

Student interest in activities in a secondary physical education curriculum: An analysis of student subjectivity

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Chen, A. (1996). Student interest in activities in a secondary physical education curriculum: An analysis of student subjectivity. *Research Quarterly for Exercise and Sport*, 67, 424-432.

This is an Accepted Manuscript of an article published by Taylor & Francis in *Research Quarterly for Exercise and Sport* on December 1, 1996, available online:

<http://www.tandfonline.com/10.1080/02701367.1996.10607974>

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Abstract:

Situational interest is defined as a student's perception of interest inherent in an activity. Holding interest is conceptualized as a specific situational interest perceived by a student based on his or her subjective understanding of the activity's meaningfulness. It motivates the student to continuously participate in that activity. This research was designed to examine the patterns of holding interest for physical activities in a state physical education curriculum for secondary schools. A group of college students (N = 35) who completed their entire secondary education in the state was invited to construct their perceptions of interest in the activities selected from their secondary physical education curriculum. Q methodology was used to determine and analyze patterns of the interest. Four patterns of holding interest were determined: fitness, socialization, activity variation, and self-expression. Specific activities associated with each pattern were identified, and relationships among the four patterns were described. Findings (a) support the notion that holding interest is based on students' subjective understanding and valuing of the unique meanings in physical activities and (b) suggest that holding interest is person- and activity-specific, implying that physical educators should focus on student-activity matching when making curricular decisions.

Keywords: curriculum | physical activity | physical education

Article:

A fundamental assumption for developing a physical education curriculum is that students will be interested in and motivated to learn the activities. It is frequently reported, however, that students do not achieve the learning goals as expected (Locke, 1992). In some cases, students showed disinterest rather than interest in physical education (Ennis, 1995). In studying secondary school female students' selective decisions in physical education, Browne (1992) found that when physical education was not listed as a required course, few students would take it. Their selective decisions were often interest-related. It is often observed in everyday life as well as

empirical research (Krapp, Hidi, & Renninger, 1992) that students learn better in the content they consider interesting than that in which they experience boredom. It therefore can be assumed that students' perceptions of how interesting physical activities are may play an important role, without exception, in how much and how well they learn.

Interest is a psychological state that emerges from a person's interaction with the environment (Krapp et al., 1992). Historically, as a research construct, interest was defined operationally as a degree of liking or enjoying. Recent developments in intrinsic motivation research suggest, however, that interest should be distinguished from enjoyment and considered an independent construct (Deci, 1992). Reeve (1989) demonstrated that interest derives from perceptions of activity correlative properties including curiosity, attention, stimulus selection, investigative intention, and desire of exploration, which are all rooted in perceptions of the values and meanings embedded in the activity. Enjoyment, on the other hand, is the feeling of satisfaction resulting from mastery, efficacy, and competence. Reeve's research (1989) implies that enjoyment contributes to an individual's continuous interest in an activity, but interest may not necessarily produce enjoyment.

Interest is characterized by personal subjectivity. In other words, interest in an activity depends on a "developing self," and the match between the self and an activity (Deci, 1992, p. 49). Subjectivity of interest is supposedly developed and strengthened through an individual's recognition and appreciation of the personal meaning and value an activity can offer. Thus, subjectivity is considered a function of a person's developing preferences for interest in an activity (Deci, 1992).

Recently, researchers have focused on situational interest: a person's subjective perception of an activity's appealing characteristics (Hidi & Anderson, 1992). Two types of situational interest have been identified: catching interest and holding interest (Mitchell, 1993). Catching interest is the student's perception of an activity's appealing characteristics that attract the student to take part in the activity at a given time. Holding interest is the perception of characteristics that have long-lasting retaining effects and maintain the student's involvement in the activity even after the catching interest has diminished. Mitchell (1993) tested this model in mathematics and found there were specific activities associated with each type of situational interest. For instance, associated with catching interest were puzzles, small-group work, and use of computers. These activities intrigued students and focused their attention on learning tasks. Students developed a holding interest in mathematics when they took part in other activities that were related closely to their daily lives.

