
ACCURACY IN SELF-ASSESSMENT: THE ROLE OF ABILITY, FEEDBACK, SELF-EFFICACY AND GOAL ORIENTATION

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Self-estimates of ability have been shown to be generally inaccurate but still continue to be used in career decision-making. The present study investigates the role of feedback and individual differences in goal orientation and self-efficacy in determining accuracy of self-estimates. A total sample of 94 high school-aged students gave self-estimates of their ability and completed questionnaires regarding self-efficacy, goal orientation and feedback. Participants were categorised as over-estimators, under-estimators or accurate estimators according to the difference between their self-estimate of ability and an objective measure. Results indicated four main areas of feedback sources, and a positive relationship between ability and accuracy of self-estimates. Learning goal orientation and use of feedback were positively related; however their effects on accuracy of self-assessment were contrary to those hypothesised. Practical implications of these findings for career decision-making, as well as suggestions for future research are discussed.

Personal assessments of one's own level of ability or performance have generally been shown to be flawed (e.g. Kruger & Dunning, 1999). Most studies report the relationship between estimates of ability and actual ability to be only moderate (Mabe & West, 1982). Despite this low correlation, self-ratings of abilities or

self-appraisals continue to be used extensively in career counselling. Self-appraisal is central to many models of career decision-making, particularly in theories that consider career as a process of self-realisation (Chen, 2003). It is the application of self-estimates in the area of career counselling, particularly as it relates to

students engaged in career decision-making, that is the focus of this paper. Comparisons are made between those who overestimate how well they will perform (over-estimators), those who underestimate their level of performance (under-estimators) and those who have an accurate perception of their performance level (accurate estimators) to determine how the three groups differ. If differences exist then recommendations can be made to improve the accuracy of self-estimates, and thereby improve the efficacy of such measures.

USE IN CAREER COUNSELLING

Theories such as Gottfredson's Theory of Circumscription and Compromise (1996), Super's Theory of Self-Concept (1990), and Holland's Theory of Vocational Choice (1997) incorporate self-knowledge as a central component in making informed career decisions. Self-knowledge is also pivotal in the Cognitive Information Processing Theory (Sampson, Peterson, Reardon, & Lenz, 2003). This theory has been developed as a model of career problem-solving and decision-making encompassing the information required to make decisions as well as the decision-making process itself. Self-knowledge serves as an important source of information on which to base decisions (Sampson et al., 2003).

However, use of self-appraisal may be problematic. Research has shown that self-ratings tend to be unreliable and biased towards individuals rating themselves more favourably than is accurate (Burson, Larrick & Klayman, 2006) and being more lenient judges of themselves in comparison to supervisor ratings (Fox, Caspy & Reisler, 1994). In a review of 55 studies that compared individuals' self-assessment of ability with an objective measure, Mabe and West (1982) found that on average the correlation between the self-assessment and the objective measure of ability was just 0.29.

A significant issue that must be addressed for self-assessment to remain viable in research and decision-making is to devise methods that will enable greater accuracy of self-ratings. A key consideration is what differentiates those that are able to accurately self-assess from those that produce erroneous self-assessments.

FACTORS AFFECTING ACCURACY OF SELF-ASSESSMENT

We investigated the relative contribution of several factors thought to influence the accuracy of self-

assessment: ability, use of feedback, sources of feedback, goal orientation, self-efficacy and confidence.

Ability, Experience and Metacognition

Research has shown that a lack of experience in the domain in which the individual is assessing themselves often leads to erroneous self-ratings as the individual is not capable of differentiating between good and poor performance in that field (Kruger & Dunning, 1999). Kruger and Dunning assessed the magnitude of difference between self-estimates and others' ratings or objective scores and found that individuals generally overestimated their performance. In particular, researchers found that individuals placed in the bottom quartile, based on others' ratings or objective scores, grossly overestimated their abilities compared to other respondents. They hypothesised that incompetence in performance also deprived the individuals of the metacognitive ability to realise the inaccuracy of their self-rating. After coaching in the domain of interest, however, it was found that individuals were better able to recognise their level of performance and how it compared to the performance of others. Thus it seems that more experience is related to higher levels of metacognition.

