
Paragons of Intelligence: Who Gets Nominated and Why

DELROY L. PAULHUS and MONICA A. LANDOLT, University of British Columbia

Abstract

Implicit theories of intelligence were investigated by collecting both nominations and rankings of ideal exemplars. Study 1 involved a 5-wave survey of student judges ($N = 1174$) asked to nominate a famous example of an intelligent person. Although the nominations were diverse, the set of most-frequent nominees was relatively stable across 16 years with Albert Einstein as the top nominee in every wave. Among living exemplars, the current U.S. President and Canadian and British Prime Ministers were consistently strong. It appears that four clusters of cultural exemplars persist over time. To control salience in Study 2 ($N = 245$), a fixed set of nominees were ranked. The highest ranked individuals virtually duplicated the popular nominees in Study 1. A number of idiosyncratic factors (familiarity, liking, occupational similarity, attitudinal similarity, sex-match) were shown to be associated with high nomination rates. The nomination process includes a tendency to select familiar and liked others as exemplars of intelligence.

Résumé

Les théories implicites de l'intelligence sont étudiées ici en colligeant de l'information à la fois sur les mises en candidature et sur les classements d'exemples types d'intelligence. L'étude 1 impliquait la réalisation d'un sondage en cinq vagues auprès d'étudiants ($N = 1174$) auxquels on avait demandé de donner l'exemple d'une personne intelligente renommée. Les noms variaient, certes, mais la série des candidats cités le plus souvent changeait relativement peu sur une période de 16 ans, Albert Einstein obtenant la première place du palmarès pour chacune des cinq vagues du sondage. Parmi les candidats vivants nommés, le nom de l'actuel président des États-Unis et des premiers ministres canadien et britannique revenait sans cesse. Il semble que quatre groupes d'exemples culturels persistent au fil des ans. Pour évaluer la constante dans les résultats de l'étude 2 ($N = 245$), une série fixe de candidats ont été classés. Ceux qui ont obtenu le plus haut pointage étaient virtuellement les mêmes que les candidats populaires

dans l'étude 1. Un certain nombre de facteurs idiosyncratiques (familiarité, sympathie, similarité de l'occupation et des attitudes, sexe identique) ont été apparentés à un taux élevé de mise en candidature. Ainsi, le processus de mise en candidature comporte une tendance à nommer des gens que l'on connaît et pour lesquels on a de la sympathie comme exemples d'intelligence.

Research on *implicit theories* of intelligence addresses lay perceptions and conceptions of intelligence (Neisser, 1979; Sternberg, 1988). The topic is typically contrasted with the more traditional research on *explicit theories* of intelligence, that is, theories about the nature of cognitive performance (e.g., Jackson, 1984; McKelvie, 1994; Vernon, 1989). Other researchers have studied the overlap between implicit and explicit measures of intelligence (Paulhus & Morgan, 1997; Paulhus, Lysy, & Yik, 1998; Vernon & Jang, 1993). A strong argument for the study of implicit theories is their ubiquity: They influence attitudes and behaviour in everyday social interactions, voting preferences, and self-conceptions, and can affect personnel decisions even where standardized test scores are available to evaluators (Sternberg, 1988).

Interest in the topic of implicit theories of intelligence was initially piqued by the claim that intelligence is cognitively represented as a prototype (Neisser, 1979). The *prototype model* suggests that we store a template of attributes representing our ideal of an intelligent person.¹ And we judge others as intelligent to the extent that their attributes match the attributes contained in our prototype of intelligence. Sternberg and his colleagues put these speculations to the test and found much empirical support (Sternberg, 1985, 1988; Sternberg, Conway, Ketron, & Bernstein, 1981). Although multifaceted, the keystone of their methodology was to ask people what they meant by the term "intelligent" and other mental

1 The prototype approach bears a close resemblance to schema approaches (e.g., Hamilton & Sherman, 1994; Zuroff, 1989).

abilities. Among other things, their research demonstrated that prototypes of intelligence are distinct from those of related mental abilities such as creativity and wisdom, and affect everyday judgments. Sternberg's work has since been followed up by others (e.g., Fitzgerald & Mellor, 1988; Kosmitzki & John, 1993; Landolt & Paulhus, 1994; Raty & Snellman, 1997; Ruisel, 1996).

An alternative to prototype theory in explaining the representation of concepts is *exemplar theory* (e.g., Nosofsky, 1984; Smith & Zarate, 1992). From this perspective, an individual's cognitive representation of the trait "intelligent" contains memories of intelligent individuals with whom the perceiver has had experience. The methodology often involves examination of social judgments after the presentation of a variety of exemplars: It does not always yield identical conclusions to those found with prototype methods (Fiske & Taylor, 1991). For example, popular exemplars of intelligence (e.g., Einstein) may have coincidental features (e.g., disheveled appearance) that people may come inadvertently to associate with intelligence (e.g., Smith & Zarate, 1992).