In addition to subjectivity, situational interest is also characterized by selectivity and persistence (Prenzel, 1992). Selectivity is the property a person perceives as meaningful, whereas persistence is the prolonged effect of the property that motivates the individual to participate continuously in the activity. It seems that selectivity is embedded in catching interest: individuals are attracted by perceiving novelty, challenge, and variability in an activity. In contrast, persistence attaches to the perception of holding interest that reinforces a person's persistent preferences associated with his or her internalizing an activity's meaning and value.

Dewey (1933) once depicted the relationship of student, content, and curriculum by using a metaphor from the retail business: "Teaching may be compared to selling commodities. No one can sell unless someone buys" (p. 35). Empirical evidence in school physical education research indicates that many physical education programs do not achieve their goals (Locke, 1992), suggesting that students are not "buying" our curriculum. Recent school-based research in physical education also revealed that at times students' boycott to physical education content forced the teacher to change the curriculum from "a curriculum of skill" to "a curriculum of motivation" then to "a curriculum of order" (Ennis, 1995, pp. 453-454). Jewett, Bain, and Ennis (1995) argue that a student entering physical education classes is not a "blank slate" or an "empty pitcher" (p. 85). The student either has determined or is determining how relevant the content is to his or her life. These assumptions about the relationship between the student and the curriculum suggest that matching a student with activities based on his or her perception of interest may be essential to encouraging the student to "buy" physical education.

The theoretical framework briefly described above represents a unique perspective in studying student motivation in learning, which supplements a unitary intrinsic motivation construct that centers on individual perception of self competence and desire of success (Deci, 1992; Reeve, 1989). The framework also provides a conceptual platform for examining the connection between specific content in a curriculum and its perceived interest, an important component of intrinsic motivation in learning (Deci, 1992), which is regarded as a missing link in educational research (Burke, 1995). In physical education, little research has been conducted on the components described in the framework. Holding interest, which influences the student's continuous participation in an activity, has rarely been examined from the student's perspective as an independent construct. Adoption of this theoretical framework was important to this study in that it clarified a link between specific content offered in a physical education curriculum and students' perceptions of holding interest in the content.

Grounded in the above theoretical framework, this research assumed that students who were actively involved in physical education might perceive different patterns of holding interest, because holding interest derived from various meanings potentially conceptualized in physical activities (Jewett et al., 1995). The purpose of this study, therefore, was to investigate student perception of holding interest in activities included in the state physical education curriculum for secondary schools in Hawaii. Specifically, this research was designed to: (a) uncover possible patterns of holding interest, (b) examine the relationship between identified patterns and physical activities, and (c) identify meanings that maintained students' perceptions of holding interest. In this article, the term interest was used interchangeably with "holding interest."

In a study on students' attitudes toward physical activities, Kenyon (1968) suggested that physical activities were perceived meaningful when people considered their participation to be: (a) a social experience, (b) a health and fitness development, (c) the pursuit of vertigo, (d) an aesthetic experience, (e) a cathartic experience, and (f) an ascetic experience. Although Kenyon's findings (1968) revealed that the students perceived and conceptualized different meanings when they participated in physical activities, much still remains unknown, especially whether and how the perception of meanings related to the perception of holding interest in educational physical activities.

This study can be viewed as a continued effort of exploring perceptions of meanings in physical activities. However, a different theoretical framework and approach was used in examining students' perceived interest and meaning and their relationships to specific physical activities in a school curriculum. This research focused on students' subjective construction and interpretation of meanings that contributed to their perceived holding interest in activities rather than their responses to a research construct operationally defined by the researcher. It was expected that this study provide empirical information for those educators interested in developing a physical education curriculum that addresses students' interests.

