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Physical self-concepts and gender differences in children, adolescents and young adults

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Abstract

Objective: The purpose of this research was to examine physical self-concepts in children, adolescents and young adults and to observe gender differences between groups. Physical self-concepts included thoughts and feelings about the body, physical activity and appearance.
Methods: This study used a cross-sectional design with several groups, including children (N=85), adolescents (N=103) and young adults (N=68). Cognitive and affective self-evaluations were elicited through self-report questionnaire.
Results: There was little difference for children in the relationship of physical self-concepts with gender, with only movement self-concepts being slightly higher for boys. There were some differences in adolescent physical self-concepts in relation to gender, with boys yielding higher scores than girls in relation to body image and physical activity. There were only slight differences in physical self-concepts between the sexes for young adults enrolled in Personal Development, Health and Physical Education (PDHPE) degrees.
Conclusions: Overall there appeared to be a steady decline in physical self-concepts from childhood to adolescence, particularly for girls, and then an increase in physical self-concepts in young adulthood for those enrolled in PDHPE degrees. The outcomes of this research contribute to understanding how children, adolescents and young adults think and feel about their bodies, physical activity and appearance.

Introduction

Understanding the self and self-concept have been the pursuit of philosophers and psychologists for centuries. At its most simple, "self-concept" involves the perceptions and attitudes a person holds about their self. Our western culture and the media place great value on the body with the projection of ideal appearances, and common beliefs that attractive people are rewarded through success, jobs, romantic relationships and happiness. A wealth of research has shown that the "bodily self is an important part of the self-concept and that feelings about the body are correlated with general feelings about the self" (Goldenberg et al. 2000, p, 120). Goldenberg et al (2000) discussed the importance of values of the body in relation to the effect they can have on self-esteem, stating that "one's physical body is a potential source of self-esteem and that not living up to societal standards regarding the body can have negative consequences for the self" (p. 120). Among both men and women, body dissatisfaction is linked to low self-esteem, insecurity and depression (Cash et al., 1986; McCaulay et al., 1988; Noles et al., 1985); while body satisfaction is associated with happiness (Berscheid et al., 1973).

Many self-concept researchers have been particularly interested in stability and change in self-concept during the potentially unstable adolescent period (Dusek & Flatterly, 1981; Wylie, 1979). Shalveson et al. (1976) suggested that self-concept becomes more differentiated with age. Marsh (1990; 1998) proposed that "self-concepts of very young children are consistently high but that with increasing life experience children learn their relative strengths and weaknesses so that mean levels of self-concept decline, individual self-concepts become more differentiated, and self-concepts become more highly correlated with external indicators of competence" (Marsh, 1998, p. 239). Harter (1983) claimed that self-concept becomes progressively more abstract with age.

Self-concept research among children, adolescents and young adults has focused predominantly on academic self-concepts (Eccles et al., 1993; Marsh, 1989). Markus and Wurf (1987) suggested that the structure of self "depends on both the information available to an individual and the cognitive ability to process this information" (Marsh, 1998, p. 239). There has been a great extent of research conducted on developing and validating models, measures and scales of physical activity and physical self-concepts (Fletcher & Hattie, 2004; Marsh, 1998; 2002; Stiller et al., 2004), however the present study is concerned with the physical self-concepts themselves. Marsh (1998; Marsh et al., 1997)) has conducted self-concept research with elite athletes compared with non-athletes, finding that during adolescence, elite athletes and boys have systematically higher physical self-concepts than non-athletes and girls; however there is scope for more investigation into regular young people and their physical self-concepts.

It is generally recognized that participation in physical activity has many benefits for the mind and body. It is also the case that in Australia there is still a disturbingly high incidence of obesity and sedentary lifestyle from childhood, throughout adolescence and into adulthood. Research with adolescents on physical self-concept (Marsh, 1989) and participation in physical activity (Smith, 1997) shows the decline as children enter the early adolescent years. Rowland (1999) found that physical activity declines during adolescence, especially among girls. Gender differences in body image among adolescents include boys being more likely to exercise to enhance their physical appearance while girls exercise to lose weight. Girls have higher levels of negative body image than boys during adolescence (Bond, 2001). It is similarly hypothesised that, in this study, boys will generally have more positive physical self-concepts than girls. It has also been discovered that early (12-14 year-old) adolescents have higher physical self-concepts than late (15-18 year-old) adolescents (Salokun, 1990). As children age into adolescence, their accuracy in evaluating their own physical competence increases (McKiddie and Maynard, 1997). In addition, adolescents with perceived poor motor coordination have high levels of anxiety and low feelings of self-worth (Skinner & Piek, 2001). Physical self-concepts are higher among athletic adolescents than non-athletic adolescents (Marsh et al., 1997). Earlier research shows that cooperative physical education programs and participation in social sports enhanced adolescents' self-concepts and improved physical fitness, with some improvement in physical appearance self-concept (Di Tomasso, 1989). In brief, physical activity is psychologically beneficial and has important positive influences on mental health, including improvements in self-esteem, self-concept, depressive systems, anxiety and stress (Calfas & Taylor, 1994).

