Unmasking the True Effects of Self-Concept Interventions and Suggested Guidelines for Rectification [R]

Alison J. O'Mara, Rhonda G. Craven, and Herbert W. Marsh
SELF Research Centre, University of Western Sydney, Australia

Over recent decades, traditional literature reviews have intimated that self-concept interventions have produced inconsistent or disappointing results (e.g., Marsh & Craven, 1997). It is put forth here that existing research practices, ranging from insufficient theoretical grounding to the use of inappropriate evaluation measures, have generally undermined the effectiveness of self-concept interventions to date. A brief rationale for the necessity of self-concept interventions for children and adolescents will be provided, followed by a review of self-concept enhancement research. This review will focus on the theoretical and methodological weaknesses that have typically resulted in an underestimation of the true effects of such interventions, as revealed by sophisticated meta-analytic techniques. A particular emphasis will be placed on the need for multidimensional approaches to intervention design and evaluation. Following from this, suggestions for improving self-concept intervention research will be posited, with the aim of increasing the consistency and effectiveness of such interventions, and thus unmasking the true effects of such interventions.

A Rationale for Enhancing Self-Concept

General Benefits of High Self-Concept

Enhancing and maintaining a positive self-concept in children and adolescents is widely valued as an important goal, since it is considered critical in the development of healthy personal and social adjustment in children (Harter, 1990). Research has also identified improvement in a multitude of affiliated positive outcomes as self-concept becomes more positive. These benefits include school performance (Marsh, 1990a; Marsh & Yeung, 1997a; 1998; Delugach, Bracken, Bracken & Shicke, 1992), social interaction (Gurney, 1986), relations with parents (Marsh & Craven, 1991), persistence through difficulties (Chapman, 1988), feelings of self-worth and self-efficacy (Chapman, 1988) and better coping skills (Shirk, 1988). Moreover, research has established that people with a positive self-concept are generally happier than their less positive counterparts (Swann, 1996).

Enhancing self-concept has also been suggested as a valuable means to addressing major social problems. As eminent psychologist Nathaniel Branden (1994) stated:

> I cannot think of a single psychological problem - from anxiety to depression, to under-achievement at school or at work, to fear of intimacy, happiness or success, to alcohol or drug abuse, to spouse battering or child molestation, to co-dependency and sexual disorders, to passivity and chronic aimlessness, to suicide and crimes of violence - that is not traceable, at least in part, to the problem of deficient self-esteem (p. xv).

Given the broad appeal of the self-concept construct, practitioners and policy-makers from a wide range of disciplines have embraced positive self-concept development as a central goal. For example, self-concept enhancement goals are prevalent in many educational policies (Gorrell, 1990) as a valued goal in itself and as an important means by which to enhance other desirable outcomes.

The Relation of Positive Self-Concept to Educational Outcomes

It is well established that self-concept is related to academic achievement (Marsh, 1990a; Marsh & Yeung, 1997a; 1998; Delugach, et al., 1992). Recently, researchers have started to explore the causal ordering of academic self-concept and academic achievement (Marsh, Byrne & Yeung, 1999). Calsyn and Kenny (1977) posited two models to explain this relation: A self-enhancement model and a skill development model. The former places self-concept as a key influence on academic achievement, while the latter posits academic achievement as the precursor to self-concept. The self-enhancement model stems from the belief by some researchers that high academic self-concept plays a motivational role and thus leads to increased academic achievement (e.g., Byrne, 1984, 1996a). As such, this model would provide a strong justification for self-concept enhancement interventions if supported. In contrast, the skill-development model suggests that changes in the individual's behavior would be more effective than directly targeting self-concept, since self-concept is a by-product of experience. Support for this skill development model implies that the best way to enhance academic self-concept is to develop stronger academic skills. In the past, inadequate statistical techniques forced researchers to adopt an "either-or"

stance to support these predictions. However, Marsh (1990a; Marsh et al., 1999) maintained that a "reciprocal effects model", in which self-concept is seen as both a cause and an effect, is more likely to occur. Marsh et al. (1999) predicted that the reciprocal effects model would exhibit a stronger effect by prior self-concept on achievement than the reverse. Using a longitudinal multiple-outcome model, Marsh, Trautwein, Lüdtke, Köller, and Baumert (2003) found support for this proposition. The results also implied that interventions successfully producing changes in the appropriate area of self-concept and achievement are more likely to have long lasting effects than studies that focus exclusively on academic self-concept or academic achievement alone.

Skaalvik (1997; Skaalvik & Hagtvet, 1990) found support for a reciprocal effects model for older students, but found that the skill-development model was a more accurate descriptor for younger students. However, Skaalvik and Valas' (1999) study did not provide support for this developmental perspective. To elucidate this contradiction, Marsh et al. (1999) recommended the use of multicohort-multioccasion designs. Such designs combine the advantages of cross-sectional and longitudinal research within the same study. Guay, Marsh and Boivin (2003) conducted a multicohort-multioccasion study, in which three measurement waves measured students in grades 2, 3, and 4 from 10 elementary schools. Results from correlational and confirmatory factor analyses showed that academic self-concept responses became more reliable, more stable, and more strongly correlated with academic achievement as the children got older. Support for these age-related differences were evident for both multicohort (cross-sectional) and multioccasion (longitudinal) comparisons. However, results from invariance analyses were not significant in relation to the developmental effects observed within and between cohorts. Taken together, the results only supported the finding that academic self-concept responses became more reliable with time. Hence, although previous research has provided evidence in favour of the skill development model for young children and the reciprocal effects model for older children, there was little support for this developmental pattern for the children considered in the Marsh et al. (2003) study.

From the research cited above, it is difficult to determine the strength of the reciprocity of effects. However, these results do support the contention by Marsh et al. (1999) that the reciprocal effects model has sufficient generalizability. Hence, it appears to be appropriate to adopt the reciprocal effects model (Marsh et al., 1999). The implications of this model are that interventions should ideally target both self-concept and other outcomes in order to produce more durable intervention effects. For example, the Marsh and Richards (1988) study simultaneously enhanced and affected math and reading self-concepts and their corresponding areas of achievement.