Method

Q Methodology

Because student subjectivity was central to this research, Q methodology, a method for studying human subjectivity (McKeown & Thomas, 1988), was used for data collection and analysis. The letter Q represents a series of analyses based on correlations among persons to "distinguish these from the more conventional trait correlations expressed by Pearson's r " (Brown, 1980, p. 9). In Q methodology, subjectivity data are collected using Q sorting and oral reflection (Brown, 1980). Q sorting is accomplished by having the respondents systematically sort, in terms of a specified condition, a set of stimulus items, usually cards with printed statements, on a bipolar differential scale (from -5 to +5). On completing Q sorting, the respondent would expound orally on his or her reasons for the sorting results. A P sample (person) and a Q sample (item) are used in data collection. The P-sample is purposefully selected to maximize the representativeness of personal experiences. The Q sample includes items widely selected to saturate theoretical components defined by the research purpose (Brown, 1980). Completed Q sorts are factor-analyzed with persons as a variable array. Persons with similar Q sorts are factored together in a group to represent a response pattern. Based on the patterns, items are rearranged to generate pattern-specific model Q sorts. Coupled with an analysis of the oral reflection data, the meanings of the patterns are interpreted in relation to the P and Q samples.

Conceptually, generalizing the findings encompasses both P and Q dimensions. Findings relevant to the P sample may only be generalized to the people who share similar experiences with those in the P sample. Findings relevant to the Q sample should only be interpreted in the context from which the items were derived (Brown, 1980). In comparison with other instruments (e.g., paper-pencil questionnaires or inventories), Q methodology provides a measuring environment in which a selected respondent can construct his or her personal meanings. Therefore, the internal validity is maximally enhanced. In addition, the Q sorting allows each respondent to construct a response to an item in reference to an insignificant point of 0, positioned in the middle of the bipolar differential scale. Thus, comparability among different Q sorts increases and, subsequently, the generalizability improves within limits of the P and Q samples (Brown, 1980).

P and Q Samples in This Study

The P sample was selected iteratively. At the first stage, 211 university students participated in the survey. They were not physical education majors but enrolled in service physical education

courses. The participants responded to questions about the names and locations of their middle and high schools, number of years in the schools, enrollment experiences in physical education (number of credits, required and elective courses taken), frequency of weekly exercise, names of the exercises, physical education classes taken each year in college, and related personal demographic information. Informed consent was obtained from all participants before the survey began.

To maximize the representativeness of physical education experiences in the secondary schools, those participants were excluded who did not receive their entire secondary education in the state or did not meet the minimum credit requirements for middle or high school physical education. In addition, former athletes and students who reported exercising less than three times a week were dropped from the sample. The screening resulted in a preliminary sample of 54 students for Q sorting.

In the second stage, a five-unknown-activity criterion was applied to determine inclusion or exclusion of a completed Q sort for further analysis. The Q sorts completed by participants who indicated more than five unknown activities (sorted into the 0, or neutral, category on the Q scale) were excluded from analyses. This screening was based on the concern that an excessive amount of unknown activities placed in the 0 (neutral) category was likely to threaten the category's midpoint position as an equal measurement to both poles (Brown, 1980). Among the 54 completed Q sorts, 19 did not meet the criterion and, therefore, were excluded from data analysis.

The final P sample consisted of 35 participants (17 women, 18 men) M age = 22.53 years, SD = 4.51, M years in college = 3.66, SD = 1.35. For elective physical education courses taken in each college year, M = 2.66, SD = 0.60. For the frequency of weekly exercise outside physical education, M = 3.54, SD = 0.75. The Q sample consisted of items representing 60 physical activities recommended as independent teaching units by the state's curriculum guide. Each activity name and its designated serial number were printed on a 1.5- x 2-in card. The cards were ordered randomly when presented to the participants for sorting. A test-retest reliability (R_{xx} = .96) was obtained by having 8 nonparticipants sort the cards twice in a 3-day interval.