Adolescence is the critical developmental period for the study of physical self-concepts. A major feature of adolescence is puberty and during this time, both boys and girls become more aware of their weight, shape and appearance (O'Dea & Abraham, 1999). Increased awareness of body and self can have positive and/or negative aspects. For instance, this is a high-risk stage for the onset of eating disorders. Some adolescents even adopt health-damaging habits such as cigarette smoking, purely as a method by which to control their weight (Fulkerson & French, 2003). The available research indicates the importance of understanding physical self-concepts during adolescence. Some school-based intervention programs (O'Dea, 2000) have been successful in improving body satisfaction and positive attitude changes; however some educational initiatives can have negative effects on body image (O'Dea, 2002).

The present study builds on the 'whole child' approach with younger children (Brake & Bornholt, 2004) to include movement and appearance, as well as the body during adolescence. With so much research available on adolescents' self-concepts about academic work, for a holistic approach to the adolescent, there is a need for further research on cognitive and affective self-evaluations about the body, physical activity and appearance. To increase levels of self-esteem, self-concepts and positive attitudes would mean healthier decisions and choices by adolescents in the formation of their identities. Few studies have been conducted with young adults, although Marsh and Sonstroem (1995) suggest that young adults have similar experiences to adolescents. Self-concept research among young adults displays negative consequences of self-objectification including body dissatisfaction, disordered eating, appearance anxiety, and body shame (Fredrickson, 1998). However, other research with young adults shows that physical self-concept is positively related to exercise (Marsh & Sonstroem, 1995). Many research findings show a significant association between physical activity and improvements in physical and psychological health in adults (Gauvin, Rejeski & Norris, 1996; Read & Brown, 2003).

Methods

Design
Cross-sectional designs were employed to examine the associations between gender and self-concepts about the body and to explore development and diversity in body perception. Data were collected from young children, adolescents and young adults, using questionnaires. The data were utilised to create profiles which included feelings and self-concepts about the body, physical activity and appearance.

Sample
Study 1 included 85 children aged 4 to 12 years. Study 2 included a large, diverse sample of 103 government secondary school girls (N = 53) and boys (N = 50). Study 3 involved 68 young adults who were enrolled in tertiary education degrees specialising in Personal Development, Health and Physical Education (PDHPE), and were therefore very experienced with their bodies. The locations of the schools were selected with NSW Department of Education and Training (DET) approval, because they were close to the national average (1000) Socio-Economic Indexes for Areas (SEIFA) Index of Education and Occupation (Australian Bureau of Statistics, 1998).

Measures
Cognitive and affective aspects of self-knowledge were elicited through self-report questionnaires and profiles included feelings and self-concepts about the body, physical activity and appearance. Measures included the ASK-KIDS Inventory for Children (Bornholt, 1997), the ASK-Q Inventory for Adolescents (Bornholt, 1997), and the ASK-Q Inventory for Young Adults (Bornholt, 1997). The ASK-Q Inventory for Adolescents also included a physical activity self-report measure (APARQ) and questions on the usefulness and interest of the body, physical activity and appearance. Adolescents also completed the Depression Anxiety Stress Scale (DASS 21; Lovibond & Lovibond, 1995) and the Affective Scale for Adolescents (ASA; Brake & Bornholt, 2001) where questions relating to feelings or state of mind are worded positively based on the DASS with permission of the authors. Adolescents were also measured for height and weight to calculate their body mass index (BMI) and random adolescents were interviewed on tape with open-ended questions about the body and gender differences. The research included indicators of other personal and social self-concepts that may co-vary with self-concepts about the body, and therefore need to be accounted for in the analysis. These are cognitive and social self-concepts, depression, anxiety, stress, and cognitive functioning, however, these will not be reported in this paper.

Procedures
All children and adolescents in the study had signed consent forms from their parent or guardian. All children participating in the study completed inventories individually with a trained researcher. Participating adolescents in completed inventories in class groups, administered by a trained researcher. All children and adolescents were given identification numbers to ensure anonymity.

The tertiary institutions were selected by the researcher based on the degrees they offered. Data were collected in tutorial classes at the tertiary institutions by the author. A description of the study was provided to randomly selected classes within the appropriate degree programs and students were asked to provide informed consent. All students in each of the classes volunteered and participated. The questionnaires were labelled with identification numbers.

Data Analysis
The data were entered and checked for missing values prior to analysis. Analysis involved coding of interview questions and statistical analysis of responses to the inventories. SPSS (2003) was used for descriptive statistics (mean, standard deviation, range) and inferential statistics (correlations among constructs within groups of participants, and multivariate analysis of variance to compare profiles of self concepts).

The results relate physical self-concepts, and these are compared to observe gender differences between groups

Results

Study 1
Study 1 explored children's thoughts and feelings about the body, movement and appearance based on the ASK-KIDS inventory (Bornholt, 1997). Children in Study 1 (N = 85) were 4 - 12 years old (mean age = 8.2, SD = 2.3). This was a representative sample of the school population by gender (girls 44%, boys 56%) and across the years at school (pre-school 17%, kindergarten 11%, Year 1 15%, Year 2 10%, Year 3 11%, Year 4 15%, Year 5 10%, Year 6 12%). The children spoke English at school, and spoke mainly English at home (92%) or with a community language.