The present research applied the exemplar approach to explore the topic of implicit theories of intelligence. In previous work, we have asked respondents to provide ideal exemplars of intelligent persons (Paulhus & Wehr, 1999). Of the total nominations, 31 percent were persons the nominator had met, for example, family members, teachers, and friends. The remaining 69 percent of nominees were well-known public figures.

The present studies address the (potentially) shared portion of the popular exemplars. The identification of a common set of famous exemplars would support the proposition that members of our culture share a common representation of the concept of intelligence. Recent work suggests that the role of the shared cognition on social norms and individual behaviour is underappreciated (Thompson, 1999).

In Study 1, our technique was simply to ask participants to name a famous example of an intelligent person. We collected large samples of such nominations to document the most popular exemplars over the last 16 years. In Study 2, we used a ranking paradigm to investigate what qualities of the nominators were predictive of their nominations.

Study 1: Nomination Rates for Ideal Exemplars of Intelligence

At the outset, we had no idea how heterogeneous the popular nominees would be nor how stable they would be across time. No published data were available for consultation. Fortunately, we had access to nominations solicited in 1982, 1984, 1989, 1993, and 1997 from under-

graduate classes at the University of British Columbia. Volunteer participants had been asked to nominate ideal examples of intelligent persons as a routine classroom exercise. Results were compiled for each year and the patterns examined.

METHOD

Nominations of ideal exemplars were solicited by the instructor before the topic of intelligence was covered in lectures. The topic was not in the textbook and, therefore, did not contaminate the nominations. The nominations were voluntary, although less than 1% declined. Responses were submitted on a sheet of paper along with the nominator's sex and major.

A single nomination was collected from each of 1,174 second- and third-year student judges. The sex breakdown was similar across samples, ranging from 60% to 66% female. The following instructions were read aloud:

"Think of an ideal example of an intelligent person. Not a friend or family member, but someone who is well-known — alive or not. Write the name on a sheet of paper and hand it in. Don't put your name or any identification on it."

The list of most popular exemplars was compiled and presented in the subsequent class. These lists proved valuable as a stimulant to classroom discussion of intelligence.

RESULTS AND DISCUSSION

Across Time. Table 1 provides the top 15 nominees for each wave. In parentheses is the percentage of that sample's nominations received by each candidate. The diversity in the source of their renown and the nature of their intelligence is striking. Yet the consistency in nomination rates across waves is equally striking — at least at the top of the lists. The same names recur across the 16-year span, especially Einstein, Da Vinci, Newton, Hawking, Shakespeare, Gates, Winfrey, Mozart, Freud, and Edison. Note from Table 1 that the top 15 nominees garnered between 83 and 88 percent of the total nominations in each wave.

Also evident from Table 1 is that the Canadian and British Prime Ministers and American President were prominent on the majority of lists. But nonsitting leaders were seldom nominated. Therefore, to highlight the continuity of the office across waves, the generic labels "President" and "Prime Minister" are used in the table to refer to the current leaders.

To index the similarity of the nominee lists, correlations were calculated across the nominees for each pair of waves. For example, the number of nominations in 1982 and 1984 were correlated across the 44 overlapping

TABLE 1
The Top 15 Exemplars of Intelligence Across 16 Years of Nominations

1982 (N = 212)	1984 (N = 251)	1989 (N = 244)	1993 (N = 145)	1997 (N = 322)
Albert Einstein (21)	Einstein (31)	Einstein (30)	Einstein (30)	Einstein (28)
Canadian P.M. (20)	U.S. President (10)	U.S. President (11)	U.S. President (8)	Gates (12)
U.S. President (9)	British P.M. (10)	Edison (7)	Newton (7)	U.S. President (7)
Da Vinci (5)	Shakespeare (6)	Hawking (6)	Canadian P.M. (5)	Hawking (7)
Isaac Newton (5)	Canadian P.M. (3)	Gates (6)	Gates (5)	Newton (6)
British P.M. (5)	Da Vinci (3)	Newton (4)	Hawking (4)	Da Vinci (4)
Stephen Hawking (5)	Hawking (3)	Da Vinci (4)	Shakespeare (4)	Shakespeare (3)
Shakespeare (4)	Newton (3)	Mozart (3)	Da Vinci (3)	Freud (3)
Thomas Edison (4)	Mozart (2)	Shakespeare (3)	Freud (3)	Darwin (3)
Oprah Winfrey (4)	Darwin (2)	Canadian P.M. (3)	Oprah (2)	Beethoven (3)
Donald Trump (3)	Edison (2)	Freud (3)	Mozart (3)	Edison (2)
Wolfgang Mozart (2)	Beethoven (2)	Oprah (2)	Spielberg (3)	Picasso (2)
David Suzuki (2)	Oprah (2)	Madonna (2)	Edison (3)	Spielberg (2)
Sigmund Freud (2)	Freud (2)	Suzuki (2)	Madonna (2)	Oprah (2)
Madonna (2)	Gates (2)	Spielberg (2)	M.L. King (2)	Mozart (2)
Total percentages of nominations				
83	81	88	85	88

Note. Percent of votes (rounded) given to each candidate appears in parentheses. The values for prime ministers and presidents represent only the individual occupying that post at the time of the survey.

nominees.² The intercorrelations among the five waves all exceeded .94, indicating a strong similarity of nominations over time. Correlations adjacent in time tended to be higher, of course. To index this trend over time, the 10 inter-wave correlations were entered as proximities in a multidimensional scaling analysis. A one-dimensional solution was sufficient for a good fit (RSQ = .93). Scores on this dimension correlated significantly with year of data collection, $r = .56$ (8), $p < .03$. Thus the similarity of nominees from year to year diminishes with time.