Research has also shown that self-concept mediates many academic outcomes beyond achievement. Marsh and colleagues' comprehensive investigations have found mediators as diverse as coursework selection (Marsh & Yeung, 1997b), educational and occupational aspirations (Marsh, 1991), motivation for academic tasks (McInerney, Roche, McInerney, & Marsh, 1997), and bullying (Marsh, Parada, Yeung, & Healey, 2001). Cumulatively, these results show that increasing self-concept is valuable for its effects on achievement as well as other desirable educational outcomes.

An Overview of Self-Concept Theory

As previously described, self-concept is regarded as a vital outcome in its own right, as well as for the benefits it extends to other domains. Consequently, many interventions have been developed with the aim of maintaining or increasing self-concept. Traditional literature reviews suggest that many of these interventions have no tangible benefits, while meta-analyses of self-concept interventions (O'Mara, Marsh & Craven, 2003; Haney & Durlak, 1998; Hattie, 1992) reveal small but positive outcomes. The burgeoning amount of research in the field has not made empirical support for self-concept interventions any clearer (Elardo & Elardo, 1976). Methodology, study design, and theoretical quandaries have all been implicated in the generally poor results (Marsh & Craven, 1997; Hattie, 1992) and are discussed further in the following section.

Early self-concept research focused on a unidimensional or global self-concept. That is, self-concept was considered to be the sum total of an individual's self-perceptions, and as such an individual's sense of self was deemed to be fairly consistent across a range of situations (Marx & Winne, 1978). Despite a push over the last few decades towards a multidimensional self-concept model, the (now largely discredited) unidimensional approach is still commonly found in self-concept research. This persistence is best evidenced by the under-use of multidimensional instruments with construct validity that has proliferated in self-concept research (O'Mara et al., 2003; Marsh & Craven, 1997; Hattie, 1992). The persistence of unidimensional measures in self-concept research has been attributed to a conventional affinity to the notion of global self-concept, and to the lack of powerful statistical procedures (such as confirmatory factor analysis) that have only recently been developed, allowing better construct validation (Byrne, 1996b). The affinity for a global self-concept is gradually eroding, but the use of unidimensional measures of self-concept is still common (see O'Mara et al., 2003).

Investigating the Structure of Self-Concept

As a hypothetical construct, self-concept is best understood through investigations of construct validity. While within-construct studies explore the structure of self-concept, between-construct studies attempt to establish a pattern of relations between self-concept and other constructs (see Messick, 1989; Shavelson, Hubner, & Stanton, 1976). Although it is logical to identify the structure of self-concept as a prerequisite to relating self-concept to other variables, self-concept research has typically focused on between-construct relations while the structure of self-concept was been neglected. This has resulted in inaccurate theory and anomalous research findings; intervention research has suffered from this haphazard research approach. For instance, Elardo and Elardo (1976) reviewed four commonly used school-based interventions, and found that there was no consistency between program design and implementation, and that there was an insufficient connection between aims and the outcomes measured. The frequently observed inconsistencies between intervention aims and the outcomes measured (see O'Mara, Marsh & Craven, 2003) are a pivotal issue in self-concept research. Based on their influential review of self-concept theory and research, Shavelson, Hubner and Stanton (1976) concluded:

> It appears that self-concept research has addressed itself to substantive problems before problems of definition, measurement, and interpretation have been resolved. Until these problems have been dealt with in a manner made possible by advances in construct validation methodology, the generalizability of self-concept findings will be severely limited, and data on students' self-concepts will continue to be ambiguous (p. 410).

Fundamental to advances in self-concept enhancement research methodology were the Marsh, Richards, and Barnes (1986a, 1986b) studies, which presented a construct validity approach to the study of intervention effects. They argued that the specific dimensions of self-concept that are most relevant to the intervention should be most affected by the intervention, while less relevant dimensions should be less affected. For example, if an intervention in a school setting targeted reading self-concept, it would be logical to test whether the intervention affected: Reading self-concept (target variable), school self-concept (since reading self-concept is related to this construct), and non-target variables (e.g., physical appearance self-concept). Hypothetically, reading self-concept should have the largest improvements, followed by school self-concept, with only minor or non-significant improvements in the non-target domains. A meta-analysis by O'Mara et al. (2003) confirmed that target self-concept domains had higher effect sizes than less relevant domains, supporting the construct validity approach and the multidimensionality of self-concept. In sum, the construct validity approach has helped to elucidate the disparity between intervention aim and the outcome domain measured, thus helping to validate the multidimensional structure of self-concept.

The Shavelson, Hubner, and Stanton (1976) Model

Shavelson et al. (1976) developed a theoretical model of self-concept that has proved to be of paramount significance. They proposed that self-concept is multifaceted; hierarchically arranged; increasingly context-specific; and more differentiated with age. Their hierarchical model of self-concept placed general (or global) self-concept at the apex of the model (Shavelson et al., 1976). The second-order dimensions of academic and nonacademic self-concept were then differentiated into further facets (e.g., academic content-specific areas such as math, and nonacademic divisions such as physical and social self-concept). These third order components also consist of more divisions (for example, social self-concept breaks down into peer relations and significant others self-concept). With increased specificity of the dimensions further down the hierarchy comes decreased stability, meaning each subdivision is less applicable across multiple contexts (Shavelson et al., 1976).

The Development of Multidimensional Instruments and the Marsh/Shavelson Model

Based on the Shavelson model, Marsh developed the Self Description Questionnaire (SDQ) instruments (Marsh, 1990b; 1990c; 1992). These instruments measure multiple dimensions of self-concept, including academic (e.g., math self-concept) and nonacademic (e.g., physical ability self-concept) domains. Researchers have lauded the SDQ instruments for their construct validation approach and their strong psychometric properties (Byrne, 1984; Hattie, 1992). In excess of 30 published factor analyses have supported the dimensions that the SDQs were designed to measure (see Marsh, 1990b). The SDQ instruments have helped elucidate methodology and theory in self-concept research (Marsh & Craven, 1997), and led to a revision of the original Shavelson et al. (1976) model.