Profiles show that, on average, the mean values of children's self-concepts were above the scale mid-points, however, individual responses covered the full range of values (range = 1.0 to 5.0). In particular, the mean self-concept about movement was more positive than the mean self-concept about the body ($t = 2.7$, $P<0.01$, effect size = 0.3), and mean self-concept about the body was more positive than mean self-concept about appearance ($t = 3.3$, $P<0.01$, effect size = 0.4).
Children generally expressed moderate to high self-concepts about the body, movement and appearance.

Table 1 Number of items, Cronbach's alpha, mean (SD) and range of reported values for each scale for children in Study 1b

Measures	**n of items**	**Cronbach's Alpha**	**mean (SD)**	**range**
Self-concepts				
body	5	0.75	4.1 (0.9)	1.0 to 5.0
movement	5	0.87	4.4 (0.9)	1.4 to 5.0
appearance	5	0.65	3.7 (0.8)	1.8 to 5.0

Profiles of self-concepts were similar for younger and older girls and boys. In particular, children's self-concepts were not necessarily associated with age (the correlations ranged from -0.3 to +0.2). Overall there were no significant differences in the profiles for girls and boys except for movement being slightly higher for boys than girls ($t = 2.4$, $P\leq0.01$, effect size = 0.55) as shown in Figure 1.

In general, children were happy and displayed generally positive self-concepts. There were few differences between gender and age although self-concepts about movement were slightly higher for boys than girls. The values tended to cluster around the ends of the scales. Although the scales were not useful for predicting associations with other characteristics such as physical activity or movement skills, the results do, as intended, give a baseline for better understanding adolescents. These results are useful for further research. It would be interesting to apply these scales to children at one year intervals to see at what point they start to become more self-critical.

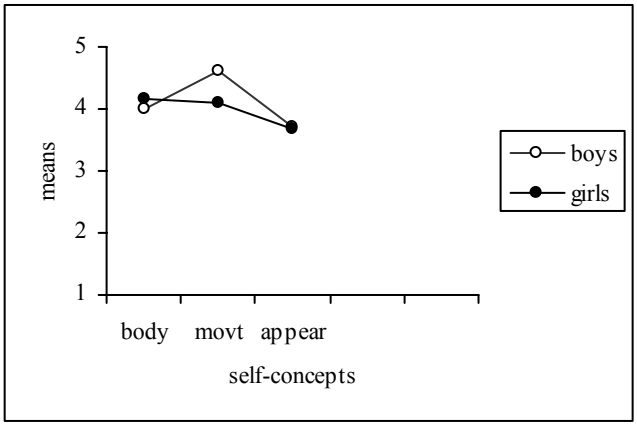

Figure 1 Profiles of children's physical self-concepts for girls and boys

Study 2

Table 2 displays a summary of adolescents' feelings and physical self-concepts. The results for Study 2 show that, generally, the mean values of adolescents' self-concepts were well above the scale mid-points. Adolescents generally expressed moderate to high self-concepts about all components in the ASK-Q Inventory. Overall, the mean values of adolescents' responses were close to or below the scale mid-points for the DASS and above the scale mid-points for the ASA. This indicates that respondents are more positive when questions related to their feelings or states of mind are worded positively. Adolescents in Study 2 generally expressed positive feelings and states of mind.

Table 2 Comparison of self-concepts, BMI, DASS and ASA among adolescents

	GIRLS				BOYS			
Measures	**N of item**	**Cronbach's Alpha**	**Study 2 girls Mean (SD)**	**Range**	**N of Item**	**Cronbach's Alpha**	**Study 2 boys Mean (SD)**	**Range**
ASK-Q Components								
Body Image	5	0.82	3.2 (0.9)	1.40 to 5.00	5	0.87	3.7 (0.9)	1.00 to 5.00
Body Image Use	3	0.91	3.5 (1.2)	1.00 to 5.00	3	0.87	3.4 (0.9)	1.00 to 5.00
Body Interest	3	0.85	3.4 (1.2)	1.00 to 5.00	3	0.63	3.2 (0.8)	1.00 to 5.00
Physical Activity	4	0.80	3.4 (0.9)	1.40 to 5.00	4	0.86	3.8 (0.9)	1.00 to 5.00
Physical Use	3	0.87	3.5 (1.0)	1.00 to 5.00	3	0.87	3.9 (1.0)	1.00 to 5.00
Physical Interest	3	0.86	3.6 (1.1)	1.00 to 5.00	3	0.84	4.0 (1.0)	1.00 to 5.00
Appearance	5	0.80	3.9 (0.7)	2.40 to 5.00	5	0.75	3.6 (0.8)	1.80 to 5.00
Appearance Use	3	0.93	3.5 (1.1)	1.00 to 5.00	3	0.88	3.6 (1.0)	1.00 to 5.00
Appearance Interest	3	0.83	3.5 (1.0)	1.00 to 5.00	3	0.85	3.4 (1.0)	1.00 to 5.00
Mean BMI			21.0 (4.2)				21.0 (4.5)	
DASS / ASA								
Depression	7	0.94	2.5 (1.0)	1.00 to 5.00	7	0.91	2.8 (1.0)	1.00 to 5.00
Anxiety	7	0.92	2.0 (0.9)	0.86 to 4.29	7	0.89	2.3 (0.9)	0.86 to 4.29
Stress	7	0.95	2.5 (1.0)	1.00 to 5.00	7	0.92	2.9 (1.0)	1.00 to 5.00
Happiness	7	0.95	3.7 (0.9)	1.29 to 5.00	7	0.83	3.8 (0.7)	2.57 to 5.00
Calmness	7	0.95	3.5 (1.0)	1.00 to 5.00	7	0.90	3.8 (0.9)	1.00 to 5.00
Relaxation	7	0.94	3.4 (1.0)	1.00 to 5.00	7	0.90	3.7 (0.9)	1.00 to 5.00