Data Collection

Q-sorting. In a sorting session, each of the 4 participants simultaneously sorted their own set of cards on a large table facing a corner of a large conference room. At the beginning, participants were asked to read the cards and write down the activities that were unknown to them. Then they were directed to place the unknown activities in the 0 category (neutral). After this preliminary sorting, each participant sorted a designated number of cards into each of the 11 categories polarized by most interesting (+5) and most boring (-5) (the number of cards in the 11 categories were: 3, 4, 4, 7, 7, 10, 7, 7, 4, 4, 3). Each category carried one of the sequential Q values ranging from 1 (-5) to 11 (+5). The sorting proceeded alternately between the two poles. The researcher frequently reminded participants to base their sorting on their secondary physical education experiences. When finished, the participant recorded the serial numbers of cards on a score sheet by writing the serial numbers in the corresponding cells. The researcher verified recording by visually comparing the score sheet with the Q sort.

Reflection. In reflection, each participant was asked to examine and adjust the completed Q sort and orally provide the rationale for sorting activities into the polar (+5 and -5) categories. A tape recorder was used to record each participant's reflection. During the reflection period, the researcher was present with additional cassette recorders and tapes. The researcher's interference was limited to replacing malfunctioning cassette recorders, which occurred only once during the data collection. No time constraint was applied during the data collection.

Data Analysis

Q analysis. The purpose of Q analysis was to group participants who had similar Q sorts into a response pattern for the generation of a pattern-specific model Q sort. First, the P sample was factor-analyzed to form response patterns. Second, in each response pattern, a factor score was computed for each activity in each participant's Q sort. Then, a ranking score for each activity was obtained by summing its factor scores from all participants. Finally, all the activities were ranked on the Q scale in terms of the ranking scores to form a model Q sort. The three physical activities with the highest ranking scores represented the model Q sort. In the Q factor analysis, the assumption of a non-identity correlation matrix for the factor analysis was examined using Bartlett's test of sphericity to warrant a valid and reliable factor solution for establishing model Q sorts.

Correlation analysis. The correlation between each model Q sort and the representative activities from all model Q sorts was computed to verify the activities' affiliations to their model Q sorts. Correlation between all model Q sorts and all 60 activities was performed to identify association of the activities with the model Q sorts. The sum of the Q values of the three representative activities for a model Q sort was used as the score (variable X) to be correlated with the Q value (variable Y) of each activity in the two analyses. Correlation among the model Q sorts was also performed on each model Q sort's average Q value of all associated activities. Pearson Product-Moment correlation was used in these analyses. Although the ranking nature of the Q sorting data could be considered on an ordinal scale, the Q scale (1-11) provides an equal distance between the ranks and, thus, can be treated as interval data when analyzed (Shavelson, 1988).

Reflection data analysis. The recorded reflection data were analyzed using Strauss's (1987) open, axial, and selective coding system. In the open coding, which occurred on daily basis, reflection data were transcribed and fractured on the basis of transcribed sentences to generate general categories and subcategories based on their properties. The axial coding occurred concurrently with the Q factor analysis. Analyzing memos for the participants were written to indicate their model Q sort affiliation, preferred activities in the individual Q sort. In this coding process, the fractured data that shared a common property were categorized to form an axis (theme) that reflected meaningfulness perceived by the individuals within the category. This process produced a higher level of data abstraction that allowed the researcher to move "toward the discovery of a core category or categories" (Strauss, 1987, p. 55). During this coding process, data from participants not associated with any model Q sorts were excluded to enhance the compatibility of the generated themes with their associated model Q sorts. In the selective coding, focus was placed on the relationships among the themes and the subcategories within them. A grounded theory (Strauss, 1987) was developed to describe the participants' perceived

meanings and interests in the activities. In this process, demographic data were deliberated to determine whether there were any pattern-unique characteristics (Brown, 1980).

