Back to the Future: Research Trends in Youth Motivation and Physical Activity

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In 1989, Linda Petlichkoff and I published a review article titled “Children’s Motivation for Participation in and Withdrawal From Sport: Identifying the Missing Links” (29) in the first volume of Pediatric Exercise Science. In our communication with Tom Rowland, founding editor of PES, about the appropriateness of our article, he stated: “I feel it is very important that this journal serve as a focus for information concerning exercise in children from the viewpoint of many different disciplines. Your article would be most helpful in letting our readers know that psychosocial issues are a top priority.” In light of the journal’s philosophy for including all aspects of youth physical activity, I am pleased with the invitation to trace how research on physical activity motivation has evolved since the original publication.

Physical activity motivation can be defined in cognitive and behavioral terms (27,32). Motivational orientations refer to an individual’s reasons for initiating, continuing, and ceasing involvement in physical activity. This aspect can be understood by why questions: Why do some youth participate in physical activities while others do not? Why do some youth exert effort and persevere while others give up easily? Why are some youth physically active for self-determined reasons whereas others participate for external reasons? Motivational behaviors refer to participation characteristics, such as choice, effort, frequency, intensity, and duration. The significance of motivational orientations and behaviors is their contribution to youths’ social, psychological, and physical development and health outcomes.

In the 1989 publication (29), our purposes were threefold: (a) review the status of research on children’s participation motivation, (b) identify “missing pieces” to the puzzle (i.e., gaps in the literature), and (c) suggest directions for future research. We used the term sport in our title and purposes 25 years ago and physical activity in the title here. I view physical activity as an overarching term that includes structured contexts such as organized sport, school physical education, and out-of-school-time programs as well as unstructured contexts such as play, recess, recreation, and active transportation. Because sport is ubiquitous among youth worldwide and physical education is inclusive of children regardless of skill level, it is not surprising that a majority of studies on physical activity motivation has been conducted in these settings.

Now, 25 years later, I will reflect on how research has progressed in physical activity motivation among youth. Just like Marty McFly (Michael J. Fox) in the
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Back to the Future trilogy, I focus on youth physical activity motivation at three time points: (1) Where were we 25 years ago? (2) Where are we currently? (3) What issues should be the focus in the next 25 years? As Doc Brown (Christopher Lloyd) said to Marty McFly in the first Back to the Future, “We’re about to embark on a historical journey.”

Back to the Future Part I:
Where Were We 25 Years Ago?

In the 1989 article (29), we synthesized common themes emerging in about two dozen studies on reasons for participating in and dropping out of community and school sport programs. The major theme was that children have multiple motives for participating in sport—improving skills, being with friends, having fun, becoming physically fit, enjoying the challenges, and experiencing success. Similarly, multiple reasons for discontinuing sport included negative coaching, skills not improving, feeling pressured, lack of fun, being injured, and wanting to try other things (sport and nonsport). Although studies documented participation reasons for youth that generalized across age, gender, nationality, and other demographics, lack of guiding theory meant that underlying explanations for activity involvement remained elusive. Lack of guiding theory also precluded offering practical implications for optimizing participation motivation based on systematic findings regarding processes and mechanisms of influence.

In addition to summarizing findings, we identified missing links to consider in future studies of physical activity motivation. I name just a few of them here. First, we raised the question of program type—how does motivation differ for required activities such as school physical education and elective activities such as organized sport? Second, we highlighted the importance of the child’s perceptions of activity experiences, because perceptions are powerful predictors of subsequent behavior. For example, children’s perceptions of physical competence rather than actual ability are strongly related to activity choice, effort, and persistence (10,27). Third, to gain insight into why youth continue or discontinue activity we encouraged researchers to use qualitative methods (e.g., interviewing) and not just surveys. Fourth, we noted participation motives were typically assessed at one point in time, which precludes knowing antecedent variables that explain level of participation and outcomes achieved as a result of involvement. Multiple assessments would shed light on stability or change over time in physical activity motivation. Finally, we noted that the social context in which activity occurs is likely to affect motivational orientations and behaviors differently for youth, such as program philosophy, coaching styles, and sociocultural factors (e.g., gender, race, culture). Social-contextual features were scarcely considered in early studies, yet reasons for dropping out of sport implied they were important considerations (i.e., overemphasis on winning, dislike for negative coaching style).