The results of the physical activity self-report measure (APARQ) for government school girls and boys showed that, generally, the adolescents in the high energy expenditure group had significantly higher physical self-concepts than the adolescents in the low energy expenditure group. It is also interesting to note that in non-organised physical activities during summer terms there was little difference in body and appearance self-concepts between the adolescents in the high and low energy expenditure groups. The self-concepts for the adolescents in the low group are slightly higher than in summer organised physical activities, winter organised physical activities and winter non-organised activities, while the self-concepts for the adolescents in the high group are slightly lower than the summer organised physical activities, winter organised physical activities and winter non-organised activities. An explanation for this in the body and appearance self-concepts could be that adolescents who are more physically active are most likely involved in swimming or water sports and may feel more self-conscious about their bodies in hotter months as they wear less clothing or swimwear. Overall, the results indicate that adolescents who participate in a higher level of physical activity have significantly higher physical self-concepts than adolescents who participate in little or no physical activity, therefore physical activity is an important factor in the self-concepts of adolescents.

It was expected that thoughts and feelings about the body would vary according to BMI with high BMI groups having less positive thoughts and feelings about the body than those in other BMI groups, and also that boys' thoughts and feelings would be less affected by BMI than girls, however, boys' thoughts and feelings about the body were affected by BMI as much as girls'. Further research is required in this area to expand on the effects BMI has on adolescent self-concepts, particularly among boys. It is important to note that the underweight categories in Study 2 had few adolescents; therefore this must be taken into consideration when interpreting the results. The most significant differences in physical self-concept means for BMI categories for girls and boys were that the overweight and obese adolescents had the lowest means. Girls and boys in the healthy weight BMI category generally scored the highest means for most components of the self-concept scales. The causal direction between BMI and self-concepts is unknown and important to explore in future research.

It was expected that body and physical activity self-concepts would be more positive in boys than girls during adolescence. The results show boys had slightly higher self-concepts in body image, physical activity and physical activity interest than girls. As previously mentioned, boys tend to be more active than girls during adolescence; therefore this result is not surprising. In relation to the physical activity self-report measure (APARQ), girls self-concepts were more affected by their involvement in physical activity than boys, however, boys in both the high and low energy expenditure groups had higher self-concepts than girls who were in the low energy expenditure group, especially in physical activity. There were much smaller differences between high and low expenditure groups for boys than for girls, indicating that participation in physical activity is particularly important for the self-concepts of girls.

There are stereotypes in our society with a general consensus that adolescent girls are preoccupied with their own bodies in comparison with other girls while boys are not concerned about nor unhappy with their own bodies. However, as seen in the comparisons across BMI categories, overweight and obese boys do have lower physical self-concepts than boys in the healthy weight range.

It is also interesting to note that, in general, the boys in Study 2 scored higher than the girls in the Depression Anxiety Stress Scale DASS 21 (Lovibond & Lovibond, 1998) and also slightly higher in the Affective Scale for Adolescents ASA (Brake & Bornholt, 2001). The more extreme response of boys warrants further study into the feelings of adolescent boys.

In summary, adolescents are generally positive in their physical self-concepts and feelings. Adolescents who participate in a higher level of physical activity have significantly higher physical self-concepts than adolescents who participate in little or no physical activity. Self-concepts are affected by Body Mass Index and there are some differences in adolescent self-concepts in relation to gender.

Study 3

Study 3 was undertaken to investigate the feelings and self-concepts of young adult tertiary education students. The study compared young adults aged 18 - 27 years (mean = 20 years) in aspects of self-knowledge about activities based on the ASK-Q inventory (Bornholt, 1997). The young adult participants included 68 tertiary education students enrolled in Personal Development, Health and Physical education (PDHPE).

Table 3 shows the responses of young adults studying PDHPE to the ASK-Q Inventory for Young Adults, including their feelings and self-concepts about each aspect of self-knowledge. The results show that young adults involved in PDHPE generally have positive feelings (on the 10-point scale from 1=unhappy to 10=happy) and positive self-concepts (on the five-point scale from 1=low to 5=high) with regard to the aspects of self-knowledge assessed. The highest score for feeling and self-concept was for movement, which might be expected of students specialising in PDHPE.