Subsequent research has shown that the experience and metacognition effect found by Kruger and Dunning (1999) may be moderated by task difficulty (Burson, Larrick, & Klayman, 2006). On more difficult tasks, those with high levels of ability were worse at estimating their performance than those with less skill, and tended to underestimate their ability. Burson et al. (2006) proposed that on easy tasks the tendency for all people is to estimate that their performance is good, and thus good performers will necessarily be more accurate, and that on difficult tasks the tendency for all people is to estimate that their performance is weaker, and so poor performers will necessarily be more accurate.

Sources of Feedback

Athanasou (2005) identified three key sources of feedback used by people in deriving self-estimates: social messages, personal factors and situational factors. *Social messages* were sources of information derived from interaction with others. Three types of social messages influenced self-evaluation: comparisons we make of ourselves with others, feedback we receive from others, and the social and cultural stereotypes on

which we base our perceptions. The second component is *personal factors*, or characteristics of the individual, such as actual level of ability and use of rating heuristics such as leniency and other biases. The third and final influence on self-evaluations defined in the model is *situational factors*, essentially the context in which the individual is making the self-evaluation. Situational factors included prior experience with the criterion of good performance, whether the evaluation is made prior to or after performance, and measurement conditions such as social desirability.

The focus of this study will be on feedback via social messages—specifically feedback received from others—and will also examine personal factors such as ability. It is already known that feedback affects self-assessments (Athanasou, 2005), but this study will examine what factors influence: a) whether individuals pay attention to feedback; b) what sources of feedback they pay attention to; and c) whether there are differences between those that can accurately self-assess and those that cannot.

Feedback Seeking

Feedback seeking behaviour has been studied extensively, with researchers focusing on many different aspects such as individual differences and their effects (Herold & Fedor, 1998), frequency (Miller & Jablin, 1991), the relationship between feedback seeking and task performance (Ang, Cummings, Straub, & Earley, 1993). However it was noted that a distinct lack of research existed regarding the process of feedback seeking (e.g., Levy, Albright, Cawley, & Williams, 1995). Researchers addressing this paucity in the literature (e.g. Ashford, Blatt, & VandeWalle, 2003; VandeWalle, 2003) have investigated six dimensions in feedback seeking behaviour:

- method (whether feedback information is sought by monitoring situations or by inquiring of people);
- frequency (whether feedback information is sought at a high or low frequency);
- type (whether feedback is sought regarding the outcome of the activity or the process);
- timing (whether feedback is sought immediately or after a delay);
- source (whether feedback is sought from those who are powerful in relation to the individual or those that possess expertise); and
- sign (willingness to seek feedback that is negative).

VandeWalle (2003) proposed that goal orientation influenced these six dimensions of feedback seeking behaviour and that these dimensions were related to task performance.

Goal Orientation

Goal orientation refers to the mental framework that influences how people approach situations of achievement in terms of interpreting the situation and motivation to achieve (Griffin, 2005). Button, Mathieu and Zajac (1996) found that goal orientation has both dispositional and situational components.

There are two types of goal orientation: performance orientation, where the aim of completing a task is to gain favourable judgements of one's performance; and learning orientation, where the aim is to gain knowledge (Button et al., 1996). These orientations produce different behaviours such that those with a performance orientation are more likely to avoid challenges and pressure which will cause performance to deteriorate, while those with a learning orientation seek out challenges and maintain drive even under difficult conditions as even failure is a form of useful feedback.

Button et al., (1996) concluded from their investigations that learning and performance goal orientations were not mutually exclusive, with each inhabiting different ends of a continuum, nor did they contradict each other. It is possible to want to perform well in comparison to others (performance orientation), as well as want to improve one's own skill set at the same time (learning orientation).

Research indicated that goal orientation exists as a trait in individuals (VandeWalle, 1997) but it can also be influenced by situational cues (Ames, 1992). In instances where the situation did not offer cues as to which orientation is preferred, trait preferences govern behaviour (VandeWalle & Cummings 1997). However when the situation offered strong enough cues, trait preferences were overridden.