We concluded that answers to the missing links are important because understanding processes and mechanisms of influence on youth physical activity motivation can assist programs in adopting a philosophy; making policy decisions; identifying curricular content, providing for coach and parent education; and prioritizing intended outcomes. Ultimately the goal is to understand cognitive, social, and environmental factors that motivate youth to sustain physical activity over the
childhood and adolescent years and beyond so that holistic health outcomes are optimized. The stage is now set for my goal of discussing major developments in the last 25 years that have contributed meaningfully to understanding youth physical activity motivation today.

Back to the Future Part II: Where Are We Now?

In the last two decades, the knowledge base on youth physical activity motivation has grown exponentially. Comprehensive review articles and book chapters identify developmentally appropriate theories, social-contextual factors, and individual differences that explicitly address the why questions with because answers (9,26,27,32). I address four major advances in the scholarly literature that elevated our understanding of youth motivation and physical activity: (a) a shift from descriptive to theory-driven studies, (b) a shift from cross-sectional to longitudinal and intervention designs, (c) a shift from limited to varied quantitative and qualitative methods, and (d) a shift from convenience to purposeful samples in more inclusive physical activity contexts.

From Descriptive to Theory-Driven Studies

Early descriptive studies revealed robust reasons for why youth participate in physical activity: (a) to develop and demonstrate physical competence (e.g., learn and improve skills), (b) to attain social acceptance and approval (e.g., be with and make friends; be reinforced by parents and coaches), and (c) to experience enjoyment (e.g., have fun, experience challenges). These common motives were instrumental for identifying theories in developmental and educational psychology that were applicable for the physical domain. These theories guided subsequent research that went beyond describing motives for participating to explaining and predicting youths’ thoughts, feelings, and behaviors in physical activity settings.

In the past 25 years, four theories have been especially productive for advancing the knowledge base in youth physical activity motivation. These include competence motivation theory, self-determination theory, expectancy-value theory, and achievement goal theory (see 9,26,27 for descriptions). Although each theory has its nuances (e.g., construct labels), all share a commonality in key determinants of motivation that encompass why youth desire to continue activity. All four theories identify perceptions of competence as contributors to motivation, which accounts for youths’ desire to develop and demonstrate physical skills, physical fitness, and body attractiveness. These theories also recognize the central role of social relationships, such as social support and feelings of connection to others that reinforce youths’ needs for recognition, peer acceptance, friendships, and adult approval. Finally, they explicitly acknowledge positive affect as an undeniable source of physical activity motivation, such as joy, happiness, and pleasure that color one’s experiences in a favorable light. In general, these theories posit that social and environmental factors (e.g., parental behaviors, coaching style, psychological climate) and intrapersonal factors (e.g., perceived competence, perceived autonomy, task values, goal orientations) predict motivational orientations (e.g., self-determined or controlling forms) and behaviors (e.g., level, intensity).
Over the past 25 years, these four theories have guided research efforts to identify predictors, mediators, and moderators of youth physical activity motivation (9,10,27,32). Along the way, developmentally appropriate measures were validated for theoretical constructs that facilitated conducting research with youth samples. Theoretical predictions have been supported and translated to evidence-based best practices for administrators, coaches/teachers, and parents to guide program philosophy, policy, programming, and instructor training (20,23,31). These are practical theories because of the strong tie among theory, empirical research, and application for optimizing youths’ physical activity motivation.

Consistent with theory, robust findings exist for the three major “ingredients” of physical activity motivation. Findings repeatedly show that (a) perceived competence is a strong predictor of self-determined motivation and physical activity level; (b) enjoyment is a powerful source of physical activity motivation and sustained participation; and (c) parents, coaches, and peers exhibit beliefs and behaviors that influence whether youth choose to be involved, how invested they are in physical activity, and what psychosocial and behavioral outcomes are attained as a consequence of participation (26,27,28,32). Extensive literature reviews on social and individual variables related to youth motivation, self-perceptions, and social influence can be found in other sources (e.g., 10,11,13,18,27). In the following paragraphs I briefly summarize and provide an example for each robust finding.