When the five waves were restricted to living individuals, the American and Canadian leaders were high on all five lists. For comparison purposes, their votes are presented in Table 2. Somewhat surprising is that the President received more nominations overall ($p < .01$) and on four of the five waves. Only Pierre Trudeau exceeded his American counterpart ($p < .01$).

Effects of Sex and Major. When nominees were collapsed across time but separated by sex, the overall correlation across nominees was .95, $p < .001$. In short, sex differences were small in terms of overall ranking of nominees. A glance at the two lists, however, suggested that Einstein rates might be higher in men than in women. To evaluate this possibility, we separated nominations into Einstein vs. Others. The chi-square was significant ($p < .01$), indicating a higher rate of Einstein nominations among men. Note that Einstein was still the

top nominee in both sexes.

Nominators were also separated by major into Arts-Education and Science-Engineering categories. The overall correlation across nominees was .90. Again, we separated nominations into Einstein vs. Others. The chi-square was significant ($p < .01$), indicating a higher rate of Einstein nominations among Science-Engineering majors than among Arts-Education majors. Conversely, we found that nominations of Shakespeare were relatively higher in Arts-Education versus Science-Engineering majors ($p < .05$). Note that the inherent confounding of major with gender guarantees that the major and gender findings are not independent.

Summary. Overall, there was a marked stability across 16 years in the popular exemplars of intelligence. At the same time, there were differences across time and subgroups that reflect coherent subcultural influences.

The second notable result was the diversity of nominees. They represent every conceivable form of achievement: national leaders, scientists, writers, business tycoons, pop-stars, sports heroes, religious leaders, and even the infamous (Hitler, Mao, and Gotti received multiple votes). Almost 15 percent were singletons. Clearly our student judges are drawing from their idiosyncratic interests and preferences.

Note, however, that each nominator was allowed only one nomination. Therefore we cannot tell from such nomination data whether the 28 percent of nominators choosing Einstein are an exclusive subgroup — albeit the largest subgroup. The other 72 percent may not see

2 The correlations were similar when nonoverlapping nominees were included.

TABLE 2
Percent of Nominations Received by U.S. Presidents and Canadian Prime Ministers

Date	Prime Minister	President
Spring 1982	Trudeau (36)	Reagan (16)
Summer 1984	Turner (9)	Reagan (15)
Spring 1989	Mulroney (12)	Bush (18)
Fall 1993	Campbell (13)	Clinton (22)
Fall 1997	Chretien (5)	Clinton (16)
Overall	(12.4)	(17.4)

Note. Each entry is the percentage of nominations of living individuals.

Einstein as a good exemplar of intelligence. Equally possible is that Einstein is near the top of every nominator's list of likely nominees.

Put another way, our demonstration of the similarity of aggregated nominee frequencies across time does not guarantee that our judges have a shared set of exemplars. For that inference, we need to show that different judges give similar rankings to the candidates. Therefore, in Study 2, we asked judges to rank a fixed set of nominees collected in Study 1.

Study 2: Individual Predictors of Nomination Rankings

Personality perceptions are known to be influenced by perceiver effects as well as interactions between perceiver and target qualities (e.g., Kenny, 1994; Paulhus & Reynolds, 1995). The results of Study 1 suggest that similar factors are likely to operate in nominations of ideal exemplars of intelligence. In particular, the variety of singleton nominations suggested that idiosyncratic nominator by nominee interactions should be important.

For example, idiosyncratic interests should induce differential *familiarity*, which, in turn, should influence nomination rates. One reason is that mere exposure enhances liking (Zajonc, 1968). Another reason is that a modicum of familiarity with a candidate is necessary for a nomination to occur.

Nominators should also prefer candidates with matching *occupational interests* because of the high value people place on specialties in which they excel (Antonietti, Iafrate, & Meazza, 1995; Campbell, 1986). *Attitudinal similarity* should also yield higher rankings of intelligence (Paulhus, 1995). Although this variable overlaps somewhat with occupational interests, we noted many types of candidates (e.g., Freud, Reagan and other politicians) where a nominator might have similar occupational interests but an opposing world view. Nominators should also favour candidates of *matching sex*, partly due to similar interests and partly as an expression of solidarity with one's own sex (Swim,

Borgida, Maruyama, & Myers, 1989). Finally, overall liking may mediate all the above effects (Byrne, 1971).

To evaluate these hypotheses, we asked a large sample of student judges to rank the likelihood that they would nominate each of 50 previous nominees as good exemplars of intelligence. They were also asked to rank the 50 candidates on four other dimensions: familiarity, liking, similarity of candidate's attitudes to their own, similarity of candidate's occupational specialty to their own interests. Regression analyses were then used to evaluate the independent contribution of each variable in predicting nomination likelihood.