Combining Feedback Seeking and Goal Orientation

VandeWalle and Cummings (1997) investigated how goal orientation may affect feedback seeking and found that learning goal orientation was positively related to feedback seeking, while performance goal orientation was negatively related to feedback seeking; those with a learning goal orientation are more likely

to seek feedback than those with a performance goal orientation. Both the performance-prove and the performance-avoid facets of performance goal orientation displayed this negative relationship, with the performance-avoid group exhibiting it in slightly greater magnitude. Based on the results of their study, the authors concluded that goal orientation was a central influence in the feedback seeking process.

Learning goal and performance goal oriented individuals regard the cost and value of feedback seeking differently due to their different beliefs regarding the controllability of personal attributes (VandeWalle & Cummings, 1997). Learning goal oriented individuals subscribe to an incremental theory of abilities, meaning they believe abilities to be malleable attributes (Dweck & Leggett, 1988). Performance goal oriented individuals on the other hand subscribe to an entity theory of abilities, believing that abilities are fixed and uncontrollable, and therefore the individual is unable to make any improvements in their performance (Dweck & Leggett, 1988).

These goal orientations and beliefs also mediate responses to failure. Those with a learning goal orientation adopt an adaptive response pattern to task failure, characterised by persistence and an escalation of effort to overcome hurdles. In contrast, those with a performance goal orientation respond to task failure in a maladaptive manner by withdrawing from and expressing a decreased interest in the task (VandeWalle, 2003).

Renn and Fedor (2001) found feedback based goals to be positively related to feedback seeking and task performance. The authors also found self-efficacy to be positively related to task performance, but did not find self-efficacy to be related to feedback seeking.

Self-Efficacy

Self-efficacy refers to the belief individuals have that they are able to perform successfully at a task specific level or more generally across different situations, and is formed following self-assessment (Yeo & Neal, 2006). Research regarding self-efficacy more commonly refers to estimating one's ability to perform in a specific situation, which is positively correlated to general self-efficacy (Whyte, Saks, & Hook, 1997). It is argued

that the probability that an individual will engage in a task is dependent on their belief that they are able to perform it successfully, i.e. self-efficacy.

Studies (e.g. Vancouver & Kendall, 2006) have shown that high self-efficacy can be negatively related to performance at a within-person level as it may result in poor resource allocation to task performance due to the high self-efficacy based past successes. Those with high self-efficacy will allocate fewer resources than is required to the task, as they inaccurately perceive the gap between their own performance and desired performance to be less than it actually is.

Thus it appears that individuals with high self-efficacy do not pay as much attention to feedback as their less self-efficacious counterparts, as evidenced by their inaccurate perception of the gap between their own performance and desired performance. High self-efficacy has also been shown to be related to unwise

escalation of commitment to a course of action due to the high belief in their ability to salvage the situation, even if it is likely that action will result in a bad outcome (Whyte, et. al, 1997). This may induce highly efficacious individuals to disregard information that is contrary to their beliefs, as their belief in themselves is so strong.

Confidence

Confidence can be defined as a person's certainty that the information they have provided is correct (Luus & Wells, 1994) and has been linked to self-efficacy (Stajkovic, 2006). Confidence ratings have been used when assessing 'calibration' of students; that is whether they can accurately assess what they do and do not know (Wahlstrom, 2001). This calibration has been assessed by analysing the correlation between students' comprehension confidence and their actual performance on a comprehension task (e.g. Sjolstrom & Marks, 1994). These confidence ratings have been found to remain relatively stable over time regardless of feedback. This stability even in the face of feedback may be due to confirmation bias, a tendency for people to seek or pay attention to information that confirms their existing beliefs, expectations or hypotheses, similar to the relationship demonstrated with self-efficacy above (Jonas, Schultz-Hardt, Frey, & Thelan,

‘Those with a learning goal orientation adopt an adaptive response pattern to task failure, characterised by persistence and an escalation of effort to overcome hurdles.’