Research in the 1990s suggested that Shavelson and colleagues' (1976) proposed hierarchy was weak (Byrne & Shavelson, 1996; Vispoel, 1995), and that the specific components of self-concept (including, social, academic, physical, and emotional) were highly differentiated (Harter, 1998; Bong, 1997; Byrne, 1996b). Shavelson et al. (1976) cited the

considerable correlations between math and reading self-concepts as grounds for interpreting these subdomains in terms of the higher-order factor of academic self-concept. In opposition to this, subsequent research using the SDQ instruments exhibited near-zero correlations between math and reading self-concept scores (see Marsh & Shavelson, 1985; Marsh, Byrne, & Shavelson, 1988). As a result, the Marsh/Shavelson model (Marsh & Shavelson, 1985) was developed, redefining the hierarchical structure. This revised model of self-concept predicts that relations between the nonacademic SDQI scales (physical appearance, physical ability, parent relationships, and peer relationships) will be stronger than their correlations with the academic scales (general-school, mathematics, and reading). Further, reading and math will be correlated with general school scores on the SDQI, but not with each other. This means that, unlike in the Shavelson et al. (1976) model, the subdivisions of academic self-concept (i.e., reading and mathematics) cannot be integrated to represent the single higher-order domain of academic self-concept. Empirical support has been found for these predictions (see Marsh & Craven, 1997) thus supporting the revised theoretical model of self-concept. Hence, the development of better measurement instruments has resulted in the emergence of new theoretical understandings of the structure of self-concept that have important implications fundamental to strengthening self-concept intervention research.

Meta-Analyses and the Unmasking of Self-Concept Intervention Research Methodology

It is becoming increasingly evident that major scientific issues cannot be resolved by a single study, and that advances in knowledge come from the integration of many studies (Schmidt, 1992). To make sense of the large volume of conflicting research in the field, it is informative to statistically review developments in self-concept enhancement research by conducting a meta-analysis. A meta-analysis involves synthesizing results from multiple studies to observe effect sizes across studies on the phenomenon under review (Rosenthal, 1984). Meta-analyses approach research in a similar way as the more traditional experimental or correlational methods do (Cooper, 1998). These include data collection, evaluation, analysis, interpretation, significance testing, and drawing conclusions. Hence, meta-analysis has been called a primary research investigation in itself (Cooper, 1998) with unique innovative characteristics in relation to research design. To date, only three meta-analyses have been conducted on self-concept interventions, each with very distinct approaches. These studies provide a clear and concise analysis of intervention studies, and are invaluable for discerning both promising and deleterious aspects of intervention research.

Hattie's (1992) Meta-Analysis

John Hattie (1992), in his seminal work on self-concept, reported a meta-analysis on self-concept interventions conducted by Janet Hattie (1986). Based on pre-1983 studies, the meta-analysis primarily looked at whether cognitively oriented intervention programs had more of an effect on self-concept change than affectively oriented programs. From 650 articles located, only 89 reported enough data to be analysed, leading Hattie (1992) to conclude that the quality of self-concept enhancement studies was unsatisfactory. As such, Hattie's (1992) meta-analysis highlighted the deficiencies rampant in the self-concept intervention literature, such as the lack of follow-up testing and insufficient data reporting. From the 89 articles, 485 effect sizes were calculated with the average size being .37.

In examining enhancement approaches Hattie (1992) found that cognitively oriented interventions appear to be the most effective, with a mean effect-size of .47. Hattie found no significant differences between studies that directly targeted self-concept, those that were indirect (e.g., academic achievement programs), those that were a combination of direct and indirect methods, and those for which self-concept was simply an incidental measure. Hattie (1992) also found that effect sizes were higher for groups with previously diagnosed problems (effect size = .55) relative to groups without pre-existing problems (.26). Academic scales were used on 13 occasions (effect size = .22) and global measures were used on 10 occasions (.08); these results led Hattie (1992, p.232) to conclude that "programs to change a particular dimension appear to have little affect on the global self". This supports the notion that outcome measures should reflect the multidimensionality of the intervention. Four studies reported 36 effect sizes measured at delayed posttest. A significant difference was present between studies that were followed up (effect size = .16) and those without (.40). These results suggest that the effect size decreases over time, which some researchers believe may be explained by the euphoria participants might experience in the short period following an intervention, which dissipates with time (Marsh, Richards, & Barnes, 1986a; 1986b).

In sum, Hattie's (1992) results are encouraging in that the mean effect size was positive, so overall interventions are showing benefits. Further, Hattie's results imply the following features could maximise self-concept intervention success: Using cognitively oriented interventions, targeting participants with diagnosed problems, using academic self-concept scales when academic self-concept is targeted in the intervention.

Haney and Durlak's (1998) Meta-Analysis

Haney and Durlak (1998) conducted a meta-analysis of 99 self-concept intervention studies published prior to 1992. The study sought to: Address whether interventions led to a significant improvement in self-concept, identify factors that moderate outcomes, and test whether improvements in self-concept are associated with other desirable outcomes. The overall mean effect size was .27. Two types of interventions were operationalized: Studies that focused on enhancing self-concept and studies that had another major focus but that included a self-concept measure. The mean effect size for studies focused on enhancing self-concept was significantly higher (.57) than the mean effect size from studies focusing on other outcomes (.10). Interventions were also categorised as to whether they were treating a pre-existing problem (treatment studies) or whether the study aimed to maintain 'normal' levels of self-concept (preventive studies). Haney and Durlak found that treatment programs exhibited greater change (0.47) than prevention studies (0.09).

Encouragingly, Haney and Durlak (1998, p. 429) concluded, "it is possible to significantly improve children's and adolescents' levels of SE/SC [self-esteem/self-concept] and to obtain concomitant positive changes in other areas of adjustment". This, coupled with the finding that indirect interventions may increase self-concept, supports a reciprocal effects model of self-concept causal ordering. Non-randomised designs resulted in significantly lower effect sizes (.04) than randomised studies (.38). Studies with no treatment control groups had significantly higher effect sizes (.34) than studies with attention-placebo controls (.10). They also reported that studies using prior empirical evidence to inform their design had greater effect sizes (0.71) than those with theoretical bases (0.50) and those with no strong rationale (0.12). Haney and Durlak found no significant change in self-concept at follow-up, although only five self-concept interventions reported follow-up results.