Feelings and self-concepts tended to correlate strongly or moderately for young adults, with all correlations significant at $P \leq 0.001$. It is interesting to note that there is a general pattern in the correlations, generally the highest correlations were for the aspects with the lowest scores and wider ranges for feelings and self-concepts; and the lowest correlations were for the aspects with the highest scores and narrower ranges for feelings and self-concepts. The magnitude of Pearson correlation co-efficients is affected by several characteristics of the data in addition to the strength of the association between two variables. One of the characteristics is the range of values such that variables with a wider range yield higher correlation co-efficients. It is quite likely that this statistical artefact is responsible for, or at least contributes to, the apparent differences between the correlation co-efficients. Consequently, the differences should be interpreted with caution.

Table 3 Mean, standard deviation, range, Cronbach's alpha and correlations between feelings and self-concepts related to various aspects of self-knowledge for young adults enrolled in PDHPE degrees

Aspects	**Cronbach's alpha**	**feelings**		**self-concepts**		**correlations between feelings and self-concepts***
		mean (sd)	**range**	**mean (sd)**	**range**	
Movement	0.73	8.8 (0.9)	6 - 10	4.1 (0.5)	3.3 - 5.0	0.48
Body	0.86	7.2 (1.7)	3 - 10	4.0 (0.7)	2.6 - 5.0	0.53
Appearance	0.81	7.0 (1.4)	3 - 10	3.8 (0.7)	2.0 - 5.0	0.38

* all significant at $P \leq 0.001$

Tables 4 and 5 show the responses of young women and young men studying PDHPE, separately, to the ASK-Q Inventory for Young Adults, including their feelings and self-concepts about each aspect of self-knowledge. The results show that both women and men involved in PDHPE generally have positive feelings (on the 10-point scale from 1=unhappy to 10=happy) and positive self-concepts (on the five-point scale from 1=low to 5=high) with regard to the aspects of self-knowledge assessed. The highest score for feelings and self-concepts for women was for movement. The highest scores for feelings and self-concepts for men were for the aspects of movement and body image. Feelings and self-concepts tended to correlate strongly or moderately for young men and women, with all correlations significant at $P \leq 0.001$, other than the exceptions noted below the tables.

Table 4 Mean, standard deviation, range, Cronbach's alpha and correlations between feelings and self-concepts related to various aspects of self-knowledge for women enrolled in PDHPE degrees

Aspects	Cronbach's alpha	feelings		self-concepts		correlations between feelings and self-concepts*
		mean (sd)	range	mean (sd)	range	
Movement	0.62	8.7 (1.0)	6 - 10	4.1 (0.5)	3.3 - 5.0	0.56
Body	0.86	6.6 (1.8)	3 - 10	3.9 (0.7)	2.6 - 5.0	0.55
Appearance	0.81	7.0 (1.6)	3 - 10	3.7 (0.8)	2.0 - 5.0	0.31

* significant at P≤0.001with the exception of appearance (P=0.08)

Table 5 Mean, standard deviation, range, Cronbach's Alpha and correlations between feelings and self-concepts related to various aspects of self-knowledge for men enrolled in PDHPE degrees

Aspects	Cronbach's alpha	feelings		self-concepts		correlations between feelings and self-concepts*
		mean (sd)	range	mean (sd)	range	
Movement	0.84	8.7 (0.9)	6 - 10	4.1 (0.5)	3.3 - 5.0	0.37
Body	0.87	7.7 (1.4)	6 - 10	4.2 (0.7)	2.6 - 5.0	0.47
Appearance	0.82	6.9 (1.2)	4 - 10	3.8 (0.7)	2.6 - 5.0	0.51

* significant at P≤0.001

Overall, the highest feelings and self-concepts were for Movement among the young adults enrolled in PDHPE degrees. There were some notable differences between young women and men enrolled in PDHPE degrees with feelings and self-concepts about Body lower for women. Young adults enrolled in PDHPE degrees generally have very positive feelings and high self-concepts. These findings indicate that being involved in physical activity has a positive influence on thoughts and feelings about most cognitive, social and physical activities.

Summary

The results of Studies 1, 2 and 3 show that all scales were reliable and had good internal consistency. A comparison of physical self-concepts means between children, adolescents and young adults is displayed in Table 6.

In relation to body image, the results show that children, adolescent boys, and young adults enrolled in PDHPE degrees, feel very positive about their bodies. Adolescent girls are less positive than these groups, although still above the mid-point of the scales. Overall there seems to be a steady decline in body image self-concepts from children to adolescence, particularly for girls.

In relation to physical activity, the results show that children and young adults enrolled in PDHPE degrees are very positive compared with adolescent girls. Adolescent boys are slightly more positive than adolescent girls, and all adolescents are above the mid-point of the scales for physical activity. Overall there appears to be a steady decline in physical activity self-concepts from children to adolescents, particularly for girls. These findings are consistent with those for body image self-concepts.

In relation to appearance, adolescent girls have the highest self-concepts followed by young adults enrolled in PDHPE degrees, children and adolescent boys. Overall, there seems to be an increase in

self-concepts about appearance during adolescence for girls, otherwise the progression from childhood through to adolescence is fairly steady.