METHOD

A total of 245 participants from the departmental subject pool completed a questionnaire for extra credit points. The cover sheet included a question about how long they had lived in the country; Those with less than three years in Canada (or the U.S.) were excluded from the analyses. This restriction was designed to reduce anticipated variation in perceptions of intelligence due to varying cultural background.

One section of the questionnaire listed 50 nominees from one previous wave of data. They were randomly selected from the 61 individuals nominated in one wave of data reported in Study 1. Instructions asked participants to *rank the likelihood* that they would nominate (each one of) a list of previous nominees as an ideal exemplar of intelligence.

The second section of the questionnaire listed the same 50 candidates down the side with four ranking variables listed along the top: *Familiarity*, *Liking*, *Attitude Match* (similarity of nominator's attitudes to those of nominee), and *Occupation Match* (similarity of nominator's occupational interests to nominee's specialty). All variables were to be ranked on a scale ranging from "Highest score" (50) to "Lowest score" (1). The order of the two sections was counterbalanced. Because order had no effect, however, the results below are collapsed across the two orders.

RESULTS AND DISCUSSION

The rankings of likelihood of nomination as an intelligent person (henceforth labeled *nomination likelihood*) were used in two ways. First, by averaging across the 245 judges, we calculated the mean nomination likelihood for each of the 50 nominees. The mean rank of the 50 nominees resulting from this method correlated .86 with the Study 1 rank order, based on frequency of nomination. The convergence of these two methods suggests that nomination likelihood is a robust construct: Mere salience cannot be the primary explanation for nomination rates in Study 1 because immediate salience, if not current fame, is controlled in a ranking study.

TABLE 3
Correlations of Nomination Likelihood with Five Nominator Variables Across 245 Student Nominators.

	1.	2.	3.	4.	5.	6.
1. Nomination likelihood*	—					
2. Familiarity	.51	—				
3. Liking	.46	.15	—			
4. Attitude match	.34	.11	.51	—		
5. Occupation match	.29	.09	.50	.35	—	
6. Sex match	.32	.10	.46	.23	.24	—

Note. $N = 245$

* Refers to ranked likelihood of nominating each candidate as a good exemplar of intelligence.

Second, the nomination likelihood rankings were correlated with the other ranking variables across the 245 nominators to examine nominator factors. The five subjective ranking variables (nomination likelihood, familiarity, likability, attitude-match, and occupation-match) were bolstered with one other variable: match of nominee sex to nominator's sex. Nominators were assigned "1" if their sex matched that of the nominee and "0" if it did not match.

Thus, for each of the 50 nominees (e.g., Einstein), we had a 245×6 data matrix. The six ranking variables were intercorrelated across student nominators. The resulting 6×6 -correlation matrix for Einstein was then averaged with the 49 corresponding matrixes computed on other nominees. The average matrix (medians) is presented in Table 3. The five predictors were then entered into a stepwise regression predicting the sixth variable — likelihood of nomination.

Note from the zero order correlations of Table 4, that all of the predictors were significantly correlated with the criterion, even with the conservative alpha of $p < .01$. That is, our students were more likely to nominate as exemplars of intelligence those who were familiar, likable, occupationally similar, attitudinally similar, and members of their own sex. In the regression analyses, however, only familiarity and liking made substantial and independent contributions: In Table 4, their beta values exceeded .20, their significance levels exceeded .01, and their partial correlations exceeded .20.

This pattern reveals that the significant correlations for occupational similarity, attitudinal similarity, and gender similarity were undermined by familiarity and liking. To evaluate their mediational impact, familiarity and liking were entered one at a time into the equation already containing the three similarity predictors. Entering familiarity had no effect, but when liking was entered the three similarity variables were undermined to the degree that they no longer made significant contributions to prediction of nomination rates.

General Discussion

Our exploration of famous exemplars of intelligence suggests some conclusions and some directions for future research. Study 1 revealed that the relative popularity of exemplars was remarkably stable over 16 years of sampling. Thirteen individuals consistently dominated the lists of frequent nominees: Albert Einstein, the concurrent U.S. President, the concurrent Canadian and British Prime Ministers, Isaac Newton, Leonardo Da Vinci, Bill Gates, Stephen Hawking, Shakespeare, Thomas Edison, Sigmund Freud, Wolfgang Mozart, and Oprah Winfrey. With a few glaring exceptions, this group is virtually an intellectual iconography of the last quarter century of Western culture. Indeed, their prominence stretches even farther back — a majority of these names might well have appeared on comparable nomination lists from the 1920s.