2001). However some evidence suggests that confidence is malleable and may be quite easily manipulated (Wells, 1993), which may account for the relationship between confidence and accuracy often being found to be weak (Shaw, Zerr, & Woythaler, 2001). Overconfidence has been linked to high self-efficacy and poorer performance (Vancouver, Thompson, Tischner, & Putka, 2002), and some evidence suggests overconfidence can be linked to overestimation regarding outcomes (Malmendier & Tate, 2005).

In summary, it appears more accurate self-estimates are made by those who have a higher level of ability. Those that are more able also seek more feedback, and feedback seeking is positively related to having a learning goal orientation. However, overly high levels of self-efficacy and confidence are negatively associated with performance and feedback seeking.

PRESENT STUDY

This study aims to determine whether or not individuals that are able to form accurate self-assessments may be differentiated by ability, the type and amount of feedback they take into account, confidence, goal orientation, self-efficacy and response to feedback. With reference to prior research, it is hypothesised that differences in these variables will explain whether individuals are able to accurately self-assess.

METHOD

Participants

There were a total of 94 participants in the study, 43 male and 51 female students in Year 12 at a high school in NSW. The average age of the sample was approximately 17 years 8 months. All participants were volunteers that were entered into a prize draw in appreciation of their participation.

Materials

Sources of Feedback Questionnaire

The sources of feedback questionnaire was developed by the researcher through focus groups and consultation with professionals in the area of career counselling, and consisted of two sections. The first section of the feedback questionnaire was designed to gather information regarding participants' self-assessment of their ability and of their strengths and confidence in these assessments. The second part of

the feedback questionnaire was designed to determine how individuals used sources of feedback, specifically what types of sources and how useful they find these sources to be. Participants were asked to rate the usefulness of potential feedback sources on a five-point scale of *very useful* to *not at all useful*, and provide information regarding any additional sources of feedback they use that were not included in the list of potential sources. A copy of the Sources of Feedback Questionnaire is available from the authors upon request.

Self-Efficacy

The New General Self-Efficacy Scale (NGSE) is an eight item five-point Likert Scale rated questionnaire with Cronbach's α of .86 developed and validated by Chen, Gully and Eden (2001). It has been found to be predictive of specific self-efficacy (Chen et al., 2001) and Scherbaum, Cohen-Charash and Kern (2006) found it to be superior to other validated self-efficacy scales in use. The scales used in the NGSE range from *strongly agree* to *strongly disagree*. Examples of items include 'When facing difficult tasks, I am certain that I will accomplish them'.

Goal Orientation

This consists of two 8-item Likert scale rated questionnaires developed by Button, Mathieu and Zajac (1996) to determine whether the goal orientation of individuals was performance or learning. Cronbach's α was 0.73 for the performance goal orientation scale and 0.79 for the learning goal orientation scale. This questionnaire has previously been administered using five-, six- and seven-point Likert scales. In this instance a five-point Likert scale has been adopted to be consistent with the NGSE. Examples of items include 'I try hard to improve on my past performance' and 'The things I enjoy the most are the things that I do best'.

Attitude Towards Feedback Scale

The 20-item Attitude Towards Feedback Scale was developed and validated by Lau (2005) to measure participants' willingness to accept feedback from others and their ability to incorporate feedback to improve their abilities or performance. Cronbach's α for the scale was found to be 0.71 (Lau, 2005). Items are rated on a 7-point rating scale ranging from *not true* to *very true*. Examples of items include, 'I am willing to accept feedback from others' and 'Others' feedback

or comments are not always useful in advancing my performance’.

Higher School Certificate (HSC) English Trials

Students’ scores on their HSC English Trials served as an objective measure of ability for the secondary school sample.

Overall HSC English Scores

Participants’ overall scores for English in the HSC were provided four months after initial data collection as a comparison to HSC Trial results.

Procedure

Participants from the senior college were recruited through flyers distributed during mentoring meetings at the school. Students were advised that participation was voluntary; however participation would make them eligible to enter a prize draw.

Participants were asked to complete the Sources of Feedback questionnaire first, followed by the NGSE, Goal Orientation and Attitude Towards Feedback Scale questionnaires in their own time. This order ensured that responses regarding sources of feedback were not influenced by consideration of questions regarding their goal orientation, self-efficacy and responsiveness to feedback. The questionnaires could be completed online or in pen and paper format.