Therefore, there are some differences in physical self-concepts between children, adolescents and young adults. In summary, the main observations include: children and young adults enrolled in PDHPE degrees are the most positive about their body image and physical activity; adolescent boys are more positive than adolescent girls in relation to body image and physical activity; and overall, there appears to be a steady decline in physical self-concepts, with the exception of appearance, from children to adolescence, particularly for girls.

Table 6 Comparison of physical self-concepts means between Studies 1, 2 and 3

Physical Self-concepts	**Study 1 Children Mean (SD)**	**Study 2 Government girls Mean (SD)**	**Study 2 Government boys Mean (SD)**	**Study 3 Adult PE female Mean (SD)**	**Study 3 Adult PE male Mean (SD)**
ASK-Q Components					
Body Image	4.1 (0.9)	3.2 (0.9)	3.7 (0.9)	3.9 (0.7)	4.2 (0.7)
Body Image Use	n/a	3.5 (1.2)	3.4 (0.9)	n/a	n/a
Body Interest	n/a	3.4 (1.2)	3.2 (0.8)	n/a	n/a
Physical Activity	4.4 (0.9)	3.4 (0.9)	3.8 (0.9)	4.1 (0.5)	4.1 (0.5)
Physical Use	n/a	3.5 (1.0)	3.9 (1.0)	n/a	n/a
Physical Interest	n/a	3.6 (1.1)	4.0 (1.0)	n/a	n/a
Appearance	3.7 (0.8)	3.9 (0.7)	3.6 (0.8)	3.7 (0.8)	3.8 (0.7)
Appearance Use	n/a	3.5 (1.1)	3.6 (1.0)	n/a	n/a
Appearance Interest	n/a	3.5 (1.0)	3.4 (1.0)	n/a	n/a

There are clear differences in physical self-concepts between children, adolescents and young adults which can be linked to age and gender. Children, due to their young age, and less experience with the body, have high physical self-concepts, but there is little difference between boys and girls. Adolescents have varying physical self-concepts depending on their gender. As previously mentioned, adolescent boys tend to have higher self-concepts than girls in body image and physical activity. Young adults' physical self-concepts differ less so with age or gender. Young adults enrolled in PDHPE degrees have high physical self-concepts, suggesting that interest and participation in health and physical education has a positive effect on physical self-concepts in young adults.

In summary, there are differences in physical self-concepts between children, adolescents and young adults that are related to age and gender. The gender differences are most apparent during adolescence. Overall, there seems to be a steady decline in physical self-concepts with age, particularly for girls, from childhood to adolescence, and then an increase for young adults enrolled in PDHPE degrees. These results suggest that childhood leading in to adolescence is a critical period for the development of positive self-concepts based on age and gender.

Discussion

This research examined young people's self-concepts about the body, physical activity and appearance, with the intention of developing a greater understanding of physical self-concepts, which may provide a foundation to better assist the development of interventions and programs designed to optimise child and adolescent self-concepts. The studies investigated children's, adolescents' and young adults' physical self-concepts; the relationships of these self-concepts to BMI and participation in physical activity; and how self-concepts differ with age and gender.

Limitations of the study

Some circumstances that may have influenced this research were as follows:

1. The participants in the study were all residents of metropolitan Sydney, NSW and therefore this project does not include information on rural residents.
2. The studies were all conducted in educational settings, therefore all participants were involved in primary, secondary or tertiary education and the project does not provide information on adolescents or young adults who are not in continuing education.
3. Although some children with disabilities were involved in this study, there was no focus on children with special needs.
4. There was no specific focus on ethnicity.
5. Although pubertal development was recorded, this was not considered in the results.
6. The samples were fairly small and the data were cross-sectional, not longitudinal, therefore the results must be considered as suggestive rather than generalisable.
7. Significance testing was not performed on some of the questions as the intention was just to compare the studies, therefore the results must be considered accordingly.
8. Self-reported physical activity was used and although the instrument (APARQ) has demonstrated and published reliability, self-reporting can be somewhat unreliable.

Conclusions

The following conclusions from this research regarding children, adolescents and young adults, were made:

1. Children are generally very positive in relation to their physical self-concepts.
2. There was little difference for children in the relationship of self-concepts with gender, with only movement self-concepts being slightly higher for boys.
3. Adolescents are generally positive in their self-concepts and feelings.
4. Adolescents who participate in a higher level of physical activity have significantly higher physical self-concepts than adolescents who participate in little or no physical activity. This suggests that physical activity is an important factor in the self-concepts of adolescents.
5. Self-concepts are associated with BMI, with adolescents in the healthy weight category yielding the highest scores.
6. There are some differences in adolescent self-concepts in relation to gender, with boys yielding higher scores than girls in body image and physical activity.
7. Young adults enrolled in PDHPE degrees generally have positive feelings and self-concepts, and have particularly high physical self-concepts.
8. There were only slight differences in self-concepts between the sexes for young adults enrolled in PDHPE degrees.
9. There are differences in physical self-concepts between children, adolescents and young adults with children, adolescent boys and young adults enrolled in PDHPE degrees generally yielding the highest scores for body image and physical activity self-concepts. Adolescent girls are less positive than these groups, although still above the mid-point of the scales. In relation to appearance, adolescent girls have the highest self-concepts followed by young adults enrolled in PDHPE degrees, children and adolescent boys.
10. Self-concepts are generally positive in childhood, decline in adolescence specific to experience, and then increase for young adults enrolled in PDHPE degrees.