Results

Model Q Sorts Generation

The principal components method was used in the Q factor analysis. Bartlett's test of sphericity showed that the correlation matrix of the 35 Q sorts was a non-identity matrix (Bartlett Sphericity = 1478.86, $p < .01$), indicating that the data met the primary assumptions for generating a valid and reliable factor solution. An Eigenvalue = 1 (Kaiser, 1974) was used as the criterion to extract factors, because the commonalities for all the subjects were high, ranging from .66-.85. Table 1 lists the factor loading in an eight-pattern solution. The variance accounted for was 84%.

Table 1. Factor loading for the elicited patterns

Pattern 1		Pattern 2		Pattern 3		Pattern 4		Pattern 5		Pattern 6		Pattern 7		Pattern 8	
ID	LD	ID	LD	ID	LD	ID	LD	ID	LD	ID	LD	ID	LD	ID	LD
3	.77	9	.60	5	.61	2	.76	1	.82	7	.82	21	.88	32	.86
4	.83	11	.80	23	.60	8	.61	13	.81	17	.53	35	.67		
6	.74	15	.78	25	.60	12	.70								
10	.64	18	.60	27	.70	26	.75								
14	.62	20	.60	33	.61										
16	.72	29	.67												
19	.71	30	.69												
22	.82	31	.66												
24	.67	34	.68												
28	.63														

Note. ID^a = Student identification number. LD^b = Factor loading.

Using Guadagnoli and Velicer's criterion (as cited in Stevens, 1992) that a factor with four high-loading values (> 0.60) should be considered reliable, a four-pattern solution (Pattern 1, 2, 3, and 4) was chosen to establish model Q sorts. The four patterns accounted for 63% of solution variance. Based on participants' factor loading, a ranking score for each of the 60 activities was obtained to determine the position of an activity in a pattern. The Q scale with the same polarized 11 categories was applied to the activity array to form a model Q sort for each pattern. The three activities in the +5 (most interesting) category were considered representative activities for the model Q sort. The representative activities and their parent model Q sorts are listed in the first two columns in Table 2. It appears that in Q Sort 1, individual fitness activities were primary, while in Q Sort 2 traditional sports were emphasized. Q Sort 3 encompassed both individual and team activities. A strong gymnastics-dance focus was noticeable in Q Sort 4.

Correlation Analysis

Results of the correlation analyses, summarized in Table 2, indicate that all the representative activities were correlated to their parent model Q sorts, with one activity (aerobic dance) correlated with both Q Sorts 1 and 4. In addition, Q Sort 1 was found to be correlated positively with Q Sort 3, while Q Sort 2 and Q Sort 4 were negatively correlated. Associations between

model Q sorts and other activities were also identified in the correlation analysis. Table 3 reports the activities related to the model Q sorts ($r_{xy} > 0.40$).

Table 2. Correlation between model Q sorts and representative activities and among Q sorts ($N = 35$)

Activity	Affiliation	Q Sort			
		1	2	3	4
Aerobics	Q Sort 1, 4	.72**	-.10	.20	.48*
Weight lifting	Q Sort 1, 3	.57**	-.03	.59**	-.27
Swimming	Q Sort 1	.73**	.18	.00	-.31
Basketball	Q Sort 2	-.39	.59**	-.36	-.34
Volleyball	Q Sort 2, 3	.10	.60**	.48*	.04
Tennis	Q Sort 2	.27	.73**	-.01	-.06
Karate	Q Sort 3	-.01	-.38	.52**	.28
Balance beam	Q Sort 4	-.20	-.32	-.21	.56**
Hula	Q Sort 4	.17	-.22	-.01	.67**
Modern Dance	Q Sort 4	.14	.09	.21	.79**
Q Sort 1			-.03	.44**	.21
Q Sort 2			.04	-.35*	
Q Sort 3			-.04		

* $p = .01$ ** $p = .001$.