Students were also asked to provide an estimate of their performance on HSC English Trials. The results of the trial HSC exam in English were provided to the researchers by the school for those students who

consented to participate in the study. Six months after initial data collection, final HSC English exam results were obtained from the school.

RESULTS

Learning goal orientation and performance goal orientation scores were calculated for each individual. Cronbach’s α for this sample was calculated to be 0.74 for performance goal orientation and 0.85 for learning goal orientation. Attitude towards feedback scores were calculated and the internal reliability coefficient for the sample in this study was 0.74. Scores for self-efficacy were calculated by averaging responses across the 8 items of the NGSE. The Cronbach’s α calculated for this sample was 0.87. Individual scores for overall usefulness of sources of feedback were similarly calculated and the internal reliability for the sources of feedback questionnaire was found to be 0.80.

Descriptive statistics for the confidence, usefulness of sources scores, self-efficacy, performance goal orientation, learning goal orientation, and attitude towards feedback scores, as well as the correlations between them, are summarised in Table 1.

Measuring Usefulness of Feedback Sources

Exploratory factor analysis was conducted on the 15 sources of feedback that were rated by the participants to determine whether an underlying pattern existed in terms of the type of sources found to be useful by individuals. Four factors were identified using this method: ‘family-related’, ‘external benchmarking’, ‘education’, and ‘own opinions’.

TABLE 1: MEAN SCORES FOR AND CORRELATIONS BETWEEN VARIABLES HYPOTHESISED TO PREDICT ACCURACY OF SELF-ESTIMATES

Variables	Correlations								
	M	SD	1	2	3	4	5	6	
Confidence	67.37	16.47	1						
Usefulness of sources	3.53	0.60	.252*	1					
Self-efficacy	3.87	0.58	.371**	.437**	1				
Performance orientation	33.19	3.89	-.013	.174	.236*	1			
Learning orientation	31.30	5.11	.309**	.400**	.602**	.276**	1		
Attitude towards feedback	53.89	7.25	.001	.120	.231*	.063	.315**	1	

* Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Comparing Accurate Estimators, Over-Estimators and, Under-Estimators

This study followed the example of Atwater and Yammarino (1992) and categorised people as under-estimators, accurate raters or over-estimators according to the magnitude of the difference between their estimates of their performance and their real performance. Participants with standardised difference scores of between -0.5 and 0.5 were categorised as 'accurate raters' ($n = 33$). Participants who had z-scores that were less than -0.5 were categorised as 'under-estimators' ($n = 31$), and those who had z-scores greater than 0.5 were categorised as 'over-estimators' ($n = 30$). This categorisation method makes it possible to understand the direction of differences and distinguish between over-estimators, under-estimators and accurate raters.

Ability

Significant differences were found to exist between over-estimator, under-estimator and accurate estimator groups on the real scores obtained via objective measures of ability, $F(2, 91) = 16.23, p < .001$. Further analyses showed that under-estimators had significantly higher real scores ($M = 71.87, SD = 9.38$) than accurate estimators ($M = 63.09, SD = 9.52$), $t(91) = 3.96, p < .001$, and over-estimators ($M = 59.30, SD = 7.47$), $t(91) = 5.53, p < .001$.

Significant differences were also found to exist between the accuracy groups in terms of their performance estimates, $F(2, 91) = 14.44, p < .001$. Over-estimators made significantly higher estimates of their performance ($M = 81.03, SD = 6.48$) than accurate estimators ($M = 72.42, SD = 9.78$), $t(91) = -3.43, p = .001$, and under-estimators ($M = 67.50, SD = 12.55$), $t(91) = -5.31, p < .001$.

Confidence

Significant differences between these groups were found on confidence in the accuracy of estimation $F(2, 91) = 3.18, p = .046$. Further analyses revealed that over-estimators were significantly more confident in the accuracy of their estimates ($M = 73.17, SD = 16.99$) than accurate estimators were ($M = 63.09, SD = 17.25$), $t(91) = -2.48, p = .015$.