Taken together, these results suggest that self-concept enhancement researchers can potentially maximise the impact of interventions by capitalising on previous research to develop interventions, and targeting students who are most likely to benefit from a self-concept enhancement intervention. Haney and Durlak (1998, p. 429) also suggested that significant improvements in self-concept are unlikely unless interventions focus on self-concept. This suggestion is supported by the longitudinal causal modeling studies discussed earlier, which demonstrated that the strongest effects on subsequent self-concept is prior self-concept.

O'Mara, Marsh & Craven (2003) Meta-Analysis.

Multidimensionality of Self-Concept

The Hattie (1992) and Haney and Durlak (1998) meta-analyses, although valuable contributions to self-concept research, did not fully incorporate the multidimensional structure of self-concept. This is most likely due to the limited number of interventions utilising a multidimensional perspective available to the previous meta-analysts, since multidimensionality has only become more dominant in the last decade. After reviewing the state of self-concept intervention research, Craven, Marsh and Burnett (2003) published a blueprint for future research, and stated that

> it is important to distinguish between the effects of an intervention on target areas of self-concept that are directly relevant to the goals of the program (e.g., math self-concept for a math intervention), the effects of an intervention on related areas of self-concept where one might predict a transfer effect (e.g., academic self-concept for a math intervention), and the effects of an intervention on non-target areas (e.g., physical self-concept for a math intervention)… By failing to make this distinction, we argue that the Haney and Durlak (1998) meta-analysis is likely to have substantially underestimated the effects of interventions on targeted areas of self-concept… (p.108-9)

Capitalising on advances in self-concept theory to account for the multidimensionality of the self-concept construct, O'Mara, Marsh and Craven (2003) extended the use of a construct validity approach to the study of intervention effects to meta-analysis design. A total of 145 primary studies were located. The 200 interventions and 544 effect sizes these studies yielded were found to be effective overall (mean effect size = .27). Target interventions, in which the intervention implemented was directly aimed at increasing self-concept, exhibited the largest mean effect size (.41). Interventions which aimed at increasing self-concept through non-self-concept programs, for example social skills training, had a mean effect size of .18, while interventions for which self-concept was an incidental variable had the lowest mean effect size of .14. Although Hattie (1992) found no difference, the O'Mara et al. (2003) findings are in line with Haney and Durlak's (1998) findings. This suggests that the design of interventions aiming to enhance self-concept can be strengthened by targeting specific facets of self-concept relevant to the goals of the intervention.

In support of the multidimensional perspective of self-concept, mean effect sizes were substantially larger for specific self-concept dimension outcomes judged to be focal (most relevant) to the intervention (.43). The mean effect size was smaller for self-concept outcomes judged to be secondary to intervention aims (.18), and smaller still for those outcomes judged to be non-relevant to the intervention (.09). This supports the construct validity approach to the study of intervention effects and endorses the use of multidimensional instruments when measuring specific domain interventions to ensure that inappropriately global scales do not mask true benefits of interventions.

O'Mara et al. (2003) reported that interventions based on studies using both theoretical models and empirical evidence to inform the intervention design produced the highest mean effect size (.50). The lowest observed mean effect size was for studies using only previous research as the rationale for the intervention design (.10). This emphasises the interdependent relation between theory and practice (Marsh, 1990b). Haney and Durlak (1998) found that studies based on prior research were most effective, which contradicts the current findings. This could be due to the fact that the more recent study incorporated newer studies, which are more likely to have taken advantage the recent developments in self-concept theory. As a result, the more recent studies in the O'Mara et al. (2003) presumably had stronger theoretical bases, utilising a multidimensional perspective, than those used in the earlier meta-analysis.

Other Features of the Interventions

A number of methodological and design features were explored in the O'Mara et al. (2003) meta-analysis. Contrary to Hattie's (1992) finding, teachers were found to be the most effective change agents (.47). This could be due to the different samples used. In the O'Mara et al. (2003) study, the maximum age of participants was 18 years, whereas Hattie (1992) extended sampling into college years. As such, teachers in the Hattie study included university lecturers and trainee teachers. As such, the samples are not entirely comparable. Haney and Durlak (1998) did not find treatment administrator to be a significant moderator of intervention effects. Treatment interventions yielded larger effect sizes (.38) than prevention interventions (.23). Both Hattie (1992) and Haney and Durlak (1998) found similar results, suggesting that students with pre-diagnosed conditions are likely to benefit more from self-concept interventions. Haney and Durlak (1998) argued that this was to be expected given that "those without problems are already functioning at normal levels to begin with, and one should not expect extremely large effect sizes" (p. 429).

In terms of group assignment procedures, there were a number of types of random assignment methods (e.g., randomly assigned individuals, randomly assigned groups) and several different non-random assignment techniques (e.g., matching groups, self-selection). Random assignment strategies consistently produced higher mean effect sizes (mean effect size range for the various techniques was .24 to .76) than non-random assignment procedures (mean effect size range -.75 to .19). It appears that randomisation impacts upon self-concept enhancement success in favour of randomised designs, suggesting that quasi-experimental studies may lead to the underestimation of intervention effects. Additionally, treatment groups that were compared with attention placebo controls resulted in a significantly lower mean effect size (.21) than those compared with inactive (.30) or waitlist controls (.51). This is the same pattern found by Haney and Durlak (1998), who intimated that attention placebo groups account for more variance and therefore produce lower effect sizes.

