The Diagnostic Value of Academic and Music Knowledge for Estimating Cognitive ability and Narcissism

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ABSTRACT

The over-claiming technique requires participants to provide familiarity ratings for general knowledge items (e.g., persons, places, events), some of which are real and some of which are fictitious (foils). Previous research with the over-claiming technique has relied solely on items from academic domains. These studies have indicated that: (1) cognitive ability is the best predictor of familiarity accuracy, and (2) narcissism is the best predictor of familiarity bias. However, the extent to which these results generalize to non-academic domains is as yet unclear. The current study compared accuracy and bias indices in academic domains to those in a non-academic domain. Participants provided familiarity ratings of academic items (e.g., history, science) and music items (music artists in five genres). Results indicated that cognitive ability was associated as strongly with music accuracy as with academic accuracy. Moreover, cognitive ability was positively correlated with accuracy across all music categories. Although narcissism was correlated with overall academic bias, results were not significant for overall music bias. Our findings extend previous conceptions of crystallized intelligence to include knowledge in non-academic domains. Furthermore, crystallized intelligence is manifested across such diverse domains as classical to country artists. The fact that narcissism correlated more strongly with academic than with music bias might be explained by the fact that narcissists do not value all music domains equally.

INTRODUCTION

The over-claiming technique requires participants to provide familiarity ratings for names, places, and events, some of which are real and some of which are false (foils). Studies using the over-claiming technique (e.g., Paulhus, Harms, Bruce, & Lysy, 2002; Williams, Paulhus & Nathanson, 2002) have been limited to academic domains. To date, the domains of knowledge have included literature, history, science, and social science. Items in these domains are academic inasmuch as they represent 'cultural literacy' (Hirsch, 1988), that is, a set of names, places, and events of which most educated people should be aware.

The over-claiming technique has been fruitful in elucidating both the association between intelligence and knowledge and the nature of over-claiming. Previous studies have suggested that intelligence predicts accurate knowledge of academic items, that is, the ability to correctly discriminate between real items and foils. In this sense, accuracy may be seen as an index of crystallized intelligence (Horn & Cattell, 1966).

In addition, previous studies found that narcissism is a strong predictor of over-claiming knowledge: That is, narcissists claim the highest degree of familiarity with both real items and foils. Other suspected individual difference predictors, such as perfectionism, self-concept clarity, and perfectionism, were not associated with over-claiming (e.g., Williams et al., 2002).

To the extent that these studies included only academic items they are limited in generalizability. Arguably, crystallized intelligence may include domains of knowledge that are outside the academic sphere. If so, then traditional measures of cognitive ability may also predict knowledge in non-academic areas, such as knowledge of country or rap music artists. It is not clear whether narcissists will over-claim as much in the music domain as they do in the academic domain.

To address these issues, we administered an familiarity questionnaire with both academic and non-academic items. Accuracy and bias scores were then correlated with standard tests of cognitive ability and narcissism.

METHOD

Participants

Participants were N = 211 students from a second-year undergraduate psychology course at a large Canadian university. All participants completed the tasks in a laboratory setting for bonus course credit.

Materials

Narcissism. We assessed narcissism with the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979), widely taken to be the 'gold-standard' of narcissism assessment. The 40-item NPI uses a forced-choice format that requires participants to indicate their agreement with one of two statements, one of which is the 'narcissistic option.' The alpha reliability of the NPI in our sample was .84.

Cognitive ability. To assess cognitive ability, we used the Wonderlic IQ Test (Wonderlic, 1983). Although there is a maximum time limit of 12 min to complete the 50-item Wonderlic, the test behaves like a power test in that items are presented in increasing order of difficulty. Items are drawn from the verbal, quantitative, and spatial areas. The alpha reliability of the Wonderlic was .83 in our sample using the odd-even method.

Familiarity questionnaire. Participants were asked to indicate their familiarity using a 5-point Likert scale ranging from 1 ("never heard of it") to 5 ("completely familiar") on nine different specified categories. We reduced the original 150-item Over-Claiming Questionnaire to 40 items to create the academic section. Four of the original categories were retained: History, literature, politics, and social science and law. Real items included 'The Lusitania' and 'Tort reform'. Foils included 'El Puente' and 'Inflamed cabinet'. Music categories and items

were chosen to run the gamut of musical genres and artists (e.g., Rentfrow & Gosling, 2003). The categories were rock artists, jazz artists, country artists, rap artists, and classical artists (Rentfrow and Gosling, 2001). Real items included 'Louis Armstrong' and 'Blink-182.' Foils included 'K-Steel' and 'Pill Dogs.'