Goal orientation

The overall ANOVA for learning goal orientation was not significant, $F(2, 90) = 2.94, p = .058$. However planned contrasts revealed that over-estimators

($M = 33.21, SD = 4.25$) showed significantly higher levels of learning goal orientation than accurate estimators ($M = 30.39, SD = 4.71$), $t(90) = -2.20, p = .030$, and under-estimators ($M = 30.61, SD = 5.89$), $t(90) = -2.00, p = .048$. No significant differences were found between the accuracy groups on performance goal orientation, $F(2, 90) = 1.36, p = .263$.

Sources of feedback

The overall ANOVA on the overall usefulness score encompassing all 15 sources of feedback showed no main effects, $F(2, 91) = 2.84, p = .063$. Planned contrasts revealed that there was a significant difference between accurate estimators and over-estimators, $t(91) = -2.20, p = .031$, such that over-estimators ($M = 3.74, SD = 0.59$) on average found sources to be significantly more useful than accurate self-assessors ($M = 3.41, SD = 0.62$). Factor scores were derived for individuals that had responded to all 15 options using the regression method. There were no differences among the accuracy groups across the four factors relating to usefulness of feedback sources: 'family-related', $F(2, 56) = 2.21, p = .119$; 'external benchmarking', $F(2, 56) = 2.49, p = .092$; 'education', $F(2, 56) = .66, p = .523$; or 'own experience', $F(2, 56) = .06, p = .945$.

Self-efficacy

No significant differences were found between accurate estimators, under-estimators and over-estimators on levels of self-efficacy, $F(2, 91) = 1.29, p = .279$.

Attitude towards feedback

No significant differences were found across under-estimators, over-estimators and accurate estimators in terms of response to feedback, $F(2, 91) = 1.24, p = .295$.

Further Post-Case Analyses

Final HSC English results were obtained for the participants in the study and further analyses were conducted using the participants' previous allocation to the over-estimator, under-estimator, and accurate estimator groupings. Final HSC English scores were significantly correlated to the dependent variable of HSC English Trial scores, $r = .61, p < .001$, and estimates of HSC English Trial performance collected from participants, $r = .47, p < .001$. No differences were found among the three groups in their final HSC English scores, $F(2, 91) = .71, p > .05$.

A comparison was also made between scores on HSC English overall and scores on the HSC Trial for English. The differences between those scores varied across the three accuracy groups, $F(2, 91) = 14.80, p < .001$. Those who overestimated their performance on their HSC Trials also showed the greatest improvement between Trial scores and overall HSC scores for English, $M = 12.17, SD = 7.75$, significantly greater than those that underestimated their performance on their HSC Trial, $M = 2.23, SD = 6.54, t(59) = -5.42, p < .001$ (see Figure 1).

DISCUSSION

The findings of the present study support previous research specifying a positive relationship between learning goal orientation and feedback seeking. The positive link between levels of ability and accuracy of self-estimates is also supported. No evidence was found regarding the relationship of self-efficacy and accuracy of self-estimates, however, overconfidence was found to be related to overestimation of performance as hypothesised. Contrary to expectations, overestimation was also found to be positively

‘Contrary to expectations, overestimation was also found to be positively related to the use of feedback and learning goal orientation.’

related to the use of feedback and learning goal orientation. The implications of these findings are discussed below.

Ability

Support was found for Kruger and Dunning’s (1999) work showing that underperformers overestimated their performance, and those who performed the best were more likely to underestimate their performance. It was also found that over-estimators made significantly higher estimates of their own

performance than accurate estimators and under-estimators. Contrary to the findings of Burson et al., (2006) it appears that over-estimators may be unable to fathom true competence, possibly due to their low level of ability (Kruger & Dunning, 1999). It follows that further coaching in the field of interest, as suggested and implemented by Kruger and Dunning

(1999), will improve both the ability of the over-estimators in terms of performance and their ability to self-assess, as well as understand their performance in relation to others.