Optimistically, O'Mara et al. (2003) found that effects at follow-up had not diminished (p>.05, effect size = -.01). This was based on 12 studies (compared to four and five in Hattie (1992) and Haney and Durlak (1998), respectively), which comprised 20 interventions. As evidenced in the previous meta-analyses, O'Mara et al. (2003) concluded that features of the methodology can mask the effectiveness of interventions, and interpretation of effect sizes should be considered in light of the impact of design characteristics (Strein, 1988; Lipsey & Wilson, 2001). O'Mara et al.'s (2003) results suggest the following features should be incorporated into intervention designs: The intervention should focus on a specific self-concept domain, which should be measured by the relevant specific domain scale, under random assignment conditions, with an attention placebo control.

Unmasking Intervention Success by Testing for Diffusion Effects

Related to the issues of randomisation and control group types is the issue of diffusion effects. In classroom settings in which a teacher-mediated intervention is to some extent public, there is a possibility that the treatment has inadvertently affected non-target participants (Craven, Marsh, Debus & Jayasinghe, 2001). From her observations, Craven (1996; Craven et al., 2001) has argued that within-class experimental designs need to test for 'diffusion effects' of the treatment to non-target participants, in the context of a construct validity approach. Testing diffusion effects on target and non-target participants has important implications for within-class control groups, as diffusion of treatment effects can lead to an underestimation of treatment success.

Promising Intervention Studies

A number of interventions have already applied some of the above suggestions, such as the use of a construct validity approach. These promising interventions are discussed in the following section.

Outward Bound Interventions

The Outward Bound Standard Course is a 26-day residential program comprised of physically and mentally demanding outdoor activities, the goals of which are primarily non-academic. The Director of the Outward Bound Program classified the 13 SDQIII scales into three categories: Those most relevant, those moderately relevant, and those least relevant to the goals of the Outward Bound Program. Marsh, Richards, and Barnes (1986a; 1986b), in an analysis of the program, found that participation in the standard course had a significant effect on the nonacademic (SDQ-III) dimensions of self-concept most related to the course goals as predicted. In addition, these gains were maintained at an 18-month follow-up (Marsh, Richards, & Barnes, 1986b).

The Outward Bound Bridging Course is a 6-week residential experience conducted in an isolated environment, with primarily academic goals. The Outward Bound Bridging Course was developed for underachieving boys to improve math and reading achievement and self-concept and self-esteem. As in the Standard Course study, Marsh and Richards (1988) evaluated the effect of the Outward Bound program on multiple dimensions of self-concept as measured by one of the SDQ instruments, using a short multiple time series design. The generality of effects was examined across different course offerings of the same (or similar) program. It was found that the program affected primarily academic self-concept dimensions, with less impact on nonacademic self-concept dimensions. Corresponding effects were present for reading and mathematics achievement. The two studies combined attest to the construct validity approach to self-concept research. Further, they emphasise the necessity of accounting for the multidimensionality of self-concept in intervention studies.

Marsh and Peart Study

Marsh and Peart (1988) conducted a study of aerobics training, physical fitness, and physical self-concept with randomly assigned competitive, cooperative, and control groups. The cooperative group participated in exercises undertaken in pairs, although feedback provided to students emphasized individual improvement. Both physical fitness and physical self-concept increased as a result of this intervention. The competitive/social comparison group participated in individual exercises, while feedback emphasized comparisons with the best students. This treatment resulted in an increase in physical fitness but a decrease in physical self-concept.

The study demonstrates the rationale for developing both skill level and the corresponding area of self-concept. Application of the reciprocal effects model of self-concept and achievement implies that failing to enhance self-concept will lead to deterioration of performance levels. Hence, interventions should be designed to enhance both self-concept and performance to ensure the intervention has long lasting effects on both constructs. Furthermore, the results provide additional evidence for the multidimensional approach to self-concept, since the self-concept effects were domain specific in that other facets of self-concept were not influenced by the intervention.

Craven's Research

Craven, Marsh, and Debus (1991), and Craven (1989) implemented an enhancement intervention in a primary setting that aimed to enhance reading and mathematics self-concept for students with low academic self-concept. Secondary effects were predicted to occur in self-attributions and academic achievement. The intervention was a combination of a researcher-devised treatment designed to enhance self-concept directly (internally focused performance feedback) and an indirect self-concept treatment (attributional retraining). The treatment was applied in educational settings and was administered by teachers in the regular classroom and by researchers in withdrawn assistance groups conducted within the school setting. The researcher-administered treatment was successful in enhancing target domains (reading and mathematics self-concepts), transfer domains (school and general self-concept), and some logically related self-attributions (e.g., attributing success to effort). Non-target facets of self-concept that were unrelated to the goals of the intervention were not affected. These results provide further support for the construct validity approach to self-concept intervention design, and are in accordance with the findings of the O'Mara et al. (2003) meta-analysis described above. Interestingly, the intervention administered by

teachers in the context of the regular classroom did not result in significant changes in self-concept. This conforms to the findings of Hattie's (1992) meta-analysis.

Craven (1996) incorporated certain design features into the design above to maximize teacher-generated effects on self-concept. These were a) strategies to maintain the frequency of reinforcement delivered by teachers; b) introducing the intervention at the beginning of the school year to ensure feedback was perceived as salient by students; and c) extending the treatment implementation period. The self-concept enhancement intervention was a combination of internally focused feedback and attributional feedback targeted at reading or mathematics, or a combination of the two. The intervention was delivered over 14 weeks by primary school teachers in the regular classroom context, and by research assistants in educational settings. In the researcher-mediated intervention, targeted domains of self-concept, as well as some logically related self-attributions and areas of academic achievement, were enhanced. For example, the researcher-mediated intervention in mathematics enhanced mathematics self-concept, some mathematics attributions and mathematics achievement. Though less powerful, the single domain teacher-mediated interventions were successful in affecting some aspects of self-concept, self-attributions and academic achievement relevant to the goals of the intervention. Moreover, students experiencing the combined teacher-mediated intervention did not enhance self-concept or self-attributions but made gains in some aspects of reading achievement. The fact that interventions mediated by teachers in single academic domains, but not combined treatments, are successful in enhancing self-concept and self-attributions affirms the necessary inclusion of the multidimensional structure of self-concept.

