

Chapter 8

Beliefs and Subjective Values in Nurturing Young Ten-Pin Bowlers

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ABSTRACT

The purpose of this study was to explore the motivation processes by utilising the Expectancy-value Model of Achievement Choice (Eccles et al., 1983) in ten-pin bowling. This study examined gender, age groups and race differences of ten-pin bowlers' expectancy beliefs and subjective task values. The participants comprised of 100 young bowlers aged 13 to 21 years old. The athletes completed the expectancy-value questionnaire assessing their expectancy-related beliefs and subjective task values. The independent sample *t*-test and one-way ANOVA were utilised to analyse the data. The independent sample *t*-test showed that there was no significant gender difference in expectation beliefs, $t(98) = .41, p = .68$ and subjective task value, $t(98) = .95, p = .34$. However, one-way ANOVA showed that there was a significant difference in expectancy beliefs, $F(2,97) = 17.06, p = .001$ and utility value, $F(2,97) = 17.06, p = .001$. Post Hoc Tukey's HSD showed that 19-21 age group displayed higher expectancy beliefs (6.16 + .49) and utility value (6.26 + .74) as compared to the 13-15 age group (4.88 + 1.24; 5.31 + 1.40) and 16-18 age group (5.29 + .82; 5.98 + 1.14) respectively. However, the one-way ANOVA showed no significant difference between races in expectancy beliefs, $F(3,96) = 2.91, p = .40$ and subjective task values, $F(3,96) = 1.11, p = .35$. The findings recommend the adaptation of a mastery environment that can enhance learning, self-improvement and enjoyment so that bowlers and significant others can work together to achieve higher success in bowling.

Key Words: expectancy beliefs, subjective task values, bowling, achievement choice

1. INTRODUCTION

When we talk about nurturing young athletes, expectancy beliefs and subjective task values play an important role to motivate athletes to perform and achieve better results in their sport by using the expectancy-value model of achievement choice (Eccles et al., 1983). The Eccles et al. (1993)'s expectancy-value theory refers to motivated behaviour that is characterised by voluntary choices, persevering effort, and achievement, which are related

with one's perceived expectancy of success and values in certain activities (Eccles & Wigfield, 1995). The achievement-belief and behaviours of the athletes are influenced by their expectancies to become success. For example, athletes' evaluation of their ability in different tasks during training and their sense of performance in their given tasks (Chin et al., 2019). Whereas, the subjective task values refer to the perceived value a task may provide for present and future goals, in which the values are placed by an individual on their success in a domain or task. The task values are attainment, intrinsic, utility and cost (Chin et al., 2009).

The purpose of this study is to determine the expectancy beliefs and subjective task values among young bowlers, which requires an understanding of both theoretical and applied perspective in examine the psychological processes underlying their motivation. This study utilised the Expectancy value model of achievement choice (Eccles et al., 1983) to provide the theoretical framework to examine the motivational processes of the ten-pin bowlers. The Eccles et al. (1983) expectancy-value model of achievement choice is a social-cognitive theory which explains motivational factors that individuals use in making decisions about achievement-related choices.

2. LITERATURE REVIEW

Expectancy-related beliefs

The first determinant of achievement choice in Eccles et al. (1993)'s expectancy-value model is expectancy-related beliefs. Expectancy-related beliefs consist of both expectancies for success and beliefs about ability. Expectancy for success focuses on the general question "Can I do this task?" (Eccles, 2006). Expectancies of success are similar to efficacy expectations or children's confidence in being successful at a specific achievement activity or task (Wigfield & Eccles, 2000). Eccles et al. (1983) defined expectancies for success as individuals' beliefs about how well they will do on upcoming tasks, either in the immediate or longer-term future and are closely related to their beliefs about ability. They defined beliefs about ability as the individual's perception of his or her current competence at a given activity or the children's evaluation of their ability in different achievement tasks. In this model, ability beliefs and expectancies for success are distinguished theoretically in that ability beliefs are seen as broad beliefs about competence in a given domain, in contrast to one's expectancies for success on a specific upcoming task (Wigfield et al., 2006). Ability beliefs focus on present ability and expectancies for success in the future. The Eccles et al. (1983) expectancy-value model shows that children and adolescents do not distinguish between these two levels of beliefs (Wigfield et al., 2006). Conley (2007) stated that expectancies and ability beliefs are considered competence-related beliefs as they are empirically indistinguishable and highly related to each other in real-world achievement situations even though they can be theoretically distinguished from each other.

Subjective task values

The second determinant of achievement choice in Eccles et al. (1983) expectancy-value model is subjective task values. Subjective task value beliefs focus on the general question "Why am I doing this task?" (Eccles, 2006; Wigfield et al., 2006). Subjective task values are defined as incentives for engaging in different tasks (Xiang, McBride & Bruene, 2006). There are three different motivational components of subjective task values. The four components are attainment value or importance, intrinsic value or interest and utility value or usefulness associated with engaging in the task.