As well as temporal consistency, there is evidence from other studies of consistency across diverse subgroups of North American judges. American and Canadian students and adults, for example, tend to agree on who belongs on such exemplar lists (Paulhus & Wehr, 1999). Note, however, that our compilation of exemplars is not simply a list of popular cultural icons (see Wallechinsky, Wallace, & Wallace, 1978). The latter include large numbers of sports heroes, pop musicians, and movie stars, whose fame is more ephemeral.³ The durability of intellectual icons is viewed as beneficial by those arguing that a flourishing Western culture requires a stable set of cultural referents (Hirsch, 1988). Such common referents are held to facilitate the communication of ideas and must therefore be maintained as the core body of cultural knowledge in our educational system (Bloom, 1988).

Diversity. Despite the stability across time and samples, this list of exemplars is remarkably diverse. Apart from the top 13, other nominees consistently hovering near the top — Beethoven, Suzuki, Picasso, Spielberg, Darwin, Mozart, Trump, and Madonna — further exemplify this diversity. Even spiritual leaders (Martin Luther King, Ghandi, and the Pope) accumulated substantial nominations across the 16 years of nominations. Clearly, no one area of achievement holds a monopoly on exemplars of intelligence.

The stable paragons appear to cluster in terms of subtypes of intelligence: (1) science/engineering (Einstein, Newton, Hawking, Edison, Darwin, Suzuki), verbal/creative (Shakespeare, Freud, Mozart, Picasso, Spielberg, Beethoven, Madonna), social/political (President, Canadian Prime Minister, British Prime Minister),

³ It is this group that is vulnerable to Andy Warhol's warning that "Soon everyone will be famous for 15 minutes."

TABLE 4
Regression of Nomination Likelihood on Five Nominator Variables

	Standardized	<i>t</i>	Sig.	Correlations	
	Coefficients			Zero-order	Partial
	Beta				
Familiarity	.44	9.96*	.00	.51*	.50*
Liking	.25	4.18*	.00	.46*	.23*
Attitude Match	.12	2.26	.02	.34*	.13
Occupation Match	.06	1.08	.14	.29*	.06
Sex Match	.12	2.43	.01	.32*	.14

Note. *N* = 245. The partial correlations control for all other predictors.

* *p* < .01, one-tailed

and business (Gates, Trump). This stable diversity suggests that consistent subcultures flourish within our society. And the nomination of an exemplar indirectly reflects whether one's subculture values literary, scientific, political, or business acumen.

Note that three of these categories of exemplars map onto the three categories of intelligence emerging from prototype research. When Sternberg et al. (1981) asked judges to nominate behaviours indicative of intelligence, the behaviours were shown to cluster into three subgroups: (1) problem-solving, (2) verbal fluency, and (3) social intelligence. Had Sternberg included more entrepreneurial items in his list of intelligent behaviours (e.g., "Can profit financially from every situation"), a fourth factor related to business might also have emerged.

These findings cry out for an integration of exemplar and prototype research on intelligence. The four categories of paragons should be analyzed within the same dataset as Sternberg's three-category system. The better the fit between the two systems, the clearer it is that they arise from the same cognitive structures and processes.

NATIONAL LEADERS

Among living individuals, the national leaders of the United States, Canada, and Britain dominated the nominations. For geopolitical reasons, these particular leaders are understandably prominent in the minds of Canadian citizens. More than prominence, the nomination of leaders seems to suggest a link between power and intelligence. Indeed, experimental manipulations have demonstrated that individuals placed in high-status roles are perceived as more competent (e.g., Lord, DeVader, & Alliger, 1986; Sande, Ellard, & Ross, 1986).

The running competition between nominations of U.S. Presidents and Canadian Prime Ministers, however, was particularly intriguing. In four of five waves of nominations, sitting Presidents were nominated more often than sitting Prime Ministers. Even the British Prime Minister (Thatcher) surpassed her Canadian counterpart (Turner) in 1984. Why aren't Canadians biased toward their own

leaders? The paradox, we suspect, is based on the fact that Presidents (and sometimes, British Prime Ministers) are viewed as more powerful than our Prime Ministers — even with respect to Canadian affairs. Indeed, there is previous evidence that leader power supersedes leader likability in determining attributions of intelligence (Simonton, 1985).

The exceptional case of Pierre Elliot Trudeau demonstrates that the Presidency/power heuristic can be overcome. In the 1982 data, Trudeau almost matched the nomination rate of the overall runaway leader, Albert Einstein. Note that independent evidence justifies this admiration for Trudeau's intellect. Suedfeld, Bluck, Ballard, and Baker-Brown (1990) coded the integrative complexity of all 13 Canadian Prime Ministers from archival materials. On the basis of a well-validated scoring procedure (Tetlock & Suedfeld, 1988), Pierre Trudeau scored substantially higher than any other Prime Minister on complexity of thought. In short, the intellectual quality of Trudeau's written and oral communications appears to justify his impressive rate of nominations as an ideal exemplar of intelligence. Apparently, nomination rates are not entirely unresponsive to valid information.