Guidelines for Creating the Next Generation of Self-Concept Enhancement Research

Craven, Marsh and Burnett (2003) posited a number of guidelines for the next generation of self-concept enhancement. The following is an extension of this blueprint, with the inclusion of the findings from the O'Mara et al. (2003) meta-analysis. Self-concept enhancement researchers are advised to consider the guidelines presented below, in order to maximise the success of interventions, as well as to facilitate between study comparisons by eliminating sources of variance.

1. Capitalise on the findings of causal modeling studies. This can be done by designing interventions to enhance both self-concept and other desirable outcomes (e.g., academic achievement; Marsh & Yeung, 1997a). As implied by the reciprocal effects model, this is the optimal design for producing longer lasting effects from the intervention (e.g., Marsh & Richards, 1988).

2. Specific self-concept domains should be targeted. The strongest available self-concept theory needs to be consulted during the intervention design phase. Research has clearly shown that the multidimensional perspective is the strongest model of self-concept (Marsh & Craven, 1997), and that interventions targeting specific dimensions of self-concept are the most successful (O'Mara et al., 2003). The study report should state hypotheses and associated rationales in sufficient detail to identify and justify any target, non-target and incidental self-concept domains, as well as other outcomes. This should ensure an appropriate fit between the goals of the intervention and the specific dimensions of self-concept and measures of other outcomes used to evaluate interventions.

3. Use a construct validity approach. The overall study design would also benefit by incorporating a multidimensional approach, by utilising multidimensional measures of self-concept. O'Mara et al. (2003) found that studies that targeted a specific self-concept domain, and then measured that specific domain, had the highest effect sizes. This reinforced the observations of others (Hattie, 1992; Marsh & Craven, 1997) that using global scales may mask the true benefits of self-concept interventions. By using appropriate measures, it will not only be easier to compare the benefits across studies, but will also prevent underestimation of intervention success. In essence, it is vital to employ a construct validity approach to the study of intervention effects (e.g., Marsh, et al., 1986a, 1986b).

4. Employ attention placebo control groups. Control group type can lead to an over- or under-appraisal of intervention benefits. The three meta-analyses described in the present paper all found that comparisons of treatment groups with attention placebo control groups have the lowest effect sizes. Therefore, attention placebo groups are recommended to avoid over-evaluation of intervention outcomes.

5. Use random group assignment procedures. O'Mara et al. (2003) found randomised designs the most effective group assignment procedures, indicating that quasi-experimental designs may underestimate intervention success. As such, interventions should use random condition assignment where practical.

6. Measure diffusion effects. Craven (1996; Craven, Marsh, Debus & Jayasinghe, 2001) has advocated that enhancement researchers using within-class experimental designs need to test for 'diffusion effects'. Diffusion effects occur when non-target participants within the treatment environment are affected by the intervention. Testing of diffusion effects should be done in the context of a construct validity approach to the study of intervention effects, enabling examination

of diffusion effects on both target and non-target participants, as well as the impact of the intervention on target and non-target facets of self-concept relevant to the goals of the intervention.

7. Pay greater attention to general design and reporting issues. (a) Adequate sample sizes must be used, to allow for the strongest statistical tools (e.g., SEM, Joreskog & Sorbom, 1993) to be employed for analysis of intervention effects; (b) Researchers need to demonstrate that their measures are reliable measures of multiple facets of self-concept based on the sample under examination, preferably by using CFA approaches. It is not sufficient to report the reliability and validity found in test manuals, especially when using adaptations of existing instruments or when targeting a new sample population with an established instrument; (c) The procedures of self-concept interventions need to be described in sufficient detail to allow replication, and for meta-analytic purposes. This will require the reporting of means, standard deviations and sample sizes for each effect on specific target, non-target and incidental self-concept dimensions for both control and experimental groups.

8. Conduct follow-up testing. Where possible, researchers should conduct studies that employ longitudinal designs and include a long-term follow-up test of intervention effects. This will enable researchers to see if intervention benefits achieved at posttest are maintained with time, and are not just attributable to some post-intervention euphoric effect (see Marsh et al., 1986a; 1986b).

Conclusion

Self-concept enhancement interventions have been found through meta-analyses to be generally beneficial, with mean effect sizes between .27 and .37 (O'Mara et al., 2003; Haney & Durlak, 1998; Hattie, 1992). However, the meta-analyses discussed above identified a number of study features that could be masking the true effect sizes of interventions. That is, the mean effect sizes found in the self-concept intervention meta-analyses may be undermined by features of the intervention, such as the group assignment procedure or – most importantly – inappropriate self-concept outcome measures. A number of promising interventions have been developed and evaluated capitalising on advances in theory and research. By addressing the guidelines above, it is hoped that self-concept researchers may strengthen future interventions to ensure the true benefits of self-concept interventions are revealed. The end goal is to produce interventions that will lead to improved self-concept, with repercussions for the multitude of constructs and behaviours associated with self-concept.

About the Authors

Alison O'Mara is a psychology Doctoral candidate with the SELF Research Centre. In 2003, Alison conducted a meta-analysis of self-concept interventions for children and adolescents using a multidimensional perspective, which earned her a First Class Honours in Psychology at UWS and earned her a Dean's Medal. In addition, Alison has written and presented a refereed paper at an international conference. Under the supervision of Professor Marsh and Associate Professor Craven, her current research involves a series of meta-analyses on self-concept, integrating a multilevel model approach. She is the past recipient of the UWS National Leadership Scholarship, as well as the current recipient of a prestigious Australian Postgraduate Award.

Associate Professor Rhonda Craven is Deputy Director of the SELF Research Centre, is Associate-Professor in the School of Education and Early Childhood Studies, and is Honours Research Degree Coordinator, College of Arts, Education and Social Science, University of Western Sydney. As an Educational Psychologist her research focuses on large-scale quantitative research studies in educational settings. She is a highly accomplished researcher having successfully secured over 1.4 million dollars in prestigious, external competitive funding for over 22 research projects. Her research has resulted in scholarly publications in books and academic journals of international repute. Her research interests include: the structure, measurement and enhancement of self-concept; the relation of self-concept to desirable educational outcomes; the effective teaching of Aboriginal Studies and Aboriginal students; and interventions that make a difference in educational settings.