Perceived competence and similar self-constructs, such as physical self-worth and self-efficacy, are consistently related to self-determined motivation and physical activity behavior (10,14). Youth who are confident in their physical abilities and possess favorable expectations of success are more likely to participate for intrinsic reasons (“want to” rather than “have to”) and be more physically active than peers with lower competence beliefs. For example, Ferrer-Caja and Weiss (7) assessed high school students in physical education on social, cognitive, and behavioral variables. Based on self-determination theory, model testing showed that perceived physical competence was a significant predictor of intrinsic motivation and physical activity behavior, and intrinsic motivation mediated the relationship between perceived competence and physical activity. The take-home message is that sessions and activities should be structured to enhance perceived competence, which increases intrinsic motivation, physical activity, and health benefits (20,23).

Positive emotional experiences, notably enjoyment, are strongly predictive of self-determined motivation, commitment to physical activity, and motivated behaviors (4,27). Children and adolescents who rate their physical activity experiences as more enjoyable and pleasurable are more likely to participate for freely-chosen reasons, exhibit desire to remain involved, and continue their participation over time. Based on competence motivation theory, Smith (17) tested a model of relationships among peer influence, self-perceptions, positive affect, and physical activity motivation with 12- to 15-year-old students. Girls and boys who reported greater positive affective responses to their physical activity involvement were more likely to express preference for optimally challenging activities (i.e., positive motivational orientation) and be more physically active than adolescents who experienced less enjoyment. Physical activities that are enjoyable and interesting to youth will have more staying power and optimize opportunities for skill and health
benefits, a message accentuated in the Physical Activity Guidelines for Americans (21).

Significant others, notably parents, coaches, and peers, are pervasive sources of youth physical activity motivation, both directly and indirectly through effects on self-perceptions and emotions (11,13,18,27). Opportunities for youth to form meaningful relationships with caring, competent, and compassionate adults and peers result in feelings of relatedness and competence, enjoyment and pride, and positive motivational orientations and behaviors. Parents, coaches, and peers (e.g., teammates, classmates) represent consistent sources of motivation for youth but the mechanisms by which these sources influence physical activity motivation vary.

Mechanisms of parental influence include providing social support, modeling attitudes and behaviors, expressing beliefs about the child’s competence, providing performance feedback, and expressing beliefs about the value of physical activity (13). Davison and Jago (5) found that girls who maintained physical activity levels from ages 9 to 15 reported greater parental modeling behaviors (e.g., enjoyment of physical activity, frequency of physical activity, family using sport as recreation) than girls who did not maintain activity levels. Coaching behaviors that influence youth physical activity motivation consist of feedback patterns, decision-making style, autonomy-supportive versus controlling behaviors, and motivational climate (11,27). Many studies have shown strong relationships between perceptions of coaches as autonomy-supportive (e.g., providing choices within limits; creating opportunity for initiative and leadership) and youths’ perceived competence, self-determined motivation, and activity participation. Finally, mechanisms of peer influence revolve around social acceptance and approval, social support/friendship quality, modeling attitudes and behaviors, and leadership behaviors (18,27). Smith et al. (19) found that 10- to 14-year-old sport participants characterized as higher in friendship quality, higher in peer acceptance, and lower in peer conflict reported higher perceived competence, enjoyment, and self-determined motivation than youth reflecting a more negative profile. Extrapolating from theory and research, more favorable self-perceptions, enjoyment, and self-determined motivation should translate to higher physical activity levels.

In sum, the past 25 years of research on youth physical activity motivation has benefited considerably from guidance by appropriate theoretical frameworks. The advantage of theory-driven studies has been an ability to go beyond describing motives for participation to explaining and predicting motivational orientations and behaviors. The knowledge base is consistent in showing that social relationships with significant adults and peers, and intrapersonal factors, namely self-perceptions and emotions, connote the main ingredients of youth physical activity motivation. These findings have not only contributed to the theoretical and empirical knowledge base but they also translate to practical strategies for promoting self-determined motivation and physical activity behavior (e.g., 20,23,32).

From Cross-Sectional to Longitudinal and Intervention Designs

Early studies were characterized by cross-sectional designs, typically using surveys to tap youths’ ratings of participation motives at one point during their activity
program (or afterward to investigate reasons for dropout). To determine processes and mechanisms underlying variations in physical activity motivation, the past 25 years has seen a shift from cross-sectional to longitudinal and intervention designs in structured contexts (e.g., school physical education classes, after-school youth development programs).