The fact that his nominations declined after he left office might suggest that salience can override validity. Nonetheless, Trudeau, unlike any other leader, continued to receive nominations as an exemplar of intelligence many years after his resignation as leader in 1984. Although not evident from the tabled data, Trudeau received at least 2 percent of the nominations in all of the Canadian polls. In 1989, he was still in the top 15 of the Canadian adult sample.⁴ This longevity is particularly impressive in light of Trudeau's relatively low public profile since his retirement. Given that a drop in power coincides with a Prime Minister's loss of prominence, however, this finding is still consistent with our view that

⁴ Trudeau's name does not appear on that list because, for simplicity, we had included only the sitting leaders.

perceived power supersedes fame.

Clearly, there is an intriguing connection between leadership and perceptions of intelligence. Future research should assess objective qualities of various attributes of nominees (e.g., power, salience) to determine why some nominees draw more nominations than others (see Paulhus & Wehr, 1999).

NOMINATOR FACTORS

Our data also provided some insight into the nomination process itself. Despite the diversity of nominations, the attributional factors driving nominations appear to reduce to a few basic social psychological mechanisms.

The types of exemplars selected in Study 1 led us to speculate that familiar, similar, and likable individuals were being chosen. Therefore, in Study 2, we had judges rank a fixed set of exemplars on a variety of ranking variables including the likelihood they would nominate this person. Five such variables were then used to predict the likelihood of nomination.

For the most part, Study 2 confirmed our predictions: Judges who said they were likely to nominate a candidate also rated that candidate as familiar, similar, and likable. Familiarity was the strongest predictor, at least partly because judges were unlikely to nominate candidates with whom they were not familiar. The fact that similar exemplar rankings emerged from nomination rates (Study 1) and nomination likelihood rankings (Study 2) is important because salience, but not familiarity, is controlled in the ranking data (Tversky & Kahneman, 1974). Because the list of candidates is fixed, the likelihood nomination rankings cannot simply index the publicity levels of salient celebrities.

All three types of familiarity effects — similarity of attitudes, occupations, and sex — showed significant associations with likelihood of nomination. None of the similarity effects held up in the regression analyses, however, because their contributions overlapped substantially with that of liking. The most obvious interpretation is that liking fully mediated the observed associations between similarity and likelihood of nomination. The implied causal sequence is that similarity begets liking, which then begets perceptions of intelligence.⁵

This pattern of correlations illustrates the familiar halo effect in attributions of intelligence. Although competence and likability are uncorrelated in the real world (e.g., Paulhus & John, 1998; Rosenberg & Sedlak, 1972),

⁵ A competing, though less compelling, interpretation is that similarity mediates the link between liking and perceived intelligence. Unspecified prior variables induce liking, which then induces perceptions of similarity. A global sense of similarity to a target then induces a perception that the target is also intelligent.

perceivers tend to attribute intelligence to those they like. The impact of such bias has been demonstrated in organizational leadership (Rush & Russell, 1988) and the political realm (McCaul, Ployhart, Hinsz, & McCaul, 1995; Tetlock, 1986). Of particular relevance is our recent work on political halo (Paulhus, 1995). In the latter report, conservative judges rated famous conservative individuals (relative to famous liberals) as being more intelligent, more friendly, more physically attractive, taller, and even kinder to animals. Liberals, in turn, showed the reverse pattern of bias. Consistent with Tetlock (1986), the conservatives exhibited a noticeably stronger halo.

Recently, Dunning and his colleagues have demonstrated that people tend to define intelligence in a self-serving fashion (e.g., Dunning & Cohen, 1992). Simply put, judges prefer a definition of intelligence that applies to themselves. We suspect that a parallel attribution bias explains the impact of likability on attributions of intelligence. That is, people will define intelligence in such a way as to maintain the belief that the people they like are intelligent.

PROTOTYPE VS. EXEMPLAR MODELS

Since the 1980s, theories of person representation have diverged into prototype and exemplar models (for a review, see Fiske & Taylor, 1991). Our methodology is clearly more consistent with the exemplar approach (e.g., Smith & Zarate, 1992). According to exemplar theory, our nominators had ready access to a set of exemplars associated with the trait "intelligent": When asked for a nomination, they reviewed and selected the best of the set or, at least, one that sufficed.

It is important to acknowledge that our results can also be explained in terms of prototype theory (e.g., Broughton, 1984, 1990; Fehr, 1988, 1994; Neisser, 1979; Sternberg, 1985) — albeit with a different notion of the search process. Judges asked to nominate an intelligent person would hold their prototype in working memory while searching lists of salient persons to find a sufficient match. The observed impact and independence of familiarity and liking as predictors suggests that those two variables represent independent evaluation mechanisms.

Other data from our laboratory, however, suggest an important difference in the constructs of "intelligence" that emerge from exemplar and prototype approaches (Paulhus, 1999). Some evidence of personal achievement (e.g., "discovered DNA") seems to be the major feature emerging from the exemplar approach, although it plays a minimal role in data collected with prototype methods. Any such case where the two approaches yield different conceptions of an important psychological construct is notable. It justifies our present efforts to explore popular

exemplars as well as future research attempting to replicate findings obtained with the prototype approach.

