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TEACHER PERCEPTIONS OF THE RELATIONSHIPS BETWEEN STUDENT BEHAVIOUR, INTELLIGENCE AND ACADEMIC PERFORMANCE

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Abstract

Student “success” may be viewed in terms of 3 domains. A “good” student is often referred to as being either “intelligent”, or “well behaved”, or “academically successful”. But what, if any, are the connections between these domains? Is there a strong connection, for instance, between high “IQ” and academic performance? Do students with high “IQs” behave better for their teachers? Do students who behave better for their teachers tend to be the same ones who are ranked higher in terms of their academic performance? This study investigated the nature of such connections by comparing IQ scores with teacher perceptions of academic performance and general classroom behaviour.

INTRODUCTION

The traditional understanding of “IQ” has been under concerted attack in recent years. After more than a century of research and development in the area of IQ, the concept has come to be seen with great caution, if not outright cynicism. In recent times, alternate concepts such as “multiple intelligences” (Gardner, 1983) and “emotional intelligence” (Goleman, 1996) have tended to dominate the discussion about what it is to be “bright”, “smart”, “clever”, or display the characteristics of similar semantic cognates. Despite the continued existence of staunch advocates of the concept of IQ (e.g. Herrnstein & Murray, 1994) the very notion, together with its measurement instruments, has come under heavier scrutiny than ever before. Indeed, the “postmodern” mindset has been to deconstruct distinctions between “cognitive” vs. “affective” domains. This has probably served as a much needed corrective to the overly “cognitive” emphases that accompanied the development of the IQ construct.

Indeed, Goleman (1996, p.34) wrote that “one of Psychology's open secrets” now “is the relative inability of grades, IQ or exam scores, despite their popular mystique, to predict unerringly who will succeed in life.” At best, Goleman -concluded, IQ contributes about 20% to the factors that determine life success, which leaves 80% to other forces.

Apart from the conceptual arguments surrounding the nature of IQ, however, for many teachers, it would be a self-evident truth that there is a close connection between student intelligence, and academic performance. Concomitantly, many would

see it as patently logical that “bright” students tend to be better behaved in class - if for no other reason than that they receive greater recognition for their performance, which leads to an enhancement in self-esteem, and so predictably, greater conformity to the system which engenders that self-esteem. Such intuitive reasoning finds strong support in the self-esteem literature (Harter, 1986; Lawrence, 1996).

On the other hand, some research would at least implicitly suggest that such assumptions and reasoning are spurious. Epstein (1998), for example, asked the blunt question - “How well do people with very high I.Qs fare in life?” and cites the work of Lewis Terman (1925) as providing the best answer to this question. Terman conducted a long term study starting with mentally gifted children, that is, ones with IQs over 140 or top 1% of the population. After his death, other researchers such as Holahan and Sears (1995) continued his project, tracing the children as adults even into their 50s. Epstein (p.17-18) reviewed the research as follows:

As a group, they did considerably better than average, but there were exceptions. As adults they tended to be healthier, better adjusted, and more successful in their work than others. As for notable accomplishments, a high proportion is listed in *Who's Who* and in *American Men of Science*. Many others have received some other form of professional recognition or have obtained patents for inventions. Most, however, were simply somewhat more successful than average, not outstanding in any way. A few fell by the wayside, dropping out of school at an early age or unable to hold a job. This group was found to be poorly adjusted emotionally or socially or to be lacking in the motivation to succeed. This study informs us that a high IQ can be very helpful along the road to success in everyday life, but other factors, including social ability, emotional adjustment, practical intelligence, and motivation, are also important, and although there is a tendency for the very bright to be more creative and successful than others, a high IQ does not guarantee either.

This debate in the academic literature forms the theoretical background to this study, inviting an investigation of the connections between this trilogy of intelligence, academic performance, and classroom behaviour. Related issues also tend to surface around this trilogy. For example, is there a connection between socio-economic status (“SES”) and IQ? Further, do differences surface when type of school (government or non-government school) is factored into the equation? This study also investigated such factors.