Many cross-sectional studies still exist, no doubt related to challenges of doing field-based, rather than laboratory, research that is typical in the social sciences. Advantages of theory-driven hypotheses and statistical techniques that consider multivariate relationships have improved earlier studies. However, the nature of a cross-sectional design, no matter the type of statistical analysis, cannot infer causation. In this case we are left with discussing associations among variables and not determinants or predictors of youth physical activity motivation.

In the last 10–15 years, greater attention has been paid to posing research questions that warrant a longitudinal design (e.g., how do social variables predict physical activity motivation from pre- to postseason?) or intervention design (e.g., does an experimental group show more favorable developmental outcomes compared with a control group?). These designs are capable of situating antecedents, processes, and outcomes of physical activity motivation (14, 27). Davison et al. (6) examined relationships among parental support, child’s perceived competence, and child’s physical activity from ages 9–11. One approach specified that parental support at age 9 predicted perceived competence and physical activity at age 11, whereas a second model hypothesized perceived competence at age 9 predicting parental support and physical activity at age 11. Path analyses showed support for the model in which the child’s perceived competence elicited behavioral change from parents (i.e., social support) and positively made an impact on the child’s physical activity behavior.

Greater public awareness of the role of physical activity in promoting holistic health and preventing disease resulted in increased opportunities for funding that facilitated comprehensive motivational interventions. For example, the Lifestyle Education for Activity Project (LEAP) comprised a school-based intervention to teach high school girls physical and behavioral skills to adopt a healthy lifestyle (16, 22). These goals were targeted using theory-based motivational strategies such as providing girls-only physical education classes, empowering girls to choose activities of personal interest, training teachers and staff to engage in positive social interactions, and promoting lifetime activities. The intervention was effective in increasing girls’ physical activity levels in and outside of class, and enjoyment, self-efficacy, and social support were critical processes reflecting positive change. Findings provide causal evidence that a theory-driven intervention, including an intentional curriculum and trained teachers to effectively deliver the curriculum, can increase youths’ self-efficacy to be active, enjoyment of physical activities, and physical activity behavior.

From Limited to Varied Quantitative and Qualitative Methods

Traditional approaches to research 25 years ago meant that study questions were addressed and data analyzed with some form of quantitative method. Analyses were primarily descriptive or univariate, with reporting of means, standard deviations,
frequencies, Pearson correlations, \( t \) tests, and ANOVAs to interpret findings related to group differences (e.g., gender, age) or relationships between single variables (e.g., participation motive with perceived competence). Occasionally an exploratory factor analysis was conducted to reduce a large number of survey items to a smaller, more parsimonious set of motivation categories (26,32). With advances in computer technology and ready access to statistical programs and resources, the past 25 years has seen a shift from analyses examining single dependent variables to multivariate and modeling techniques.

Today, researchers are able to examine relationships among multiple variables or compare groups on several motivation constructs simultaneously. Even in cross-sectional study designs, analytic methods such as cluster analysis, canonical correlation analysis, multivariate analysis of variance, and structural equation modeling allow multiple motivation constructs to be considered in tandem and enable a more accurate interpretation of findings. The rigor with which studies can be evaluated using quantitative methods has never been stronger. Importantly, the more frequent reporting of clinical or practical significance allows a means of judging a study’s contribution to real-world applications and a more transparent outlook on the meaningfulness of statistically significant findings. Still, it is crucial to remember the research question drives the method—no matter how tempting it may be to conduct the trendiest analytic method available (tongue-in-cheek).

Beyond greater access to quantitative methods, today there is greater acceptance of and encouragement for the use of qualitative and mixed methods approaches to explore a topic in depth (12). Remembering that the research question drives the method, understanding the many potential factors that influence physical activity motivation could benefit from a combination of quantitative (e.g., surveys) and qualitative (e.g., interviews) methods. Bruening et al. (2) conducted a physical activity intervention with five preadolescent girls of color over 12 weeks. The intervention was designed to improve self-perceptions, physical abilities, feelings of connectedness, and health-related life skills. Methods included weekly journal entries by participants and coinvestigators and four individual interviews with each participant and her parents. Analyses were described in depth—including triangulation of data, peer debriefing, and member checks (qualitative steps to “validate” analyses). Results showed that program involvement improved girls’ self-esteem, responsibility, sense of belonging, and knowledge and acquisition of life skills. The authors designed an intervention customized for a purposeful sample and employed methods that aligned with the research question. They obtained information-rich responses about girls’ thoughts, feelings, and behaviors related to physical activity, which contributed to the knowledge base and informed after-school program leaders about optimizing physical activity motivation.