The Relationship between expectancy-related beliefs and subjective task values

A number of large-scale correlational studies were conducted to investigate how children's expectancies for success, ability beliefs and subjective task values change across school years, and how children's beliefs and values relate to their performance and activity choice (Eccles et al., 1983; Eccles & Wigfield, 1995; Wigfield et al., 1997). These studies which used both cross-sectional and longitudinal designs have consistently showed positive relationship between expectancy-related beliefs and subjective task values that cut across achievement domains such as Mathematics, English, reading, music, sports and physical education in the expectancy-value model of achievement choice (Eccles et al., 1983; Gao, 2007; Gao & Xiang, 2008; Wigfield et al., 1997). This fact represents a departure from older expectancy-value theories that assumed that expectancy and task value beliefs are negatively related (Miller, 2004). Eccles and her colleagues have posited that expectancy-related beliefs and subjective task values would be positively related to each other (Eccles et al., 1993; Eccles, Wigfield & Schiefele, 1998). In other words, individuals tend to see the activity as more important, interest and useful if they do well and believe they are competent on the activity (Gao & Xiang, 2008). Further study by Gao and Xiang (2008) also revealed positive relationships among expectancy-related beliefs and three subjective task values (importance, interest and usefulness) indicating that students who scored higher on expectancy-related beliefs in weight training tended to see it as more useful, important and interesting than students who scored lower on expectancy-related beliefs. This positive link demonstrated that students who scored higher on expectancy-related beliefs regarding sports and physical education tended to see it as more useful, important and interesting (Gao, 2007).

3. METHODOLOGY

3.1. Participants and Instrument

This study comprised of 100 bowlers aged 13 – 20 years old. They were 46 males and 54 females. Permissions were obtained from the Amateur Bowling Association of Sarawak (ABAS) before the research was conducted, and the participation was voluntary. For the data collection in this study, the instruments utilised was the expectancy-related beliefs and subjective task values. The expectancy and subjective task values measures were adapted from instruments developed and used by Eccles et al. (1983); Xiang et al., (2003); Xiang, McBride and Bruene (2006).

The expectancy-related Beliefs and Subjective Task Values Measures

The expectancy-related beliefs and subjective task values measures were developed by Eccles et al. (1983). The questionnaire consists of 11 items assessing athletes' self-perceptions of their ability, expectations of becoming success, intrinsic value, attainment value and utility value. All these items are measured on a 7-point Likert scales anchored at both ends. The expectancy-related beliefs measure comprised of expectancy-related beliefs and expectancy for success subscales meanwhile, the subjective task values measures comprised of attainment value, utility value and intrinsic value subscales. The following is a brief description of each of the subscales in this questionnaire:

1. Expectancy-related beliefs: The athletes were asked three questions to assess their general ability in athletics. For example, "How good are you at physical activities and training in athletics?" (1 = not at all good, 7 = very good)
2. Expectancies for success: The athletes were asked two questions to assess expectancies for success in athletics. For example, "How well do you think you will learn physical activities and training in athletics this year?" (1 = not at all well, 7 = very well).

3. Attainment value or importance: The athletes were asked two questions to assess the importance of doing well on a task in athletics. For example, “For me, being good at physical activities and training in athletics is ...”(1 = not very important, 7 = very important).
4. Intrinsic or interest value: The athletes were asked two questions to assess the enjoyment or satisfaction inherent in engaging in an activity. For example, “In general, I finds learning new physical activities and training in Athletics is ...” (1 = very boring, 7 = very fun).
5. Utility value or usefulness: The athletes were asked two questions to assess perceived usefulness of a task to them. For example, “Compared to your other school subjects, how useful is what you learn in Athletics? (1 = not at all useful, 7 = very useful).

3.2. Data Collection Procedures

The questionnaires were printed and prepared together with cover letters and pencils. The questionnaires were distributed to the bowlers with the help of the coaches. The researcher also assured the confidentiality of the bowlers, verbal instructions were given by the researcher on how to administer the questionnaire to the bowlers.

3.4. Psychometric Properties of the Questionnaire

The internal consistency of the expectancy-related beliefs and subjective task values subscales were assessed using the Cronbach’s alpha coefficients. Table 1 shows the reliability of expectancy-related beliefs and subjective task values. The result shows high internal consistency which exceeded the minimum acceptable cut-off of .70 (Nunally, 1978) with alpha values of .901 for expectancy-related beliefs and .834 for subjective task values.