Accuracy and bias scores were calculated separately for the academic and music categories. Based in signal-detection theory (Macmillan and Creelman, 1991), 'yes' responses on the familiarity questionnaire are divided into hits, i.e., indicating familiarity with real items or lack of familiarity with fictitious items, and false alarms, i.e., indicating familiarity with fictitious items. Accuracy was calculated as the mean number of false alarms subtracted from the mean number of hits and bias was calculated as the mean number of hits added to the mean number of false alarms (Paulhus and Petrusic, 2001).

Overall accuracy and bias scores for the music categories were calculated in an identical fashion to those for the academic categories. The alpha reliability of accuracy scores from the academic categories was .53, and the reliability of the bias scores was .78. The alpha reliability of accuracy scores from the music categories was .51, and the reliability of bias scores was .75.

RESULTS

The correlations of cognitive ability and narcissism with overall accuracy and bias are found in Table 1. Cognitive ability correlated with overall academic accuracy ($r = .38$, $p < .001$), which replicates findings from previous research. Even more interesting is the finding that the correlation between cognitive ability with overall music accuracy ($r = .41$, $p < .001$) is as strong as that with academic accuracy.

Narcissism correlated with overall academic bias ($r = .18$, $p < .01$), again replicating previous research. The correlation between narcissism and overall music bias, however, was not significant ($r = .12$, $p = $ ns).

To investigate the consistency of the associations between cognitive ability and accuracy, we examined the correlations within each specific category. These results as presented in Table 2 are largely consistent across categories . For the academic categories, correlations are all positive and averaged .27. For the music categories, correlations are all positive and averaged .22.

DISCUSSION

The pattern of results expands our understanding of both crystallized intelligence and self-enhancement. The strong correlation between cognitive ability and music accuracy suggests that crystallized intelligence is manifested in non-academic domains. Furthermore, our results suggest that regardless of the music domain being tapped, be it classical or country music, individuals high in cognitive ability are able to discriminate between real and fictitious items. These findings expand earlier work (e.g., Rolfhus and Ackerman, 1996, 1999) suggesting that cognitive ability is associated solely with a wide range of *academic* knowledge. We suggest that cognitive ability may be associated with the accrual of knowledge in non-academic domains as well. Taken together, these findings extend the notion of crystallized intelligence to include a wider range of domains than previously considered.

Although crystallized intelligence appears to extend to non-academic domains, self-enhancement may not. The results with music bias suggest that narcissists do not over-claim in non-academic areas. At first, it may appear puzzling that narcissism does not predict overclaiming of musical knowledge. A potential explanation for this result is the tendency to differentially evaluate musical genres. Hence narcissists should only overclaim for genres they value. As a result, the correlation between narcissism and overall music bias should be small.

An alternative explanation is that setting influences bias. Given that the familiarity questionnaire was administered in a university setting, participants – especially narcissists -- may have felt pressured to demonstrate their academic knowledge. In that setting, knowledge of music artists may not have been relevant enough to over-claim.

Future directions. Given that these results have expanded the use of the over-claiming technique to non-academic categories, future research will need to include other similar categories such as sports, movies, and television. Including other non-academic categories will allow us to test whether the notion of crystallized intelligence may be extended even wider. Future research should also determine and assess the non-academic domains valued by narcissists. Similarly, familarity ratings in non-academic domains should be collected in domain-relevant settings (e.g., collecting familiarity ratings of music artists in a music store).

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Table 1

Correlations between cognitive ability, narcissism, and overall accuracy and bias scores

| | Knowledge accuracy | | Knowledge bias | |
	Academic	Music	Academic	Music
Cognitive ability	.38***	.41***	.00	.06
Narcissism	-.04	-.09	.18*	.12

N = 211   * *p* < .05 *** *p* < .001, two-tailed

Table 2

Correlations between cognitive ability and accuracy scores in academic and music categories

	Academic categories			
	History	Science	Social Science and Law	Politics
Cognitive ability	.26**	.30**	.27**	.27**

	Music categories – names of artists				
	Rock	Jazz	Country	Rap	Classical
Cognitive ability	.30**	.09	.26**	.30**	.24**

N = 211 ** *p* < .01, two-tailed