PARTICIPANTS

This study, conducted in 2001, involved 87 students, across four schools, in Perth, Western Australia. The students were “Year 3s”, i.e. 7-8 years old. The four schools were chosen to investigate possible socio-economic differences, as well as differences between the government and non-government sector. Both non-government schools were Catholic, and together with the government schools, were selected using convenience sampling techniques within predetermined SES areas. The following profile was thus created:

- A. A government school in a lower SES area.
- B. A non-government/Catholic school in the same lower SES area.
- C. A government school in a higher SES area.
- D. A non-government/Catholic school in the same higher SES area.

The SES factor was determined by reference to AUS-STATS, a census-derived database maintained by the Australian Bureau of Statistics. The median earnings of individuals in the lower SES area was found to be \$300-\$399, which is also the Western Australian median. The median for the higher SES area was \$400-\$499, well above the State's median. The selection of schools within areas was confirmed by reference to supportive demographic data.¹ (Table 1)

Table 1.
Demographic Data by Socio-Economic Area

	Area 1 (lower SES)	Area 2 (Higher SES)
Average price of houses	\$103,000	\$386,000
Percentage of Rental Properties	43%	14%
Median Weekly Rent	\$68	\$203
Most common educational level	Skilled vocational	Bachelor Degree
Most common occupations	1. Clerical/Sales/Service 2. Tradespersons 3. Labourers	1. Professionals 2. Clerical/Sales/Service 3. Associate Professionals

It is evident from these demographics, that the schools were located in radically different SES areas. Moreover, each of the schools reported that the great majority of their students resided within a catchment area similar in profile to that of the suburb in which the school was located.

Forty of the students in the study came from schools in the lower SES bracket, 47 from schools in the higher bracket. Forty-four students came from the two government schools and 43 from the two non-government schools. Forty-five students were male and 42 female (Table 2).

Table 2
Profile of Participating Students

School	SS	SES	SchoolType	Gender
A	21	L	NG	12M-9F
B	19	L	G	12M-7F
C	23	H	NG	10M-13F
D	24	H	G	11M-13F

¹ Refer to the Domain real estate website. <http://www.domain.com.au/>, and Real Estate Institute of Western Australia website: <http://reiwa.com.au/content-suburb-letter>

Total	87	40-L, 47-H	43-G, 44-NG	45M-42F
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L=lower; H=higher; G=government; NG=non-government; M=male; F=female

METHODOLOGY

Early in 2001, the students were given a standardised cognitive ability ("IQ") test for circa eight years of age (Smith & Hagues, 1993). The test items required no linguistic proficiency, this removing this skill as a confounding variable. The test was entirely visual-spatial in nature and comprised 40 items, with students being allowed 20 minutes to complete it. Once scored, students in each class were ranked according to their performance, to produce an "IQ Rank". Teachers were not informed of the results on this test.

At the end of 2001, when it was considered that the teachers really knew their students, they were requested to rank each member of their class, according to the students' general behaviour and academic performance throughout the year. This formed the basis of what would constitute expert opinion.

With reference to academic performance, teachers were asked: "On the basis of your knowledge of each child, please rank your class members in terms of overall academic performance (top student = no.1, through to the lowest ranked student)."

For general behaviour, the teachers were asked to complete a Likert-type ranking for each child in their class (Table 3)

Table 3
Ranking Procedure for the Category *General Behavior*

Please give a rating for each of your students, according to the other aspects below, using the following code:

- 4 Always
- 3 Usually
- 2 Sometimes
- 1 Rarely
- 0 Never

- 1. Pays attention in class
 - 2. Follows directions
 - 3. Completes work diligently
 - 4. Works co-operatively in groups
 - 5. Regularly interrupts others
 - 6. Is neat and tidy
 - 7. Stays on-task
 - 8. Complies with class rules
-

A maximum of 32 points was possible, which provided a basis for the ranking.

All measurements involving teacher rankings were undertaken on a within-class basis, as it could not be assumed that one teacher's ranking was comparable to another's, and especially across different schools. Thus, when comparing IQ with academic performance, the student's rank order in their class only, on both parameters, was incorporated into any analyses.