Table 1 Reliability for expectancy-related beliefs and subjective task values

Scale	Cronbach Alpha Coefficient
Overall Expectancy-beliefs and subjective task values questionnaire	.820
Expectancy-related /Beliefs	.901
Subjective Task Values	.834

3.5. Data Analysis

Both descriptive and inferential statistics were used to analyse the data. The data was coded and analysed using the Statistical Package for the Social Science (SPSS). Descriptive statistics such as frequency, percentage, means and standard deviations were used to report the data. Independent sample t test and one-way ANOVA were used to determine if any statistical differences existed between expectancy-related beliefs and subjective task values among gender, age groups and races.

4. RESULTS & DISCUSSION

The demographic characteristics of the participants are shown in Table 1. A total of 100 participants (male = 46, female = 54) were involved in this study. The participants were divided into 3 age groups where 48% of the participants aged between 13-15 years old, 19% of them aged between 16-18 years old, and 33% of the participants were aged between 19-21 years old. the majority of the participants were Malays ($n = 40$), followed by Dayak ($n = 25$), Chinese ($n = 18$) and others ($n = 17$).

Table 2. Demographic characteristics of the participants

Characteristics		N	%
Gender	Male	46	46
	Female	54	54
Age Groups	13 – 15	48	48
	16 – 18	19	19
	19 – 21	33	33
Races	Malay	40	40
	Chinese	18	18
	Dayak	25	25
	Others	17	17

Table 3 shows no significant differences between male and female in expectancy-related beliefs, $t(98) = .41, p = .68$. The result also showed that there was no significant differences in subjective task values between male and female, $t(98) = .95, p = .34$.

Table 3. Independent sample *t*-test on expectancy-related beliefs and subjective task values between genders

Variable	Male		Female		<i>t</i> -test		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	df	<i>P</i>
Expectancy-related beliefs	5.44	1.04	5.34	1.18	.41	98	.68
Subjective task values	3.51	.75	3.38	.62	.95	98	.34
Utility value	5.73	1.20	5.77	1.27	1.62	98	.87
Attainment value	5.78	1.04	5.82	1.04	.63	98	.86
Intrinsic value	6.07	1.13	6.07	1.03	1.24	98	.99

Table 4 shows significant differences for expectancy-related beliefs and utility values among age groups, $F(2,97) = 17.06, p = .001, F(2,97) = 6.82, p = .001$. The participants within the age 19-21 have higher expectancy beliefs and utility value ($6.16 \pm 0.49; 6.26 \pm 0.74$) compared to the participants aged 16 – 18 years old ($5.29 \pm 0.82; 5.98 \pm 1.14$) and 13 -15 years old ($4.88 \pm 1.24; 5.31 \pm 1.40$). However, there were no significant differences for attainment value $F(2,97) = 2.21, p = .12$ and intrinsic value $F(2,97) = 1.26, p = .29$ among age groups.

Table 4. One way Anova of expectancy-related beliefs and subjective task values on age groups

Variable	Age Groups			<i>F</i>	<i>P</i> value
	13 – 15	16-18	19-21		
Expectancy-related beliefs	4.88 (1.24)	5.29 (.82)	6.16 (.49)	17.06	.001*
Subjective task values	3.46 (.72)	3.60 (.65)	3.30 (.63)	1.24	.29
Utility value	5.31 (1.40)	5.98 (1.14)	6.26 (.74)	6.82	.001*
Attainment value	5.60 (1.10)	5.82 (.95)	6.10 (.96)	2.21	.12
Intrinsic Value	6.24 (1.04)	6.00 (.87)	5.86 (1.21)	1.26	.29

Table 4 shows the one-way ANOVA for expectancy-related beliefs and subjective task values among races revealed no significant differences among different races, $F(3,96) = 2.91, p = .40; F(3,96) = 1.11, p = .35$ respectively.

Table 5. One way Anova of expectancy-related beliefs and subjective task values on races

Variable	Races				F	P value
	Malay	Chinese	Dayak	Others		
Expectancy-related beliefs	5.03 (1.29)	5.48 (1.02)	5.53 (.90)	5.91 (.85)	2.91	.40
Subjective task values	3.34 (.63)	3.42 (.68)	3.40 (.70)	3.70 (.74)	1.11	.35
Utility value	5.45 (1.35)	6.06 (1.14)	5.76 (1.00)	6.12 (1.28)	1.69	.18
Attainment value	5.63 (1.07)	5.97 (1.10)	5.92 (.93)	5.88 (1.07)	.69	.56
Intrinsic Value	6.04 (1.21)	6.19 (.88)	6.10 (1.11)	5.97 (0.94)	.79	.50

Discussion

In assessing the differences in expectancy-related beliefs and subjective task values to gender, age groups and races, it was found that there were no significant differences between male and female in expectancy-related beliefs and subjective task values. However, the study showed that participants within the age of 19-21 years old had a higher expectancy-related beliefs and utility value compared to other age groups. In addition, no significant differences were found for expectancy-related beliefs and subjective task values among races.