Paulhus and Wehr (1999) found that most (69 percent) but not all nominations were famous individuals (the others were family members, friends, etc). The important methodological restriction in the present studies was to famous individuals. Only the 69 percent, then, are potentially part of culturally shared cognition (see Thompson, 1999). Even then, the distinctive exemplars matching the four cultural subcategories provide a limited degree of shared icons. Cognition at the individual level will be most affected by the individual's subset of exemplars, although a strong set of exemplars shared by a significant proportion of the population is also likely to have an indirect effect.

Conclusions and Recommendations

The present research represents a preliminary foray into the study of implicit theories of intelligence from an exemplar perspective. Two purposes have been served: (1) we have documented the most popular exemplars for future normative purposes, and (2) we have explored the idiosyncratic operation of the nomination process. Our data show promise that exemplar research will contribute to our understanding of implicit theories of intelligence, that is, the mental representation of concepts related to intelligence. To a lesser extent, exemplar data may also have implications for representational models in general. For the most part, they replicate the results obtained with a prototype approach. Such a convergence was not a given — the two approaches sometimes diverge (Paulhus, 1999; Smith & Zarate, 1992). Future comparison of the two models can only be effected if future research goes beyond intelligence to the study of other constructs (e.g., extraversion, love, commitment). Also required is an extension of research to everyday exemplars (e.g., acquaintances, friends, and family members) as opposed to the famous exemplars studied here.

Ultimately, we look forward to an elucidation of the relation between nominations and their cognitive representations. It seems naïve to accept the nominated exemplars at face value, that is, whatever process underlies a nomination, the final product constitutes an efficient summary of the nominator's implicit theory of intelligence. Issues of impression management and time availability no doubt alter the emerging pattern of exemplars. To the extent that automatic vs. controlled processes are involved, entirely different exemplars may emerge. We hope that this report will inspire others to tackle these issues.

We would like to thank Nadine Bruce, David Lim, Kathy Morgan, Gordon Murphy, Doug Reid, Bethany Teachman, and Paul Wehr for assistance in collecting and

compiling the data. This research was supported by a grant from the Social Science and Humanities Research Council of Canada.

Correspondence should be addressed to Del Paulhus, Department of Psychology, University of British Columbia, Vancouver, British Columbia V6T 1Z4, Canada (E-mail: dpaulhus@cortex.psych.ubc.ca).

References

- Antonietti, A., Iafrate, R., & Meazza, F. (1995). The "intelligent student" as perceived by undergraduates with different majors. *Studia Psychologica*, 37, 37-46.
- Bloom, A. (1988). *The closing of the American mind*. New York: Simon & Schuster.
- Broughton, R. (1984). A prototype strategy for construction of personality scales. *Journal of Personality and Social Psychology*, 47, 1334-1346.
- Broughton, R. (1990). The prototype concept in personality assessment. *Canadian Psychology*, 31, 26-37.
- Byrne, D. (1971). *The attraction paradigm*. New York: Academic Press.
- Campbell, J.D. (1986). Similarity and uniqueness: The effects of attribute type, relevance, and individual differences in self-esteem and depression. *Journal of Personality and Social Psychology*, 50, 281-294.
- Dunning, D., & Cohen, G.L. (1992). Egocentric definitions of traits and abilities in social judgment. *Journal of Personality and Social Psychology*, 63, 341-355.
- Fehr, B.A. (1988). Prototype analysis of the concepts of love and commitment. *Journal of Personality and Social Psychology*, 55, 557-579.
- Fehr, B.A. (1994). Prototype-based assessment of laypeople's views of love. *Personal-Relationships*, 1, 309-331.
- Fiske, S.T., & Taylor, S.E. (1991). *Social cognition* (2nd ed.). New York: McGraw-Hill.
- Fitzgerald, J.M., & Mellor, S. (1988). How do people think about intelligence? *Multivariate Behavioral Research*, 23, 143-157.
- Hamilton, D., & Sherman, J.W. (1994). Stereotypes. In R.S. Wyer & T.K. Srull (Eds.), *Handbook of social cognition* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Hirsch, E.D. (1988). *Cultural literacy*. New York: Vintage Press.
- Jackson, D.N. (1984). *Multidimensional Assessment Battery*. London, ON: Research Psychologists Press.
- Kenny, D.A. (1994). *Interpersonal perception*. New York: Guilford.
- Kosmitzki, C., & John, O.P. (1993). The implicit use of explicit conceptions of social intelligence. *Personality and Individual Differences*, 15, 11-23.
- Landolt, M., & Paulhus, D.L. (1994). *Implicit theories of intelligence: The role of specific achievement*. Presented at