It is important to emphasise, therefore, that this study compares "objective" measures – IQ, socio-economic status, type of school, gender – against more subjective measures, namely, the teacher's perception of the students' general behaviour, and academic performance ranking (APR). It was considered that this more subjective expert evidence could assist in explaining the results produced by the more objective measures.

RESULTS

All correlations were analysed using a Pearson product-moment two-tailed test, using SPSS.11 software. A listwise analysis was undertaken for all correlations, so excluding cases with missing values from the sample. The following Tables indicate scores and correlations.

Table 4
Mean IQ Score for Total Sample

A	96
B	90
C	110
D	111

Table 5
Correlations between IQ Ranking & Academic Performance Ranking

A	0.378
B	0.226
C	0.636**
D	0.503*

* = significant to the .05 level, ** = significant to the .001 level.
Mean Σ A-D = 0.436*

Table 6
IQ Ranking and General Behaviour Ranking

A	0.098
B	-0.138
C	0.491*
D	0.287

* = significant to the .05 level

Mean Σ A-D = 0.185.

Table 7

General Behaviour Ranking & Academic Performance Ranking

A	0.322
B	0.126
C	0.642**
D	0.687**

** = significant to the .001 level

Mean Σ A-D = 0.444*

The correlations between IQ Rank and APR were far stronger in the higher SES schools (0.636** Catholic and 0.503* government) - compared with the lower SES schools (0.378 Catholic and 0.226 government). Similarly, the correlations between IQ Rank and General Behaviour Rank (GBR) were far stronger in the higher SES schools (0.491* Catholic and 0.287 government) compared with the lower SES schools (0.098 Catholic and -0.138 government). The dichotomy also applied to how the teachers' ranked the students' academic performance and general behaviour. In the higher SES schools the connections were particularly tight (0.642**Catholic and 0.687**government), compared with the lower SES schools (0.322 Catholic and 0.126 government).

Similar to SES, IQ seems to have been a better indicator of performance in the two Catholic schools studied. The correlations between IQ Rank and APR proved to be stronger in the Catholic schools (0.378 and 0.636**) compared with the government schools (0.226 and 0.503*). The correlations between IQ and GBR showed a similar across-system pattern: Catholic schools (0.098 lower SES and 0.491* higher SES), State schools (-0.138 lower SES and 0.287 higher SES). The connections between the teachers' GBR and APR, however, were not as clear cut: Catholic schools (0.322 and 0.642**), State Schools (0.126 and 0.687**)

In terms of gender, the connection between IQ Rank and APR was a little stronger for girls than boys (0.529 vs. 0.430 respectively). The IQ Rank vs GBR connection, however, was a little stronger for boys than girls (0.188 vs. 0.075 respectively). Neither result, however, was significant. The linking of GBR with APR was slightly stronger for boys than girls (0.414 vs. 0.327 respectively). It would seem, therefore, that gender had little overall impact on the strength of the correlations between the parameters investigated. Certainly, the connections seem to be nowhere near as dramatic as for SES, where similar results have recently been reported (Peck, 2001).

DISCUSSION

It is clear from the results that IQ showed a positive correlation with APR, but far less so with GBR. As expected, a strong correlation emerged between the students' GBR, and their -APR.

An overall positive relationship between academic performance and general behaviour ($r = 0.444$, $p < .05$) should not be surprising, especially in view of the fact that each was determined according to rank ordering by the same teacher. As a general pattern, students who were ranked highly in terms of their behaviour were more likely to be ranked highly in terms of their academic performance.

What is of greater import, is that the correlations for the higher SES schools are significant at an alpha level of .001 whereas those for the lower SES schools failed to reach significance at even the 95% interval level. The most likely explanation is that there is greater parental pressure on teachers in higher SES schools to perceive their children as well behaved and academically capable. This is akin to the principle of vicarious conditioning, in that behaviour and performance expectations are modelled by parents which teachers then feel obliged to ascribe to the children of those parents. Failing to do this means that teacher reinforcement may be withheld, creating an undesirable situation for the teacher. Along the lines of this reasoning, Keyser and Barling (1981) found that people often rely heavily on modelling as a source of self-efficacy information. The important role of self-efficacy will be further developed later in this paper.