Table 3. Activities associated with model Q sorts

Q sort 1 (fitness)	Q sort 2 (socialization)	Q sort 3 (variation)	Q sort 4 (self-expression)
Swimming	Bowling	Free-weight lifting	Synchronized swimming
Jogging	Tennis	Karate	Aerobic dance
Aerobic dance	Golf	Surfing	Balance beam
Free weight lifting	Table tennis	Volleyball	Tumbling
Machine weight lifting	Basketball		Hula
Yoga	Softball		Creative dance
	Volleyball		Dramatic dance
			Social dance
			Modern dance

Note. Activities included in a pattern had positive correlation ($r_{xy} > .40$, $p < .05$) with their model Q sorts. Forced distributions in Q sorts may result in low correlation (Brown, 1980), $r_{xy} > .40$ was considered to indicate an informative correlation.

Meaningfulness of the Model Q Sorts

Analysis of self-reflection transcripts revealed four themes of rationale across the four model Q sorts: personal fitness, socialization, perceived competence, and culture appreciation. An activity variation theme and an self-expression theme were found to be associated only with the model Q sorts 3 and 4, respectively. Table 4 reports the distribution of the rationale themes and the number of participants in each model Q sort who cited each rationale as a basis for making a selective decision in the Q sorting. Although all the themes generally reflected participants' perceived meanings associated with their perceptions of holding interest in physical activities, the number of participants citing a particular meaning varied across the model Q sorts. In model Q sort 1, 80% of the participants cited fitness-health development as the rationale for their

perceptions of interest in activities, whereas 89% of the participants in model Q Sort 2 used socialization as their rationale for selecting activities perceived interesting. Similar rationale-model Q sort associations were observed in activity variation and self-expression.

Table 4. Number of participants in each rationale theme across the model Q sorts

Model Q sort	<i>N</i>	Fitness (<i>n</i>)	Socialization (<i>n</i>)	Perceived competence (<i>n</i>)	Culture appreciation (<i>n</i>)	Activity variation (<i>n</i>)	Self-expression (<i>n</i>)
1	10	8	3	4	4	0	0
2	9	5	8	5	4	0	0
3	5	3	2	0	2	5	0
4	4	2	0	3	1	0	4

Perceived competence and culture appreciation were not salient themes in any model Q sort. It can be speculated that they might represent two fundamental but not activity-specific meanings that accounted for participants' decisions to participate in physical activities in general; however, they did not account for participants' perceptions of holding interest relative to specific activities identified in the model Q sorts. To maintain a focused analysis on reflection themes associated with the model Q sorts, these two meanings were dropped from further examination. The four model Q sorts were labeled by the researcher in terms of the representative activities in each and its associated participants' rationale. Thereafter, interest patterns for model Q Sorts 1, 2, 3, and 4 were labeled Fitness, Socialization, Activity Variation, and Self-Expression, respectively.

The reflection data showed that personal fitness and socialization themes were associated mainly with the model Q Sorts 1 and 2, whereas movement variation and artistic expression were associated with model Q Sorts 3 and 4, respectively. Reflection data that appeared specific to a model Q sort are presented below. Eight participants in Q Sort 1 emphasized personal health fitness benefits. Three of them commented:

I like aerobic dance, free-weight lifting, and stretching. They involve a lot of actions that are good for my body, good for my health. As a person in the modern society, you have to be healthy and fit to enjoy your life. So I think those are the most interesting activities for me. [Student 3]

I play soccer a lot. I run both 50-yd dash and cross-country. And I love stretching. I am interested in these activities, because you have to put aerobic and anaerobic activities together for your health. I feel those three provide the overall fitness to me. These activities give me a balanced body and help me stay fit. [Student 10]

I am interested very much in swimming, aerobic dance, and weight lifting. These activities challenge my body and improve my body functions. Swimming and aerobics help my cardiovascular system, and weight lifting strengthens my muscles and gives me more ability to do a lot of things to have a healthy life. [Student 14]

Eight participants in Q Sort 2 emphasized friendship, interpersonal association, and socialization as their primary reasons for continuing to participate in physical activities. Two of their comments are presented below as examples.

