Accuracy and Bias in Lay Knowledge

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Abstract

The over-claiming technique is a signal-detection based method for simultaneously assessing knowledge accuracy and self-enhancement bias (i.e., over-claiming). Although previous work with academic and music domains has proved useful, the extent to which the technique applies to a wider variety of lay domains remains unclear. The current study aimed to fill this gap by administering a lay Over-Claiming Questionnaire (OCQ) that included 25 domains such as movies, tools, and mainstream sports. Participants rated their familiarity with the items in these domains, completed standard measures of verbal ability, narcissism, and rated their expertise in each domain. Results indicated that domain expertise and high verbal ability predicted accuracy in all domains. The notable exception was macho sports, where knowledge accuracy emerged as an indicator of *low* verbal ability among men. Associations with bias were inconsistent for narcissism but clear for expertise: Regardless of domain, self-rated expertise significantly predicted over-claiming, even after controlling for narcissism. In signal detection terms, experts are both accurate and biased.

Introduction

The over-claiming technique applies signal-detection analysis to familiarity ratings of items in a topic such as history. The fact that some items are non-existent foils permits the calculation of both accuracy and bias scores for each respondent. Previous research has yielded two consistent findings: (1) individuals high in verbal ability show high knowledge accuracy regardless of topic and (2) narcissists over-claim their knowledge (i.e., self-enhance) (e.g., Paulhus & Harms, 2004; Paulhus, Harms, Bruce, & Lysy, 2004; Williams, Nathanson, & Paulhus, 2002). However, these studies have relied heavily on topics in the so-called 'academic' domain, such as history or law.

To date the only research on everyday or lay domains covered genres of music (Nathanson, Williams, & Paulhus, 2003). Although the link between ability and accuracy held up regardless of genre, narcissism was associated with over-claiming only in musical genres where the individual rates himself or herself an expert. We concluded that narcissism is only activated in ego-relevant domains.

The generalizability of these links to other lay domains such as movies or daytime television, remains to be investigated. It is possible that knowledge of some lay domains may actually be a cue to *low* ability. In addition, unlike in academic domains, we expected to see gender differences in knowledge as well as gender differences in correlations with verbal ability. Finally, given our previous finding with over-claiming in music knowledge, we expected that narcissism would show no overall relation with over-claiming in these other lay domains.

Another area yet to be fully explored is the role of expertise in knowledge of and

over-claiming in lay domains. As might be expected, expertise has been consistently shown to predict actual knowledge in myriad academic domains (e.g., Rolfhus & Ackerman, 1999). However, experts are also known to be overconfident (Bradley, 1981). We too have found that expertise is a strong predictor of over-claiming in academic domains (e.g., Paulhus & Harms, 2004). It is unclear the extent to which expertise will demonstrate similar patterns in lay domains.

To address these issues, we administered an Over-Claiming Questionnaire composed solely of items from lay domains. Knowledge (accuracy) and over-claiming (bias) scores were compared between the sexes then correlated with self-reported expertise along with standard measures of ability and narcissism.

Method

Procedure

Participants were 266 undergraduates at a large northwestern university. Sixty-six percent of participants were women.

The lay OCQ was administered in several large group settings. Items were presented one at a time at a fixed rate (5 sec/item) on a large screen. Many of these participants also participated in an ongoing laboratory study in which biographical, personality, and verbal ability measures were collected.

Materials

Lay OCQ.250. Participants were asked to rate their familiarity with the items presented on a 5-point Likert scale (1 = 'never heard of it' to 5 = 'completely familiar'). Based on signal detection theory (MacMillan & Creelman, 1991), two indexes may be computed from these familiarity ratings. *Knowledge accuracy* is the ability to correctly distinguish real items from foils (i.e., hit rate minus false-alarm rate). *Knowledge bias* is the tendency to rate both reals and foils as familiar (i.e., hits plus false alarms).

The lay OCQ was composed of 250 items covering 25 topics (i.e., 10 items per topic). Each item is the name of a person, place, or thing (e.g., "Montel Williams"). For analysis, we simplified these 25 topics into seven knowledge domains: *Music artists* (rap music, country music); *movies* (romance, horror/thriller, anime, comedy, action and drama, foreign); *mainstream sports* (golf, soccer, figure skating, NFL football); *macho sports* (monster trucks, NASCAR, pro wrestling); *daytime TV shows* (soap operas, daytime talk shows); *traditional male interests* (tools, computers, world leaders); and

traditional female interests (cosmetics, clothing stores, fashion designers). Mean alpha reliability of accuracy scores was .35 and mean reliability of bias scores was .58.

Narcissism. Narcissism was measured with the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). Widely considered the 'gold-standard' of self-reported narcissism, the NPI is composed of 40 forced-choice items. For each item, one option is the narcissistic option, e.g. "I am a born leader". Alpha reliability of the NPI was .82.

Verbal ability. Verbal ability was measured with the 100-item UBC Word Test (Paulhus, 2003). For each item, participants are presented with a stem and asked to choose the best synonym out of four options. Alpha reliability was .89.

