performance, intervention studies might be in order as optimism can be learned (Seligman, 1990).

This group of athletes was also characterized by high levels of dispositional hope. Furthermore, they exhibited extremely high agency and pathway hope subscale scores. These hope findings were triangulated to some degree by high TOPS and ACSI-28 goal-setting subscale scores and qualitative findings emphasizing both goal setting and goal dedication. Again, because no comparison group was available for this study, the results are only suggestive. However, they are consistent with the initial athletic hope research of Curry and Snyder (2000) and lead us to recommend that sport psychology researchers further examine dispositional hope and its relationship to athletic success. Moreover, it should be noted that hope is an especially interesting construct to explore because sport psychology goal-setting research has tended to focus most of its attention on specific goal characteristics. However, the hope model looks at goal setting as a system with both dispositional and state components, as well as the specific goals one sets, possible pathways for achieving goals, and motivational strategies for dealing with obstacles that block goal achievement (Snyder, 2000).



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Consistent with previous research, the ability to focus was identified as one of the most cited characteristics of these highly successful performers. However, several components of focus were identified including the abilities to narrow one's attention, block out distractions, attend to what one can control, and automatize one's responses. Sport psychology researchers studying attention and concentration might find it useful to explore these potential components, especially in light of the latest motor learning and control attention and performance research (Abernethy, 2001).

The qualitative results also identified new variables and variable components that future investigators may consider. For example, mental toughness was an important characteristic identified in this study (mentioned by 73% of the participants). While athletes and coaches often talk about mental toughness, seldom has it been precisely defined. Participants (athletes, significant others, coaches) in this study were certainly not uniform in their views of mental toughness, but some of the more common components of it focused on resilience, perseverance, and the ability to successfully deal with adversity. (These findings are especially interesting given Jones, Hanton, and Connaughton's [2002, this issue] components of mental toughness study contained elsewhere in this issue.)

Finally, sport intelligence was an interesting new psychological characteristic identified in this study. It consisted of such themes as the ability to analyze, being innovative relative to one's sport technique, being a student of the sport, making good decisions, understanding the nature of elite sport, and being a quick learner. Further interviews with athletes and coaches about this variable and its components would be useful. Investigators could explore the make-up, antecedents, and potential effects of sport intelligence on performance.

The Development of Psychological Characteristics

This study was also designed to examine how psychological characteristics were developed in U.S. Olympic champions. Results showed that many individuals and institutions were perceived to influence the development of these outstanding performers. Specifically, these included the community, family, non-sport personnel, the individual himself or herself, sport environment/personnel, and the sport process. Moreover, ways of influence were both direct, such as teaching or emphasizing certain psychological lessons, and indirect, involving modeling or unknowingly creating certain psychological environments. These results, then, support the work of Bloom (1985) and Csikszentmihalyi and colleagues (1993) in showing that the psychological development of outstanding athletes takes place over a long time period and is influenced by a variety of individuals and factors. This long-term process involves both the talented person and a strong support system.

Although the interview guide was organized around Bloom's (1985) three career phases of elite performer development, it was clear to the three investigators that all 10 athletes' experiences easily fit into these stages. Hence, in the early years (the Romance phase) the athlete developed a love for the sport, had a great deal of fun, received encouragement from significant others, was free to explore the activity, and achieved a good deal of success. Parents also instilled the value of hard work and doing things well during the early years. In the middle years (the Precision phase), a master coach or teacher promoted long-term systematic skill learning in the talented individual. The focus was on technical mastery, technique, and excellence in skill development. Finally, in the later years (the Integration phase) an individual continued to work with a master teacher (coach) and practiced many hours a day to turn training and technical skills into personalized performance. During this phase, there was a realization that the activity was significant in one's life.

Not surprisingly, parents and families were perceived to play a critical role in psychological



talent development. They were found to provide financial, logistical, and social-emotional support. Families clearly supported and encouraged participation, but in most cases exerted little pressure to win. This is consistent with the youth sports research by Power and Woolger (1994) who found that parental support was positively related to children's enjoyment and enthusiasm for swimming. Similarly, it supports Côté's (1999) recent research with elite athletes and their families showing that families played a critical role in elite athlete involvement and athletic development.

Most interesting were the findings that families emphasized a belief in the child's ability to succeed or "can do" attitude. This is consistent with the research of Brustad (1993), who found that a higher rate of parental encouragement was correlated with perceived physical competence for children. Families also modeled hard work and discipline, a finding consistent with research by Monsaas (1985), Sloan (1985), Sosniak (1985), and Sloboda and Howe (1991) who showed that parents of highly successful individuals espoused or modeled values related to achievement such as hard work, success, being active, and persistence.

This optimistic achievement-oriented climate created by parents, then, helped develop the confidence and motivation needed for future success. At the same time, parents emphasized the attitude that "if you are going to do it, do it right." These results are consistent with Bloom's (1985) conclusion that the successful development of a talented individual requires the facilitation of disciplined involvement ("do it right" attitude) while avoiding excessive expectations (did not pressure the athlete). This is also consistent with Csikzentmihalyi et al.'s (1993) complex family notion. That is, these families are both integrated and differentiated—integrated in that they were stable in their sense of support and consistency; differentiated in that they encouraged their children to "individually" seek out new challenges and opportunities.

Like parents, coaches were also found to be a primary influence on athlete psychological development. They did this in a number of ways, including emphasizing certain things such as hard work and discipline or having fun, having characteristics that facilitated athlete trust, proving encouragement and support, directly teaching or fostering mental skills, and by understanding these athletes. Looking across the interviews it was also clear that the same coaching strategies were not appropriate for each athlete—different athletes required different things from their coaches at different points in their careers. This certainly emphasizes the importance of coaches reading athletes' psychological needs and utilizing different approaches at different times and in different situations. Some evidence (Hanson & Gould, 1988) indicates, however, that many coaches are not skilled at reading their athletes' psychological needs. A need exists to better understand this process.