It was expected that the meanings of self-concepts would be quite diverse and relative to experience. Self-concepts were not as diverse as expected, however, they were relative to experience. The hypothesis that self-concepts would be more positive and less diverse for young children than for adolescent students due to experience in thinking about their bodies was supported. Due to previous research (Sallis et al., 2000), it was expected that young boys would have slightly higher physical self-concepts than young girls. This was only partially supported as there was little difference in physical self-concepts for boys and girls other than boys having slightly higher movement self-concepts. Body and appearance self-concepts were very similar in both boys and girls. This may be

due to the differentiation in self-concept occurring with age (Harter, 2003; 2006) therefore resulting in little diversity evident in children.

Due to previous findings (Biddle, 2000; Booth et al., 2002), it was expected that physical activity participation would be positively associated with physical self-concepts in adolescents. This hypothesis was strongly supported with results showing that adolescents, particularly girls, who participate in a higher level of physical activity, have significantly higher social and physical self-concepts than adolescents who participate in little or no physical activity. This provides a strong case for the importance of physical activity in adolescence.

It was expected that thoughts and feelings about the body vary according to BMI with high BMI (overweight to obese) groups having less positive thoughts and feelings about the body than those in the underweight or healthy BMI groups. As expected, adolescents in the overweight and obese BMI categories had the lowest physical self-concepts. However, the hypothesis that boys' thoughts and feelings would be less affected by BMI than girls was not supported, with boys and girls being equally affected by being overweight or obese. Ericksen (2004) also suggests that boys' body discrepancy, or physical self-concept, is influenced by their BMI.

The hypothesis that Body Image and Physical Activity self-concepts would be more positive among secondary school boys than secondary school girls was also supported, as expected due to previous research (Hargreaves & Tiggemann, 2004; Noemi et al, 2005; WHO, 2005d; Davison & McCabe, 2006). The results showed that boys had slightly higher self-concepts in Physical Spatial activities, Body Image, Physical Activity and Physical Activity Interest than girls. It is interesting to note that Davison & McCabe (2006) found that while girls tended to report a more negative body image than did boys, the relevance of body image to self-esteem was similar for boys and girls. This also supports the previous result of the relationship between BMI and self-concept among boys.

The results of the young adults enrolled in PDHPE degrees indicate that participation and interest in health and physical activity may be associated with positive self-concepts in most physical activities. This is based on correlational data and it would be beneficial to conduct further research to determine the degree of causality of this relationship. This is a foundation for encouraging physical activity at all ages and is supported by Landaas (2006).

Overall, it was expected that self-concepts would generally be high in childhood, declining in adolescence with a mixture of diverse self-concepts dependant on gender, and then an increase in self-concepts in young adulthood with particularly high self-concepts for young adults enrolled in PDHPE degrees. This was supported in that self-concepts were high in childhood and there was a drop in adolescence, particularly among adolescent girls. There also was an increase in self-concepts for young adults enrolled in PDHPE. This indicates that involvement in sport, health and physical activity in young adulthood is associated with positive feelings and high self-concepts, and warrants further investigation into the causal direction of this relationship.

The outcomes of this research suggest physical self-concepts do vary (Brake, 2006) with size and shape and BMI; through increasing experience in thinking about the body for children and adolescents relative to age; through the social reality of gendered experience of the body for girls and boys; and through the experience of educational contexts for young adults.

Recommendations

Education Policies

At a federal level, the states, territories and the Commonwealth of Australia united in a joint project to develop a statement on health and physical education for Australian schools. This project listed common and agreed national goals for schooling in Australia, including the following:

> "To enable all students to achieve high standards of learning and to develop self-confidence, optimism, high self-esteem, respect for others, and achievement of personal excellence."
>
> (AEC, 1994, p.52)

The rates of youth suicide, depression, obesity, eating disorders, and negative health behaviours in Australia including drug, alcohol and tobacco use, do not reflect all students possessing qualities of self-confidence, optimism, self-esteem and respect. A successful approach to the well-being of young people will obviously have many components. The recommendations described here are limited to the findings of this research.

Health Policies

The Department of Health and Family Services (DOHAFS) found there was inadequate coverage of mental health in Australian education policies. There are some well-developed Health policies at Federal and State levels, however these are often not linked to education in schools (Commonwealth of Australia, 1996). There is a need to investigate these ideas further into adolescence and adulthood to determine why physical activity and positive self-concepts decrease with age, and if they are able to be maintained at an optimal level.