- the meeting of the Canadian Psychological Association, Penticton, British Columbia.
- Lord, R.G., DeVader, C.L., & Alliger, G.M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions. *Journal of Applied Psychology, 71*, 402-410.
- McCaul, K.D., Ployhart, R.E., Hinsz, V.B., & McCaul, H.S. (1995). Appraisals of a consistent vs. a similar politician: Voter preferences and intuitive judgments. *Journal of Personality and Social Psychology, 68*, 292-299.
- McKelvie, S.J. (1994). Validity and reliability findings for an experimental short form of the Wonderlic Personnel Test in an academic setting. *Psychological Reports, 75*, 907-910.
- Neisser, U. (1979). The concept of intelligence. In R.J. Sternberg & D.K. Detterman (Eds.), *Human intelligence: Perspectives on its theory and measurement* (pp.179-189). Norwood, NJ: Ablex.
- Nosofsky, R.M. (1984). Choice, similarity, and the context theory of classification. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 10*, 104-114.
- Paulhus, D.L. (1995). *Political halo: Its breadth and scope*. Unpublished manuscript, University of British Columbia.
- Paulhus, D.L. (1999). Nominations of intelligent exemplars: Relative contributions of prototype match and target achievement. Under review at *Social Cognition*.
- Paulhus, D. L., & John, O. P. (1998). Egoistic and moralistic bias in self-perception: The interplay of self-deceptive styles with basic traits and motives. *Journal of Personality, 66*, 1025-1060.
- Paulhus, D.L., Lysy, D.C., & Yik, M.S.M. (1998). Self-report measures of intelligence: Are they useful as proxy IQ tests? *Journal of Personality, 66*, 525-554.
- Paulhus, D.L., & Morgan, K.L. (1997). Perceptions of intelligence in leaderless groups: The dynamic effects of shyness and acquaintance. *Journal of Personality and Social Psychology, 72*, 581-591.
- Paulhus, D. L., & Reynolds, S. R. (1995). Enhancing target variance in personality impressions: Highlighting the person in person perception. *Journal of Personality and Social Psychology, 69*, 1233-1242.
- Paulhus, D.L., & Wehr, P. (1999). An exemplar approach to implicit theories of intelligence. Unpublished manuscript.
- Raty, H., & Snellman, L. (1997). Children's images of an intelligent person. *Journal of Social Behavior and Personality, 12*, 773-784.
- Rosenberg, S., & Sedlak, A. (1972). Structural representations of perceived personality trait relationships. In A.K. Romney, R.N. Shepard, & S.B. Nerlove (Eds.), *Multidimensional scaling* (pp.134-162). New York: Seminar Press.
- Ruisel, I. (1996). Implicit theories of intelligence in adolescents. *Studia Psychologica, 38*, 23-34.
- Rush, M.C., & Russell, J.E.A. (1988). Leader prototypes and prototype-contingent consensus in leader behavior descriptions. *Journal of Experimental Social Psychology, 24*, 88-104.
- Sande, G.N., Ellard, J.H., & Ross, M. (1986). Effect of arbitrarily assigned status labels on self-perception and social-perceptions: The mere position effect. *Journal of Personality and Social Psychology, 50*, 684-689.
- Simonton, D.K. (1985). Intelligence and personal influence in groups: Four non-linear models. *Psychological Review, 92*, 532-547.
- Smith, E. R., & Zarate, M. A. (1992). Exemplar-based model of social judgment. *Psychological Review, 99*, 3-21.
- Sternberg, R.J. (1985). Implicit theories of intelligence, creativity, and wisdom. *Journal of Personality and Social Psychology, 49*, 607-627.
- Sternberg, R.J. (1988). *The triarchic mind: A new theory of human intelligence*. New York: Penguin Books.
- Sternberg, R.J., Conway, B.E., Ketrion, J.L., & Bernstein, M. (1981). People's conceptions of intelligence. *Journal of Personality and Social Psychology, 41*, 37-55.
- Suedfeld, P., Bluck, S., Ballard, E.J., & Baker-Brown, G. (1990). Canadian federal elections: Motive profiles and integrative complexity in political speeches and popular media. *Canadian Journal of Behavioural Science, 22*, 26-36.
- Swim, J., Borgida, E., Maruyama, G., & Myers, D. G. (1989). Joan McKay versus John McKay: Do gender stereotypes bias evaluations? *Psychological Bulletin, 105*, 409-429.
- Tetlock, P.E. (1986). A value pluralism model of ideological explanation. *Journal of Personality and Social Psychology, 50*, 819-827.
- Tetlock, P.E., & Suedfeld, P. (1988). Integrative complexity coding of verbal behavior. In C. Antaki (Ed.), *Lay explanation*. Beverly Hills, CA: Sage.
- Thompson, L. (1999). Socially shared cognition, affect, and behavior: A review and integration. *Personality and Social Psychology Review, 3*, 278-302.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*, 1124-1131.
- Vernon, P.A. (1989). The generality of g. *Personality and Individual Differences, 10*, 803-804.
- Vernon, P.A., & Jang, K.L. (1993). Self-rated vs. "actual" personality similarity in monozygotic and dizygotic twins and non-twin siblings. *Personality and Individual Differences, 15*, 219-220.
- Wallechinsky, D., Wallace, I., & Wallace, A. (1978). *The book of lists*. New York: Bantam.
- Zajonc, R. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, Monograph Supplement No.2, Part 2*.

Zuroff, D.C. (1989). Judgments of frequency of social stimuli: How schematic is person memory? *Journal of Personality and Social Psychology*, 56, 890-898.

Received December 9, 1999

Revised March 23, 2000

Accepted April 4, 2000