Expertise. To measure expertise, we asked participants to indicate the extent to which they saw themselves as experts in each knowledge domain. Participants were asked to make these ratings using a 5-point Likert scale (1 = 'not an expert' to 5 = 'complete expert'). The mean alpha reliability within domain was .45.

Results

Knowledge Accuracy

Table 1 summarizes our results with accuracy. The gender correlates suggest clear sex differences in accuracy across the domains. Men were significantly more accurate in music, movies, and both sports domains, with women being more accurate in daytime TV shows. The differences between the traditional male and female interests domains supported our categorization: Men were more accurate in traditional male interests, whereas females were more accurate in traditional female interests.

Results with expertise suggest significant congruence between participants' rated and actual expertise (Rolfhus & Ackerman, 1999). That is, regardless of domain, participants who rated themselves as experts in that domain were highly accurate, with a mean correlation of .43.

Our findings with verbal ability were generally in line with previous work (e.g., Nathanson et al., 2003; Paulhus & Harms, 2004; Stanovich & Cunningham, 1992). That is, verbal ability significantly predicted knowledge accuracy in both male and female respondents with median correlations of .19 for men and .24 for women.

The one exception to this pattern was accuracy regarding macho sports. The correlation with ability was not significant for females and significantly *negative* for males, $r = -.25, p < .05$.

Knowedge Bias (over-claiming).

Within each domain, ability showed minimal correlations with bias (mean $r = .01$). Similarly, bias scores showed minimal correlations with gender.

Results with narcissism were small and inconsistent, as indicated in Table 2: Although it did not significantly predict bias in sports or music (Nathanson et al., 2003) and even negatively predicted bias in movies, narcissism significantly predicted bias in the remaining four domains. Across the seven domains, the mean correlation of narcissism with bias was .13.

However, bias scores showed consistently strong positive correlations with self-rated expertise within domain. Averaged across all seven domains, the mean correlation was .65. Hence self-ratings of expertise contain a strong component of self-enhancement. Can all these correlations be explained by the tendency of narcissists to self-enhance? As noted in Table 2, the correlations of expertise with bias changed little after controlling for narcissism (mean = .61).

Similarly, could the expertise-bias associations within domains be due to a common global self-perception of expertise? To evaluate this possibility, we computed the mean cross-domain correlations of expertise and bias (e.g., mean correlation of expertise in each domain except music with music bias). For each domain, this value (mean = .18) was consistently lower than that between expertise and bias within that domain (mean =.65). After controlling for cross-domain expertise to create an index of 'unique expertise', the correlations between expertise and bias changed little.

Table 1

Correlations of domain accuracy with gender, expertise, and verbal ability

	Gender	Self-rated expertise	Verbal ability	
			Males	Females
Music artists	-.16**	.38*	.38**	.33**
Movies	-.30**	.36*	.25*	.37**
Mainstream sports	-.55**	.43*	.30*	.24**
Macho sports	-.36**	.44*	-.25*	.12
Daytime TV	.17**	.51*	.11	.21**
Traditional female interests	.43**	.54*	.19	.07
Traditional male interests	-.42**	.32*	.10	.37**

Note. N = 266. * *p* < .05 ** *p* < .01 (both two-tailed).

A positive correlation with gender indicates higher accuracy among females.

Table 2

Correlations of domain bias with verbal ability, narcissism, and domain expertise

	Verbal ability	Narcissism	Self-rated expertise	Expertise controlling for narcissism	Unique expertise
Music artists	.09	.08	.69	.67	.60
Movies	-.05	-.14	.52	.53	.47
Mainstream sports	-.03	.11	.73	.71	.67
Macho sports	.00	.12	.65	.62	.59
Daytime TV	-.05	.15	.58	.55	.51
Traditional female interests	-.09	.23	.65	.62	.60
Traditional male interests	.21	.32	.71	.60	.65

Note. N = 266. All correlations greater than .12 are significant at $p < .05$ (two-tailed).

Discussion

The results extend our understanding of knowledge and self-enhancement to lay domains. Highly verbal individuals possess accurate knowledge of a wide variety of lay domains. Only one domain -- macho sports -- showed a significant *negative* correlation among males. Knowledge of macho sports such as NASCAR and monster trucks appears to be a cue to low verbal ability, at least among men. One possible explanation is that the simplicity of such macho sports (compared to more nuanced sports like football) appeals to men lower in ability. Another possibility is that macho sports are incompatible with the intellectual identity that individuals of high verbal ability tend to nurture. They may actively avoid learning about such sports or, at least, act as if they are ignorant about those topics.

Our results with knowledge bias extend our previous work in the music domain (Nathanson et al., 2003), In particular, narcissism showed small and inconsistent associations with bias in knowledge ratings of lay domains. More clear, however, were the findings with expertise: Within each lay domain, self-rated expertise emerged as a powerful predictor of the tendency to inflate familiarity ratings. These associations remained after removing the effects of narcissism and global self-perceptions of expertise. It appears that unique expertise promotes an exaggerated sense of knowledge within that domain: "It's my specialty, so I must know all this stuff."

Indeed, the experts within a domain do tend to be accurate. However, their confidence in the domain also leads them to exaggerate their knowledge.

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