Over the past decade, many studies using qualitative methods—focus groups, individual interviews, journals/diaries, observations, open-ended questions—have unleashed a wealth of information on youth physical activity motivation and participation. Rigorous criteria define the trustworthiness of data collected as part of qualitative studies just as they are for quantitative studies (e.g., validity and reliability of measures). In addition, computer programs are available for analyzing qualitative just as they are for quantitative data, making the prospect of using mixed methods a more appealing and seamless endeavor.
From Convenience to Purposeful Samples in More Inclusive Physical Activity Contexts

Studies reviewed in our 1989 publication (29) consisted mostly of convenience samples of youth participants in community or high school sport programs. This approach is characteristic of the early phases of research in a new area—to access youth who vary in characteristics such as age, gender, sport type, nationality, and so forth, to develop a knowledge base—in this case motivational reasons for physical activity participation. This is often a necessary beginning before deriving more specific research questions.

Adopting theories applicable to the physical domain and implementing appropriate study designs considerably advanced research in youth physical activity motivation. Over the years, purposeful samples have become the norm, such as Bruening et al.'s (2) preadolescent girls of color (a population at risk for lower physical activity and health) in an urban afterschool program and LEAP’s adolescent Black girls in physical education classes (16,22). Today, physical activity motivation researchers are more likely to select samples for a particular reason (e.g., at-risk for low physical activity; specific sport or program type) and offer a rationale for this selection. This shows a shift from early research on convenience samples in organized sport to purposeful samples in varied physical activity contexts. These include structured (e.g., after-school sport program) and unstructured (e.g., recess) contexts and individuals varying in demographic, social, and cultural attributes.

In sum, advances in research on physical activity motivation over the past 25 years have contributed to theory development and testing, understanding processes and mechanisms of influence, and informing evidence-based best practices for motivating youth to be physically active. Paradigm shifts from descriptive to theory-based questions, cross-sectional to longitudinal and intervention designs, quantitative to mixed methods, and convenience to purposeful samples show a rapid growth in knowledge and application. These advances also importantly addressed the missing links or gaps in the literature so prominent in the 1989 publication.

Back to the Future Part III: Where Are We Going in 25 Years?

To round out our trilogy, I now look to the future—what questions, issues, and controversies await empirical research in the next 25 years? There are many possibilities, but I will focus on three issues: (a) the need to consider developmental differences (e.g., cognitive, physical, social) in youth motivation, (b) embracing a positive youth development (PYD) approach to structuring youth physical activity programs, and (c) implementing evaluation research to assess effectiveness of physical activity-based youth development programs.

First, children and adolescents vary considerably in cognitive, physical, and social maturity, thus it is critical to consider between-age and within-age variability in studies of youth motivation (see 24). Age groups can be chosen based on physical, cognitive, and/or social criteria. For example, in Smith’s (17) study of peer influence and physical activity motivation, middle school-age students were purposefully chosen because friendships are important to and physical activity declines for this age group. Smith also included an index of physical maturity as a control variable,
as have others (1,15), showing that puberty is related to self-perceptions, affect, and motivation. Theories that explicitly account for developmental differences are most appropriate for explaining variations in physical activity motivation. In addition to competence motivation, self-determination, expectancy value, and achievement goal theories—approaches such as ecological systems and social-cognitive theories have been productive for understanding correlates, mediators, and moderators of physical activity motivation. By contrast, others such as theory of reasoned action, theory of planned behavior, and stages of change model are not as youth-friendly because they were developed and validated with adult samples.