An overall positive relationship between APR and IQ ($r = 0.436$, $p < .05$) should also not be surprising given that most IQ tests are designed to predict achievement. Little wonder then, that such a relationship finds consistent support in the literature (Ceci, 1991; Sattler, 1992).

It is curious, however, that the relationship between IQ and GBR, in terms of the two findings above, is not strong ($r = 0.185$). It would seem logical to assume that if a relationship exists between IQ and academic performance, and a relationship exists between academic performance and general behaviour, then a connection between IQ and general behaviour could be expected. Two explanations for this result are offered. The first is from within the realm of motivational theory.

The self-worth theory of achievement motivation (Covington, 1984, essentially a modification of Dweck & Elliott, 1983) suggests that a student's perception of performance may be as important as the performance itself in regulating behaviour. Thus, if the student feels that the performance was not in accord with a predetermined perception of the self schema, the student may respond in a behaviourally inappropriate fashion, regardless of how others have assessed the performance. Such a situation has also been explained via self-concept integration theory (Berlach, 1996; Hattie, 1992; Swann, 1983), namely the need to self-verify, i.e. to preserve firmly held self-views by soliciting self-verifying feedback, in this case, doing so by manifesting negative behaviour. Concomitantly, if the performance is perceived as bringing with it socially undesirable consequences, then misbehaving may be a way of succeeding while still maintaining the affections of the reference group. This may be the response of 'acting out' to gain a desired self-esteem payoff, albeit a negative

one (Good & Brophy, 1997). Regardless of preferred explanation, the student has seen it as being undesirable to behave positively as a result of possessing a higher IQ, which has mediated the higher level of performance.

The counter-intuitive findings regarding the relationship between IQ and GBR may also be explained in terms of self-efficacy theory (Bandura, 1995, 1997). Basically, this theory suggests that individuals with a high sense of efficacy work harder, have greater levels of persistence, and believe in themselves. It may be the case that students in lower socio-economic areas (where much lower correlations were evident, see Table 6) perceive themselves as being essentially disadvantaged and powerless to do anything about it, so developing a low sense of efficacy. This is akin to what Seligman (1975) described as “learned helplessness”, and which Weiner (1994) insisted “dumbs down” the child for expected failure. This then manifests as a type of self-fulfilling prophecy that reasons “I am stupid, so there’s no point in trying”. The child is then not perceived as being badly behaved, quite the contrary, they may indeed be seen as being well behaved. Unfortunately though, such ‘good’ behaviour may be the manifestation of a situationally induced despondency.

The second explanation for the correlational disparity between IQ and GBR may be termed the factorial analogy argument. If one were to discover a strong connection between squares and rectangles, and then discover another strong connection between squares and four-sided-figures, one may perhaps expect there be a strong connection between rectangles and four-sided-figures as well.

A strong relationship between A and B, and another between A and C, however, need not necessarily imply a strong one between B and C. This is evident by another analogy. Apples and bananas may show a strong connection, in that both are forms of fruit. Apples may also show a strong connection with circular objects. This does not mean, however, that bananas are circular objects.

The difference in the two analogies is revealing. In the case of squares and rectangles, it shows that if the aspect that forges the strong connection between them, is the same as that identified as the third factor – “four-sidedness” – then the trilogy as a whole will be strong. This would be akin to a situation in which the commonality between apples and bananas is forged via them both being forms of fruit, and then having fruit as the third factor in the trilogy. If the third factor, in other words, is the same as that which causes the commonality between A and B, then one will find a strong correlation between A and C, and then B and C.

This, however, need not be the case. Apples may be related to bananas via them both being forms of fruit, and apples may be related to the class of objects that are “circular”, without this necessarily implying that bananas are circular. This is because the third factor – “circularity” – is not the same as that which connects apples and bananas.

By the same reasoning, APR and GBR may well share in a common factor that forges the strong correlation between them. There is also a factor that forges a strong relationship between APR and IQ. The key point, however, is that the factor forging this latter connection is not necessarily the same as that forging the former. What

both these factors may be remains purely speculative, and certainly warrants further investigation.