Finally, while not the major focus of this study, costs of talent development were noted such as giving up aspects of a social life outside of sport or having difficulty separating one's sport and self-identity. This is consistent with Howe's (1999) conclusion that any intense effort to develop talent will have costs as well as benefits. More specifically examining these costs and benefits would be a fruitful area of future research. Additionally, it would be interesting to explore the process of how athletes balance such costs and benefits over time.

Strengths and Limitations

This investigation had a number of strengths. First, a very elite group of athletes was studied. Seldom before have so many high-level elite athletes been interviewed and surveyed. This was supplemented with interviews with significant others and coaches who knew the athletes very well. Triangulating findings across methods (surveys and interviews) and sources (athletes, coaches, significant others) was a strength, then. Interviewing the three sources also allowed us to gain three unique views of psychological characteristics and talent in Olympic



champions. A third strength was the three-person consensual validation procedure employed. In addition, previous studies on psychological characteristics of athletes have used only one of two inventories—an extensive battery of tests was employed in this study, as well as qualitative interviews. Finally, a broad scope was taken to the study.

Like all investigations, this study had several limitations. First, only 10 athletes were surveyed and interviewed. While they were certainly unique in their performance accomplishments, their total number is small and no comparison group of less successful but elite athletes of comparable experience (and their significant others and coaches) was surveyed and interviewed. Similarly, elite athlete norms for most of the inventories were not available for comparison purposes. Finally, because the data was collected in a retrospective fashion, results are subject to attribution effects and memory bias and this must be considered in interpreting findings.

Future Research Directions

Based on the results of this investigation, several lines of additional research are warranted. First, since this study did not employ a comparison group of elite athletes of similar experience (who had worked to medal but failed to do so), studying such a group of comparison athletes would further help determine how these individuals might have differed from their more successful counterparts. Similarly, prospective studies of elite athletes would allow us to later compare more and less successful individuals free from the possible memory bias and attribution effect limits of retrospective studies.

The degree that psychological characteristics are learned versus inherited is a point of some contention in the talent development literature. Ericsson (1996) suggests that talent development results from extensive deliberate practice, not inherited characteristics or genetics. Others argue that inherited characteristics play a more important role (Howe, 1998). However, few researchers have addressed this issue in psychology and no investigators in the sport psychology area. Examining the role of deliberate practice in the development of psychological skills and characteristics is critically important.

Parenting practices and the parents' role in psychological talent development is a fertile area of future research. The present results highlight the importance of parents supporting their child while emphasizing discipline and hard work. In addition, the notion of positive or optimal parent push was evident where parents would at some times challenge and motivate athletes and other times provide empathy and support. More needs to be known about how parents maintain the delicate balance between pushing and supporting involvement. Studies of effective versus less effective sport parents might be especially useful. Longitudinal case studies and observation research might be best suited in this regard.

Finally, the ability for coaches to individualize strategies based on accurate assessments of athlete psychological characteristics and states was identified as important by these respondents. Previous research by Hanson and Gould (1988), however, has shown that many college cross country coaches were not effective in reading their athletes' psychological states and traits. Studies examining factors related to coaches' abilities to appropriately read their athletes' needs and states are badly needed. One possible predictor of such abilities worthy of exploration might be the level of emotional intelligence of the coach (Goleman, 1995).

Practical Implications

These results have a number of implications for those interested in enhancing mental skills in developing athletes. First, our results are consistent with previous research showing key psychological characteristics and skills such as self-regulation of arousal, high confidence,



focus and positive imagery/self-talk are possessed by champion athletes. Those designing programs to enhance psychological skills and characteristics in developing athletes should focus on these characteristics. Second, our results show that top athletes develop psychological skills and characteristics over long time periods and are influenced by a wide variety of individuals (e.g., parents, coaches, teachers) and institutions (e.g., school, sport organizations, family). Thus, in addition to psychological skills training with individual athletes, more of a systems approach should be taken where key individuals within the athlete's socialization network (e.g., parents, coaches) are educated as to how to foster desirable psychological characteristic growth. Mental characteristics were also found to be developed both in formal and informal ways. However, in sport psychology we have focused most of our attention on formal psychological skills training efforts lead by sport psychology specialists. More attention should be given to parent, significant other, and family member education in the development of psychological characteristics of champion athletes. Finally, while common psychological characteristics were found in these champions, numerous individual differences were noted. In our efforts to design systematic programs to develop psychological skills and characteristics in athletes, we must be careful to recognize such differences.

CONCLUSION

While as a group these Olympians were characterized by a number of important psychological characteristics, it is important to remember that these are nomothetic results. No one Olympian was characterized by all the factors identified. In addition, each was unique in how the factors were combined to comprise his or her psychological make-up. It must also be emphasized that although the majority of factors identified were positive, the participants at times struggled and faced adversity. Two athletes even experienced clinical issues. Notwithstanding these facts, these characteristics can provide an important glimpse into the components of the psychology of excellence.

Relative to the development of their psychological talent or characteristics, this data suggests that psychological characteristic development is best thought of as a complex system made up of a variety of factors of influence. It is a long-term process that requires proper nurturing if success is to be achieved. Moreover, any number of individuals and agencies influence this process and do so in a variety of direct and indirect ways. It is our hope that as we continue to study the process of psychological characteristic development in outstanding athletes we will be better equipped to help all athletes better develop mentally so that they can achieve their personal performance and well-being objectives.

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