Considering developmental differences in youth physical activity motivation also means it is critical that measures of motivation and other related variables (e.g., perceived competence, affect, social influence) show good psychometric properties with the intended age group (3). Valid and reliable scales ensure that items are compatible with the cognitive-developmental level for the age group of interest. Finally, research on variations in motivational orientations and behaviors are needed for developmental transitions—elementary to middle school, middle school to high school, and high school to college (32). Transitional periods are marked by changes in social-environmental characteristics (e.g., teacher behaviors, emphasis on social comparison) and intrapersonal factors (e.g., physical maturity, domain-specific perceived competence) that are likely to influence youths’ physical activity attitudes and behaviors. Similar transitions can be studied in out-of-school-time programs—from recreational (where all children play) to select teams (i.e., tryouts) to all-star and elite teams.

The second future research direction I want to emphasize is embracing a positive youth development (PYD) approach to structuring youth physical activity programs (25,28,31). This framework views children and adolescents as resources to be developed and focuses on teaching physical, social, and psychological assets, or life skills, that provide youth with self-regulated means of dealing with life’s challenges. Physical assets or life skills include motor skill competencies, movement literacy, knowledge about the importance of a physically active lifestyle, and physical fitness; psychological assets include self-determined motivation toward physical activity, favorable self-perceptions, and positive affect and stress relief; and, social assets include support from significant adults and peers, and attributes such as respect, responsibility, courtesy, and integrity (25,28,31).

In physical-activity-based positive youth development programs (PA-PYD), such as Girls on the Run (www.GirlsontheRun.org) and The First Tee (www.thefirsttee.org), physical activities and life skills are taught concurrently so that making healthy choices, managing emotions, and resolving conflicts, among other skills, are successfully transferred from the immediate activity context to other relevant domains (e.g., school, family, community). Within these domains, positive social interactions with teachers, classmates, parents, siblings, and community members are critical for becoming a productive citizen in society. PA-PYD programs feature an intentional curriculum to teach physical activities, life skills, and core values; opportunities for skill building through activities to teach physical, social, and psychological competencies; deliberate training of instructors to ensure effective delivery of the curriculum; and an evaluation component to document evidence of program effectiveness. This last point provides a transition to my third recommendation for future research.
Evaluation research is needed to determine if and how a youth physical activity program is effective (i.e., processes and mechanisms explaining change in outcomes). Evaluating the effectiveness of youth physical activity programs serves three purposes (a) contributes to the knowledge base on physical activity motivation, (b) translates research to practical applications for youth program personnel, and (c) identifies exemplary curricula, coach training, and programming that other organizations can seek to emulate. Evaluation research consists of assessing if an existing program is achieving intended goals; results provide feedback to practitioners about program strengths, areas needing improvement, and recommendations for how to modify curricula and instructional strategies to achieve intended objectives. A few evaluation research studies have shown positive results for PA-PYD programs in teaching physical, social, and psychological life skills (8,30) but more research is an important future direction. Encouraging programs to embrace a PYD approach, which combines physical activities and life skills, will be a productive way to motivate youth to embrace positive attitudes and behaviors and, at the same time, learn how to successfully transfer skills learned within the physical activity context to other life domains.

Concluding Remarks

Returning to my *Back to the Future* theme, an understanding of youth physical activity motivation has come a long way in the last 25 years. Developmentally appropriate theories have guided research questions, identified constructs that predict motivation, and aided interpretation of findings that translate to evidence-based best practices. Results from longitudinal and intervention designs unveiled processes and mechanisms influencing motivational orientations and behaviors. A variety of quantitative and qualitative methods that align with the research question provided a more complete picture of factors explaining youths’ cognitions, emotions, and behaviors in physical activity settings. Designating purposeful samples in school and community contexts enlightened our understanding of sociocultural and at-risk populations relative to their needs, attributes, and traditions concerning a physically active lifestyle.

The next 25 years look even more promising for yet more revelations on youth physical activity motivation. Notably studies should explicitly consider how variations in cognitive, social, and physical maturity impact attitudes and behaviors; focus on physical activity as a context for teaching life skills by embracing features of a PYD approach; and include evaluations of program effectiveness to delineate curricular and instructional components that can serve as exemplars for other programs.

In conclusion, I again invoke the wisdom of Doc Brown as he explains to Marty McFly why he invented the time machine in a scene from *Back to the Future Part II*: “The intent here is to gain a clearer perception of humanity—where we’ve been, where we’re going—the pitfalls, the possibilities, the perils, and a promise… perhaps even an answer to the universal question, ‘Why?’”

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References