Recommendations for children

As stated in the review by Sallis et al. (2000), correlates of physical activity for children include physical activity preferences, previous physical activity, program/facility access and time spent outdoors, and are not related to body image. As the present research has indicated, those adolescents and young adults involved in physical activity had higher physical self-concepts, and children generally had higher self-concepts than adolescents. Therefore it is important to capture the high self-concepts of children before they become concerned by body image and carry their optimism through puberty to adolescence and adulthood. On the basis of these factors, some recommendations for children are made:

1. Provide daily physical activity in primary schools based on physical activity preferences. Offer a variety of activity types, for example, dance, aerobics, running, or ball games, and allow children to participate in the activity of their choice. The purpose of the daily physical activity sessions is to provide regular physical activity and for children to participate in activities of their preference. This is supported by the Australian government who recommend 60 minutes of moderate to vigorous intensity physical activity per day in Australia's Physical Activity Recommendations for Children and Young People (Commonwealth of Australia, 2005).
2. Provide play and sports equipment at recess and lunchtime and encourage children to be active during these periods. Create enticing playgrounds and environments with fun resources to encourage children to play in an active manner.
3. As previous findings have shown (Okely, 1999), it is also critical for children to learn fundamental motor skills for a range of activities in PDHPE classes. Improving physical activity skills will make children feel good about participating in sport and therefore continue to feel good.
4. Encourage and implement programs for before and after school care which are physical activity based. Active Australia (Commonwealth of Australia, 2005) provide physically active after hours school care as they claim that many primary schools in NSW and other states are not offering sufficient opportunities for physical activity or physical education classes.
5. Provide information for parents on the importance of children having time outdoors playing. Provide some resources of simple play/games ideas parents can use with their children.
6. Teachers may be uncomfortable with teaching some of the sensitive issues that arise in the PDHPE syllabus (Duff, 2006). It is important to ensure that the Personal Development and Health aspects of the PDHPE program are well-implemented with information about puberty and self-concepts as well as the importance of physical activity and nutrition and the importance of looking at all aspects of health, physical, emotional, mental and spiritual. It is

also important that teachers are supported with resources and teaching strategies for discussing sensitive issues.

7. Provide interventions in critical periods such as pre-pubescence, before young people begin to be self-conscious about the bodies (O'Dea & Abraham, 1999).

It must be noted that in reality there are a number of factors opposing these recommendations being implemented in schools, including financial, resource and environmental limitations, as well as the limitation of time in the already full school curriculum.

Recommendations for adolescents

As stated in the review by Sallis et al. (2000), correlates of physical activity for adolescents included perceived activity competence, previous physical activity, parent support and opportunities to exercise. In the present research adolescents indicated their choices to participate in particular activities. These activities could be used these to educate adolescents about health. The present research also emphasises the importance of physical activity in adolescence and its positive impact on self-concepts.

Taking these factors into consideration, some recommendations for adolescents are made:

1. Provide simple information for parents on adolescent health including body image, self-concepts, self-esteem, eating disorders, the importance of exercise and nutrition, and the health of the 'whole person' including physical, emotional, mental and spiritual health.
2. Implement daily physical activity in every school day including a range of activities for adolescents to choose from, including games and sports, dance, yoga, aerobics and athletics. This is supported by the Australian government who recommend 60 minutes of moderate to vigorous intensity physical activity per day in Australia's Physical Activity Recommendations for Children and Young People (Commonwealth of Australia, 2005). This could be done by providing both competitive and non-competitive lunchtime sports and physical activities to encourage adolescent participation.
3. Promote physical activity in girls to improve social and physical self-concepts. This is supported by the findings that girls were less likely to be physically active during winter, and girls' participation declined significantly with age (Booth et al, 2002a).
4. Interventions including physical activity, health information, body awareness and teaching positive thoughts to optimise embodied self-concepts. A major feature of adolescence is puberty and during this time, both boys and girls become more aware of their weight, shape and appearance (O'Dea & Abraham, 1999). If adolescents value, respect and appreciate their bodies they are more likely to look after it and treat it well.

Recommendations for educators

Some recommendations for teachers are made:

1. Encourage teachers to be involved in and participate in daily physical activity and lunchtime sports and activities, to support the recommendations for children and adolescents.
2. Provide teachers with resources for physical activity sessions.
3. Assist teachers to understand the role they play in modelling to their students, and encourage healthy lifestyle habits.
4. Ensure tertiary programs are providing pre-service teachers with adequate education, user-friendly resources, teaching strategies for sensitive issues, and the confidence to implement effective PDHPE programs (Duff, 2006).

Directions for future research

Some recommendations for further research include:

1. Examine specific ages during childhood, puberty and adolescence to find when self-concepts tend to decrease in order to find critical periods for intervention.
2. Conduct a longitudinal study with adolescents, tracking adolescent experience into young adulthood to find patterns related to experience with physical activity and BMI.
3. Explore the relationship between BMI and self-concepts to find the direction of the causal pathway.

4. Conduct an adolescent intervention program with a control group; a group receiving physical activity intervention; and a group receiving physical activity and positive thought intervention.
5. Compare the self-concepts of young adults enrolled in PDHPE degrees, young adults enrolled in other tertiary education, and young adults not enrolled in education and their experiences with physical activity.

This research was undertaken to investigate physical self-concepts and gender differences in children, adolescents and young adults. The results build upon the findings of previous research and contribute to self-concept theory, research and practice in the fields of health, education and psychology. The results give future directions for educational practice as well as further research into better understanding and optimising the physical self-concepts of children, adolescents and young adults.

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