I picked basketball, softball, and table tennis as my most interesting activities because my friends play them too. A lot of fun comes out of playing something with your friends. You strengthen both your skills and friendship. [Student 11]

My three choices for the most interesting [activities] are basketball, volleyball, and surfing. I like to be with my friends. These activities give me opportunities to spend a lot of time with them. When I went to high school, all my friends were playing basketball. Actually, I can play anything as long as I am playing it with my friends... These three are the ones we play the most. So they interest me. [Student 30]

Four participants in Q Sort 3 indicated that they found the activities interesting because of their variation.

I selected surfing, karate, and volleyball as my most interesting activities. It's interesting to do different things, especially for exercise... It's interesting for me to try different skills from time to time, otherwise I will get bored pretty soon. [Student 27]

I picked volleyball, cycling, and karate for the most interesting category. I think I need to play different sports to keep myself from getting bored. I can't keep playing one thing for a long time. I don't know why-maybe because I became so used to switching to a new unit every 3 weeks when I took gym classes in high school. [Student 33]

All participants in Q Sort 4 said that artistic expression of self through dance and gymnastics allowed them to stay involved actively in these activities.

For the most interesting activities, I picked hula because it has meaning to each movement and a story behind it. I also chose balance beam because it not only requires strength, agility, [and] flexibility but also loveliness, expression, and elegance. To me, the artistic part in physical activities is more interesting than the physical part. [Student 2]

Social dance, modern dance, and square dance. I chose these dances because it's a good form of exercise and it's interesting how you can move your body in different ways to express what you are dancing about... I love dances, because dancing involves emotions and requires artistic creativity to express myself [Student 26]

Based on these salient themes, fitness, socialization, variation, and self-expression appeared to be appropriate labels for the model Q Sorts 1, 2, 3, and 4, respectively, to represent the different patterns of holding interest. Deliberation of participants' demographic data in terms of their response patterns revealed that most female participants selected Fitness (6 women, 4 men) and Self-Expression (4 women, 0 men), whereas male participants selected Socialization (1 woman, 8 men) and Variation (1 woman, 4 men).

Discussion

The purpose of this study was to examine what types of holding interest participants might find in physical activities offered in a secondary physical education curriculum by: (a) eliciting

interest patterns, (b) associating interest with activities, and (c) determining meanings underlying different interest patterns. The results indicate that interest could be differentiated into four patterns on the basis of activity and meaning.

Differentiated Patterns of Interest

Four patterns were uncovered from the participants' subjective construction of interest in the physical activities. Differentiation of these patterns indicates that participants may construct interest in different ways. For instance, participants in the Fitness pattern emphasized an interest in activities that enhance personal health and fitness. Interest is associated with their understanding of the health benefits of participating in those activities. On the other hand, the participants in the Socialization pattern indicated that opportunities for socializing with friends made the activities interesting. Emergence of the patterns of perceived holding interests and their associated meanings supports a social-cognitive perspective of exercise adherence theory, postulating that individual decisions on exercise participation are based on multiple determinants (Godin, 1994). The pattern differentiation suggests that a student's perception and interpretation of the meanings in specific activities played an important role in determining the perception of holding interest.

Correlation analyses revealed two informative relations among the four patterns of interest. A positive correlation ($r^{xy} = .44$) between Fitness and Variation suggests a shared basis on which the participants perceive different interests. It seems likely that those who find fitness improvement interesting may participate in activities that also interest those who frequently switch from one activity to another to keep physically active. On the other hand, Socialization was negatively correlated with SelfExpression ($r^{xy} = -.35$), indicating that those who perceive socializing as interesting were less likely to participate in activities that emphasize artistic expression, which was deemed interesting by participants who valued self-expression.