Expectancy-related beliefs

The results obtained in this study showed that there were no significant differences between gender in expectancy-related beliefs and subjective task values. Gender differences in both beliefs and subjective task values will emerge early in the children's development years but get smaller with age (Eccles, 2006). The learning environment which focuses on personal accomplishments based on their personalised training programmes as well as equal opportunities given to participate by the coaches and the sports authorities have helped enhance their feelings of competence in athletics and motivation (Frederick & Eccles, 2002). The Olympic Council of Malaysia also strongly supports the International Olympic Council's gender fairness/equality initiative and it encourages, promotes and develops opportunities for women in sports and sport-related activities at all levels. These changes have a positive effect on girls who view athletics as appropriate for both genders. Thus, it is necessary to ensure that girls have confidence in their ability to be successful in athletics. It is also important that they perceive themselves as competent and are able to engage in physical activity (Daigle, 2003). On the contrary, the study shows significant differences in expectancy related beliefs among age group where older athletes tend to have higher beliefs compared to younger athletes. This finding is congruent to findings from the previous study (Xiang, McBride & Bruene, 2006), which showed older athletes have high expectancy beliefs. The reason for this could be because older athletes show signs of maturity that focus on long term goals where success is determined by their amount of effort and time invested in sport. To achieve long term success, they must strive on hard work regardless of ability, prevail further in their performance and persist over time (Chin, Khoo & Low, 2012). William (2013) stated that a student's or an athlete's biggest desire is to be treated equally by their coach or teacher without judging their backgrounds. Therefore, physical education (PE) teachers and coaches play a vital role in motivating them to be involved in sports. The finding shows that there were no significant differences in expectancy-related beliefs among races. This concludes that athletes were treated equally by their coaches.

Subjective task values

The results of the study showed that there was no significant difference in subjective task values between male and female. This study is in line with the previous study by Gao (2007); Xiang, McBride & Bruene (2006) which showed that there were no significant differences in subjective task values between male and female. The likely reason is athletics has never been stereotyped as gender-bias, dominated by a particular gender. Even at the school level, students of both genders are given equal access and attention to train and learn together as a team. The results of this study are supportive of the belief that sports are increasingly seen as a gender-neutral activity which will lead to greater persistence, enjoyment and satisfaction in athletic participation (Duda et al., 1995). The non-significant difference in beliefs and task values among age groups could be due to the role of significant others. The role of significant others such as coaches, parents and teachers could represent another source of positive influence in these adolescents' athletes as proven by previous studies (Fredricks & Eccles, 2002; Stuart, 1997). Coaches could have helped the athletes achieve some success through task-oriented performance by providing positive and accurate feedback. They could have also made training fun by introducing interesting, meaningful and challenging activities that are pitched at the athletes' skill levels. The benefit of sports and the opportunities provided would also have enhanced the adolescent athletes' involvement in athletics. As children get older usefulness in sports is likely to become a strong predictor of their involvement in different activities (Wigfield, 1994). From the perspective of races, the findings showed no significant differences. According to Chin, Khoo and Low (2012), the reward is one of the main extrinsic factors that lead to the athlete's achievements. For example, the state government through the Sarawak Sports Council (MSNS) offered incentives of RM5,000 for the first gold medal, RM7,000 for second gold and the same amount for subsequent gold medals to the athletes who delivered medals during SUKMA 2016 regardless of different races and religions.

5. CONCLUSION AND RECOMMENDATION

In conclusion, the results of this study can provide additional evidence about gender, age and races differences in athlete's expectancy-beliefs and subjective task values. In addition, it supports the expectancy-value model of achievement choice for a better understanding of motivation in sports. The PE educators and coaches can increase their students and athletes' motivation by increasing the understanding of the values such as utility, attainment and intrinsic in learning and decreasing their unwilling to participate in learning in sports and physical activities. Therefore, they can try to enhance their students and athletes' perceptions of values of learning by explaining to them the behaviours which are associated with learning such as training, understanding the reasons behind the training, and communicate with the coaches on the techniques and strategies. They need to explain to their athletes on how to train technically in mastering their skills and practice on their own during their free time, setting realistic goals and pro-active during training. They need to recognize the utility value of engaging in sports and physical activities which are the positive effects and benefits which can nurture their innate talents properly and systematically. In addition, The PE educators and coaches could adopt a differentiated learning approach in training, task and activity design according to different levels, standards and abilities of students and athletes. It is necessary to balance teaching students and athletes at their instructional levels according to their grade level systematically. Therefore, choosing and finding ways to coach, teach or prompt them through the process to eventually get to the instructional objective and complete the skill on their own.

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