Confidence

The data confirmed the hypothesis and previous research regarding the relationship of overly-high confidence levels with poorer performance (Vancouver et al., 2002) and overestimation (Malmendier & Tate, 2006). Since high levels of confidence result in overestimation of one’s level of ability, careful consideration must be given to the fine line between building up the confidence and self-efficacy of individuals, and making them overconfident. Self-efficacy and confidence are necessary for individuals to have the courage to approach tasks in order to achieve goals in life. Evidence was found to suggest that those who were confident of their abilities (as seen by overestimating trial performance) were also those who made the greatest improvements.

Goal Orientation and Use of Feedback

The data did confirm the existence of a significant positive relationship between learning goal orientation and attitude towards feedback as well as ratings of source usefulness. These findings are in line with the hypotheses and previous evidence (e.g. VandeWalle &

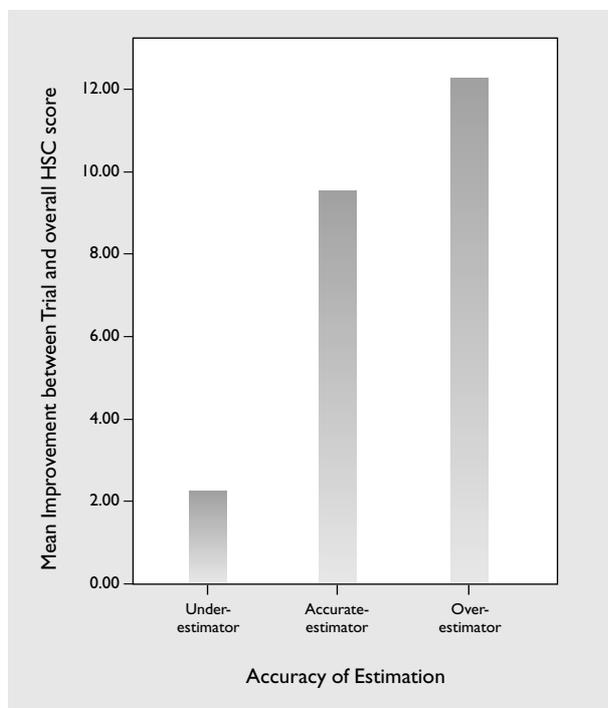


FIGURE 1: IMPROVEMENT BETWEEN TRIAL AND OVERALL HSC RESULTS FOR ENGLISH ACROSS OVER-ESTIMATORS, ACCURATE ESTIMATORS AND UNDER-ESTIMATORS.

Cummings, 1997; VandeWalle, 2003) regarding the relationship between feedback seeking and learning goal orientation. However, contrary to the hypotheses, it was over-estimators rather than accurate estimators who showed a higher learning goal orientation.

Also unexpected was that over-estimators indicated that they found feedback overall to be more useful than accurate estimators did. Several explanations may exist. It may be that over-estimators enter more competitions and participate in more extracurricular activities as they are so sure that their performance will be good, and they will therefore have more experience to draw from when rating sources on this factor. Alternatively, given the evidence of over-estimators generating high scores on other measures contrary to the hypotheses, over-estimators may have a tendency to inflate the ratings they give on all measures. If it is the case that differences are due to biases in ratings, further research may need to consider attempting to correct for these biases, perhaps using unbalanced, positively skewed scales such as those used by Fox et al. (1994). If over-estimators really do pay more attention to feedback and possess a learning goal orientation, then the emphasis placed on mastery and consideration of feedback to improve performance may be incorrect.

Categorising Sources of Feedback

Overall, participants found feedback to be moderately useful when trying to form a view of their abilities, and gathered feedback from the four types of feedback sources. While over-estimators indicated that they found feedback to be more useful than accurate estimators when considering the sources of feedback, over-estimators, under-estimators and accurate estimators did not differ in their scores across the four categories.

Post-Case Analyses

The post-case analyses demonstrated that there were no differences in overall HSC English results across the three accuracy groups, although differences in English ability scores did exist at the HSC Trial stage. We discovered that those students who had originally overestimated their abilities were also the ones to make the greatest improvement between the Trial and overall HSC results for English.