Professor Herb Marsh is Professor of Education and founding Director of the SELF Research Centre. He is the author of internationally recognised psychological tests that measure self-concept, motivation and university students' evaluations of teaching effectiveness. He has published more than 230 articles in top international journals, 22 chapters, 8 monographs, and 225 conference papers. He was recognised as the most productive educational psychologist in the world, as one of the top 10 international researchers in Higher Education and in Social Psychology, and the 11th most productive researcher in the world across all disciplines of psychology. His major Research/Scholarly interests include self-concept and motivational

constructs; evaluations of teaching effectiveness; developmental psychology, quantitative analysis; sports psychology; the peer review; gender differences; peer support and anti-bullying interventions.

Contact Details

Ms. Alison O'Mara
PhD Candidate
SELF Research Centre
University of Western Sydney
Bankstown Campus
Locked Bag 1797
Penrith South DC NSW 1797
Australia
Email: a.omara@uws.edu.au
Phone: +61-414-726-535

<div align="center">

References

</div>

Branden, N. (1994). *Six pillars of self-esteem*. New York: Bantam.

Byrne, B.M. (1984). The general/academic self-concept nomological network: A review of construct validation research. *Review of Educational Research, 54*, 427-456.

Byrne, B.M. (1996a). Academic self-concept: Its structure, measurement, and relation to academic achievement. In B.A. Bracken (Ed.). *Handbook of self-concept* (pp. 287- 316). New York: Wiley.

Byrne, B.M. (1996b). *Measuring self-concept across the life span: Issues and instrumentation*. Washington, DC: American Psychological Association.

Byrne, B.M., & Shavelson, R.J. 599-613. (1996). On the structure of the social self-concept for pre-, early, and late adolescents: A test of the Shavelson, Hubner, and Stanton (1976) model. *Journal of Personality & Social Psychology, 70*, 599-613.

Calsyn*,* R.J. & Kenny*,* D.A. (1977). Self-Concept of ability and perceived evaluation of others: Cause or effect of academic achievement. *Journal of Educational Psychology, 69,* 136-145.

Chapman, J.W. (1988). Learning disabled children's self-concepts. *Review of Educational Research, 58,* 347-371.

Cooper, H. (1998). *Integrating research: A guide for literature reviews* (3rd ed.). Newbury Park, CA: Sage.

Craven, R.G. (1989). An examination of self-concept: The interrelationship of teachers', parents' and children's perceptions of self-concept, and their influence in enhancing self-concept. University of Sydney, Australia (Unpublished B.A. Honours thesis).

Craven, R.G. (1996). Enhancing academic self-concept: A large-scale longitudinal study in an educational setting. USA: UMI. (Doctoral thesis submitted to the University of Sydney).

Craven, R.G., Marsh, H.W., & Burnett, P. (2003). Cracking the Self-Concept Enhancement Conundrum: A Call and Blueprint for the Next Generation of Self-Concept Enhancement Research. In H.W. Marsh, R.G. Craven, & D. McInernery (Eds.) (pp. 91-126). *International Advances in Self Research*. Volume 1. USA: Information Age Press.

Craven, R.G., Marsh, H.W., & Debus, R. (1991). Effects of internally focused feedback and attributional feedback on the enhancement of academic self-concept. *Journal of Educational Psychology, 83, 17-26.*

Craven, R. G., Marsh, H. W., Debus, R. L., & Jayasinghe. U. (2001). Diffusion effects: Control Group Contamination Threats to the Validity of Teacher-Administered Interventions. Journal of Educational Psychology, 93, 639-645.

Delugach, R. R., Bracken, B. A., Bracken, M. J., & Schike, M. C. (1992). Self-concept: Multidimensional construct exploration. *Psychology in the Schools, 29*, 213-223.

Elardo, P. T. & Elardo, R. (1976). A critical analysis of social development programs in elementary education. *Journal of School Psychology, 14*(2), 118-131.

Gorrell, J. (1990). Some contributions of self-efficacy research to self-concept theory. *Journal of Research and Development in Education, 23*(2), 73-81.

Guay, F., Marsh, H. W. & Boivin, M. (2003). Academic Self-concept and Academic Achievement: Development Perspectives on Their Causal Ordering. Journal of Educational Psychology.

Gurney, P. (1986). Self-esteem in the classroom: Theoretical perspectives and assessment issues. *School Psychology International, 7*, 199-209.

Haney, P., & Durlak, J.A. (1998). Changing self-esteem in children and adolescents: A meta-analytic review. *Journal of Clinical Child Psychology, 27*, 423-433.

Harter, S. (1990). Processes underlying adolescent self-concept formation. In R. Montemayor, G. Adams & T. Gullotta (Eds.), *From childhood to adolescence*. CA: Sage Publications.

Harter, S. (1998). The development of self-representations. In Damon (Series Ed.) and Eisenberg (Vol. Ed.) *Handbook of child psychology:* Vol. 3. Social, emotional and personality development, (5th ed., pp. 553-617). New York: Wiley.

Hattie, J.A. (1992). *Self-concept*. Hillsdale NJ: Lawrence Erlbaum Associates.

Hattie, J.C. (1986). Enhancing self-concept. University of New England, Australia. (Unpublished Master of Education thesis).

Joreskog, K.G., & Sorbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language.* Chicago: Scientific Software International.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis.* Thousand Oaks, CA: Sage.

Marsh, H.W. (1990a). The causal ordering of academic self-concept and academic achievement: A multiwave, longitudinal path analysis. *Journal of Educational Psychology,* 82, 646-656.

Marsh, H.W. (1990b). *Self Description Questionnaire (SDQ) I: A Theoretical and empirical basis for the Measurement of multiple dimensions of preadolescent self-concept: A test manual and a research monograph.* Sydney: University of Western Sydney.

Marsh, H.W. (1990c). *Self Description Questionnaire (SDQ) II: A theoretical and empirical basis for the measurement of multiple dimensions of adolescent self-concept: An interim test manual and a research monograph.* San Antonio, TX: The Psychological Corporation (Republished in 1992, Publication Unit, Faculty of Education, University of Western Sydney, Macarthur).