In a nutshell, there is no logical problem in suggesting that while students with high IQs tend to receive high APRs, and students with high GBRs tend to receive high APRs, students with high IQs may not necessarily receive high GBRs.

CONCLUSION

In summary, this study revealed the presence of highly significant connections between IQ and APR, and APR and GBR. The connection between IQ and GBR, however, was not as strong. The connection between IQ and both APR, and GBR, was distinctly stronger in the two higher SES schools, and the two Catholic schools under investigation.

Summarizing the above argument, a low correlation may be found between general behaviour ranking and academic performance ranking because of the influence of other significant factors such as personal attribution; the influence of SES; and speculative factors underlying the concepts under investigation. Further research needs to be undertaken to determine the validity of these results across a larger and more general population.

References

- Bandura, A. (1997). *Self-efficacy: The exercise of control*. NY: Freeman.
- Bandura, A. (1995). *Self-efficacy in changing societies*. NY: Cambridge University Press.
- Berlach, R. (1996). *Self-concept integration processes in expert and novice student teachers*. Unpublished doctoral dissertation, University of Western Australia.
- Ceci, S. (1991). How much does schooling influence intelligence and its cognitive components? A reassessment of the evidence. *Developmental Psychology*, 27, 703-720.
- Covington, M. (1984). The self-worth theory of achievement motivation: Findings and implications. *The Elementary School Journal*, 85, 5-20.
- Dweck, C., & Elliott, S. (1983). *Achievement motivation*. In P. Mussen (Ed.), *Handbook of Child Psychology: Vol 4, Socialization, personality, and social development* (pp. 643-691). NY: Wiley.
- Epstein, S. (1998) *Constructive Thinking: the key to emotional intelligence*. Westport, Connecticut: Praeger Publishers.

- Gardner, H. (1983). *Frames of Mind : the theory of multiple intelligences* (2nd ed.). London: Fontana.
- Goleman, D. (1996). *Emotional intelligence: Why it can matter more than IQ*. London: Bloomsbury.
- Good, T., & Brophy, J. (1997). *Looking into Classrooms* (7th ed.). NY: Longman.
- Smith, P. & Hagues, N. (1993). *NFER-Nelson Non-Verbal Reasoning 8&9 Test*. Windsor, UK: NFER-Nelson.
- Harter, S. (1986). Cognitive-developmental processes in integration of concepts about emotion and self. *Social Cognition*, 4, 119-151.
- Hattie, J. (1992a). *Self-concept*. Hillsdale, NJ: Lawrence Erlbaum.
- Herrnstein, R. J. & Murray, C. (1994). *The Bell Curve: Intelligence and class structure in American life*. -NY:: Free Press.
- Holahan, C.K. & Sears, R.R. (1995). *The Gifted Group in Later Maturity*. Stanford, California: Stanford University Press.
- Keyser, V., & Barling, J. (1981). Determinants of children's self-efficacy beliefs in an academic environment. *Cognitive Therapy & Research*, 5, 29-40.
- Lawrence, D. (1996). *Enhancing Self-esteem in the Classroom*. (2nd ed.). London: Paul Chapman.
- Peck, B. (2001). The poor stay poor and the rich stay rich. *Issues in Educational Research*, 11(2), 45-64.
- Seligman, M. (1995). *The Optimistic Child*. Boston: Houghton Mifflin.
- Sattler, J. (1992). *Assessment of Children*. (3rd ed.). San Diego: Jerome M. Sattler.
- Swann, W. B., Jr. (1983). Self-verification: bringing social reality into harmony with the self. In J. Suls & A. G. Greenwald (Eds.), *Psychological Perspectives on the Self*, Vol. 2 (pp. 33-66). Hillsdale, NJ: Erlbaum.
- Terman, L. (1925) *Mental and Physical Traits of a Thousand Gifted Children, Genetic Studies of Genius* Stanford, California: Stanford University Press.
- Weiner, B. (1994). Ability versus effort revisited: The moral determinants of achievement evaluation and achievement as a moral system. *Educational Psychologist*, 29, 163-172.