Earlier analyses identified two key areas of difference between over-estimators and the other two groups: these were learning orientation and confidence in their own opinion. By setting goals in relation to their learning, and believing in themselves, over-estimators made the greatest improvements. Over-estimators also indicated that they found feedback overall to be more useful than accurate estimators did. It may be that over-estimators integrate feedback and provide estimates of what they believe they can ultimately achieve, but that HSC Trials were too soon after receiving feedback to see improvements in their ability. However, these improvements were later demonstrated at the time of the Final HSC exams.

These variables may provide a key in understanding ways to improve performance between Trial and overall HSC results—students should be encouraged to set goals beyond their current capabilities, use trials as an opportunity to learn about their capabilities and integrate trial feedback to improve their final performance.

Limitations and Future Directions

In contrast to previous research (e.g. Vancouver & Kendall, 2006) and the hypotheses, no significant differences in accuracy were found depending on attitudes to feedback, self-efficacy and performance goal orientation. However, self-efficacy was found to be significantly related to confidence, which did show a significant effect across accuracy, therefore it may be that hypothesised differences in self-efficacy, performance goal orientation and attitudes to feedback were not detected due to power considerations and the sample size.

However, the lack of significant relationships of these predictors with accuracy does indicate that any relationships that may exist are not as strong as the relationship of accuracy of self-assessment with learning goal orientation, confidence in achievement, actual levels of ability and the number and type of sources of feedback used.

Also, this sample consisted wholly of high school students preparing to complete their HSC and make decisions regarding their future directions. While this sample is appropriate in terms of consideration of self-assessment in relation to career decision-making, there

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is some doubt as to whether findings from this sample can be generalised to the wider population. Some characteristics such as ability level have been similar to previous findings, however others such as learning goal orientation and attention to feedback have not.

Finally, in regards to the post-case analyses, there is some small concern that improvement scores may be affected by ceiling effects. At the HSC English Trials, over-estimators on average showed the least amount of ability, with under-estimators showing the most ability on average, and accurate estimators in the middle. Thus over-estimators may have improved the most because they had the most room to improve. However none in the sample achieved perfect scores, meaning there was room to improve for all participants.

Further research is needed to determine the exact relationship between the use of feedback, learning goal orientation and accuracy of self-estimates. The findings of this study are at odds with previous research suggesting that having a learning goal orientation and paying attention to feedback can increase accuracy in self-assessments. One suggested explanation—that over-estimators may inflate their ratings on multiple scales—needs to be further explored, possibly with the use of unbalanced rating scales.

Our research findings identified important differences between over-estimators and others. We were able to determine that students in this group were more confident, made more use of feedback and were more learning goal oriented. More importantly this group also made the greatest improvements between the Trial exams and actual HSC exams. This raises the bigger question, when it comes to self-assessment should accuracy be our aim?

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THEORY AND PRACTICE

This section is designed as a brief professional review of the article. It provides relevant study questions and answers for readers to test their knowledge of the article.

Why is accuracy of self-assessment important in vocational and career psychology?

Answer: Many of our career assessment methods use self-ratings of ability as important inputs to the career decision-making process. It is in our best interests to try and identify ways to make self-estimates more accurate.

Who are important empirical proponents to the self-ratings research?

Answer: Mabe and West (1982) completed the most comprehensive meta-analysis, although it is quite old now. This would be a great topic for a PhD thesis or an ambitious Masters thesis. More recent influences have included Kruger and Dunning.

What were the determinants of self-accuracy investigated?

Answer: We examined ability, confidence, goal orientation (learning and performance), sources of feedback, usefulness of feedback, self-efficacy and attitudes towards feedback. Our key findings were that sources of feedback, learning orientation and confidence were all features of those people who over-estimated their performance. Over-estimators were also the group to make the greatest improvements in performance over time.

How can research findings be applied to career counseling and assessment?

Answer: It is important to note that those people with the greatest ability may also be the people that continue to under-estimate their performance. Evidence of over-estimation may not necessarily be a bad thing. The individual may simply be expressing ambitious goal setting and take time to integrate feedback into performance improvements.