Marsh, H. W. (1991). The failure of high ability high schools to deliver academic benefits: The importance of academic self-concept and educational aspirations. *American Educational Research Journal, 28,* 445-480.

Marsh, H.W. (1992). *Self Description Questionnaire (SDQ) III: A theoretical and empirical basis for the Measurement of multiple dimensions of late adolescent self-concept: A test manual and a research monograph.* Publication Unit, Faculty of Education, University of Western Sydney, Macarthur.

Marsh, H.W., Byrne, B.M., & Shavelson, R. (1988). A multifaceted academic self-concept: Its hierarchical structure and its relation to academic achievement. *Journal of Educational Psychology, 80,* 366-380.

Marsh, H. W., Byrne, B. M., & Yeung, A. S. (1999). Causal Ordering of Academic Self-concept and Achievement: Reanalysis of a Pioneering Study and Revised Recommendations. *Educational Psychologist, 34,* 155-167.

Marsh, H.W., & Craven, R.G. (1991). Self-other agreement on multiple dimensions of preadolescent self-concept: Inferences by teachers, mothers, and fathers. *Journal of Educational Psychology, 83*, 393-404.

Marsh, H.W. & Craven, R.G. (1997). Academic self-concept: Beyond the dustbowl. In G. Phye (Ed.). *Handbook of classroom assessment: Learning, achievement and adjustment.* US: Academic Press.

Marsh, H. W., Parada, R. H., Yeung, A. S. & Healey, J. (2001). Aggressive School Troublemakers and Victims: A Longitudinal Model Examining the Pivotal Role of Self-concept. *Journal of Educational Psychology, 93*(2), 411-419.

Marsh, H.W., & Peart, N. (1988). Competitive and cooperative physical fitness training programs for girls: Effects on physical fitness and on multidimensional self-concepts. *Journal of Sport and Exercise Psychology, 10,* 390-407.

Marsh, H.W., & Richards, G. (1988) The Outward Bound Bridging Course for low achieving high-school males: Effect on academic achievement and multidimensional self-concepts. *Australian Journal of Psychology, 40,* 281-298.

Marsh, H.W., Richards, G., & Barnes, J. (1986a). Multidimensional self-concepts: The effect of participation in an Outward Bound program. *Journal of Personality and Social Psychology, 45,* 173-187.

Marsh, H.W., Richards, G., & Barnes, J. (1986b). Multidimensional self-concepts: A long-term follow-up of the effect of participation in an Outward Bound program. *Personality and Social Psychology Bulletin, 12,* 475-492.

Marsh, H.W., & Shavelson, R.J. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-125.

Marsh, H. W., Trautwein, U., Lüdtke, O., Köller, O. & Baumert, J. (2003). Personality, and Academic Criteria: Multidimensional Vs Unidimensional Perspectives of Self-concept. SELF Research Centre, University of Western Sydney (in review).

Marsh, H.W., & Yeung, A.S. (1997a). The causal effects of academic self-concept on academic achievement: Structural equation models of longitudinal data. *Journal of Educational Psychology, 89,* 41-54.

Marsh, H.W., & Yeung, A.S. (1997b). Coursework selection: The effects of academic self-concept and achievement. *American Educational Research Journal, 34,* 691-720.

Marsh, H.W., & Yeung, A.S. (1998). Top-down, bottom-up, and horizontal models: The direction of causality in multidimensional, hierarchical self-concept models. *Journal of Personality and Social Psychology, 75*, 509-527.

Marx, R., & Winne, P.H. (1978). Construct interpretations of three self-concept inventories. *American Educational Research Journal, 15,* 99-108.

McInerney, D. M., Roche, L.A., McInerney, V., & Marsh, H.W. (1997). Cultural perspectives on school motivation: The relevance and application of goal theory. *American Educational Research Journal, 34*(1), 207-236.

Messick, S. (1989). Validity. In R.L. Linn (Ed.). *Educational measurement* (3rd ed.) (pp. 13-104). New York: Macmillan.

O'Mara, A., Craven, R. G. & Marsh, H. W. (Dec. 2003). Evaluating Self-Concept Interventions from a Multidimensional Perspective: A Meta-Analysis. Paper presented at the Joint Meeting of the Australian and New Zealand Associations for Research in Education, Auckland, New Zealand.

Rosenthal, R. (1984). *Meta-Analytic Procedures for Social Science Research (4 ed.)* (Vol. 6). California: SAGE Publications, Inc.

Schmidt, F.L. (1992). What do data really mean? Research findings, meta-analysis, and cumulative knowledge in psychology. *American Psychologist, 47*, 1 173-1 181.

Shavelson, R.J., Hubner, J.J., & Stanton, G.C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research, 46,* 407-441.

Shirk, S. R. (1988). What is child psychotherapy? In S.R. Shirk (Ed.), *Cognitive development and child psychotherapy* (pp. 1-16). New York: Plenum Press.

Skaalvik, E. M. (1997). Issues in research on self-concept. In M. L. Maehr & P. R. Pintrich (Eds.) *Advances in motivation and achievement* (Vol. 10, pp. 51-98). Greenwich, CN:JAI Press.

Skaalvik, E. M., and Hagtvet, K.A. (1990). Academic achievement and self-concept: An analysis of causal predominance in a developmental perspective. *Journal of Personality and Social Psychology*, 58, 292-307.

Skaalvik, E. M., & Valas, H. (1999). Relations among achievement, self-concept, and motivation in mathematics and language arts: A longitudinal study. *The Journal of Experimental Education, 67*, 135-149.

Strein, W. (1988). Classroom-based elementary school affective education programs: A critical review. *Psychology in the Schools, 25*, 288-296.

Swann, W. B. Jr (1996). *Self-traps: The elusive quest for higher self-esteem.* New York: Freeman.

Vispoel, W.P. (1995). Self-concept in the arts: An extension of the Shavelson model. *Journal of Educational Psychology, 87,* 134-145.