Interest-Activity Association

A person-activity association emerged in this study. Results of the correlation analyses indicated that participants' perceptions of interest were associated with specific physical activities, which may reflect the property of personal selectivity of interest (Prenzel, 1992). Correlation analysis between each pattern and the 60 activities generated an activity array bearing a fundamental resemblance to the pattern's representative activities. It seems that a student is likely to be attracted by similar characteristics in different activities and find these activities interesting in similar ways. However, the results also indicate that students are likely to perceive an activity as interesting in different patterns. For example, free-weight lifting was associated with both Fitness and Variation, and volleyball was correlated with both Socialization and Variation (see Table 3). The overlap suggests that perceptions of interest are dependent on personal subjectivity and that students who choose to participate in the activity may be interested in its different elements.

Meanings as Basis for Interest

Contributing to a student's understanding of the meaning and value inherent in an activity may be his or her perception of holding interest in the activity (Mitchell, 1993; Prenzel, 1992). Analysis

of the reflection data lent support to this argument by showing that the participants' perceptions of interest were rooted principally in their acknowledgment of the meaning and value each activity could offer. It is worth noting that although the participants stated they had enjoyable experiences when engaging in their chosen activities, participation purely for fun did not emerge from the reflection data as a theme. It appears that the participants, during the process of constructing what interested them, subjectively distinguished interest from enjoyment.

Consistency between the reflection themes and the patterns of interest suggests that one type of interest may be recognized in various activities, if the activities possess a meaning relevant to those who pursue that meaning. In other words, when students identify a primary meaning that interests them to participate in an activity, they are likely to seek the same meaning in other activities. This finding is consistent with Prenzel's (1992) argument that simultaneous cognitive understanding of the value and meaning of multiple activities accounts for the perception of interest in a variety of learning tasks.

Although the themes for rationale are characterized with the Q pattern-specific property, several themes were commonly perceived by the participants in different Q patterns. The most salient was the fitness theme. Analysis of the reflection data suggests that nearly all the participants across all the Q patterns recognized the importance of fitness. It seems, however, that their selection of activities of interest was not necessarily based on their understanding of the importance. For the participants not associated with the fitness Q pattern, other meanings embedded in their pattern-specific activities might have greater impact on their holding interest than the importance of fitness. Analysis of their reflection data suggests that the decisions on continuing participation in physical activities were likely to be based on their interpretations of other meanings in the activities, such as exploring new experiences or strengthening social relationships. These findings echo Godin's argument (1994) that it is necessary to help people understand the importance of exercise to their health. But understanding the importance only may be not sufficient to motivate them to develop a habit of physical exercise. Rather, revealing additional meanings in physical activities may enhance the possibility of encouraging and sustaining a continued participation.

Helping participants recognize carryover values in physical activities for developing a healthy life style serves as a very important goal in school physical education. It has been defined in the national standards for physical education (National Association for Sport and Physical Education, 1995) and emphasized in most local school curriculum guides. The unique activity specificity of each holding interest pattern identified in this study implies that a person-activity match should be considered in the curriculum development. Allowing students to select physical activities in which they wish to participate, coupled with carefully planned instructions to reveal various meanings associated with the activities, may eventually enhance the persistence of what the students perceive to be interesting in these activities.

This investigation delineated the participants' perception of holding interest in physical activities in a curriculum by illustrating the relationship of the interest with participants, activities, and meanings. Identification of the four patterns of interest suggests that the holding interest should be conceptualized as a broad construct and examined in relation to personal understanding of the meanings found in specific physical activities. As an exploratory study, this research may have

raised more questions than it has answered concerning student interest in physical education. Future research is needed to test the patterns uncovered in this study. Research is also needed to examine the characteristics of catching interest in physical activities, relationships between catching and holding interest, and the functions of these two types of situational interest in learning physical education. Hopefully, future investigations will eventually address the critical relationship between student interest and learning achievement to respond to the need for a student-sensitive curriculum and meet the challenge of curriculum reform in physical education.

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