

Relationship between leadership strengths and imposter phenomenon in pharmacy professionals and students

Jaclyn D. Cole, PharmD, BCPS¹; Anthony DeClue, PharmD, BCACP²; Jordan Marie Ballou, PharmD, BCACP³; Kristy Brittain, PharmD, BCPS, CDCES²; Melissa J. Ruble, PharmD, BCPS¹; Caroline Sasser, PharmD⁴; Caroline L. Ko, PharmD, BCCCP⁵; Melissa Noble, PharmD, BCCCP¹; Brandon T. Jennings, PharmD, BCACP⁶

¹University of South Florida Taneja College of Pharmacy, Tampa, FL

²Medical University of South Carolina College of Pharmacy, Charleston, SC

³University of South Carolina College of Pharmacy, Columbia, SC

⁴University of North Carolina Eshelman School of Pharmacy, Chapel Hill, NC

⁵University of the Pacific Thomas J. Long School of Pharmacy, Stockton, CA

⁶Phi Lambda Sigma Pharmacy Leadership Society. Uniontown, PA

Abstract

Objective: To identify trends between leadership strengths and the prevalence of imposter phenomenon (IP), with a secondary focus on growth mindset.

Methods: An anonymous electronic survey invitation was shared through email and social media accounts, targeting pharmacists and pharmacy students who had completed the GiANT Worldwide 5 Voices Assessment utilized by the Phi Lambda Sigma Leadership Society for leadership development. Survey content included leadership voice order, Clance Imposter Phenomenon (CIP) scale, and Implicit Theories of Intelligence Scale (ITIS). Responses were analyzed through both descriptive and inferential statistics.

Results: Twenty-five respondents were included in the final analysis: P3 students (n=4), P4 students (n=6), PGY-1 residents (n=4), PGY-2 residents (n=1), practicing pharmacists (n=4), pharmacy faculty members (n=3), and did not disclose (n=3). Primary voices included 9 Nurturers (36%), 7 Pioneers (28%), 3 Connectors (12%), 3 Creatives (12%), and 3 Guardians (12%). Pioneers (CIP mean=67.43) and Nurturers (CIP mean=66) reported high IP, while Connectors had the least IP prevalence at a moderate level (CIP mean=50.33). Growth mindset was more prevalent in Pioneers and Connectors, while Nurturers more commonly reported a fixed mindset.

Conclusion: These findings suggest that the prevalence of IP cannot be assumed based on the volume or perspective (future vs. present orientation) of individual leadership strengths. The prevalence of IP did not appear to correlate with reported growth mindset.

Keywords: pharmacy, leadership strengths, imposter syndrome, growth mindset

Background

Imposter phenomenon (IP), first described by Clance and Imes in 1978, refers to the situation wherein a qualified individual may incorrectly feel as though they do not have the knowledge or skills to perform adequately in a position, and thus may experience anxiety or fear that they will eventually be discovered as a fraud.¹ An individual may also experience IP when they feel they have been over-rewarded for what they perceive is appropriate based on their abilities. This leads to the feeling that an accomplishment or opportunity is a mistake.²

IP can result in negative consequences for individuals, and has the potential to impact employers, universities, and institutions. Compared to those without IP, individuals with IP can experience higher rates of generalized anxiety, a lack of self-confidence, depression, and frustration.^{1,3,4} Maladaptive behavior that can develop in response to IP has also been suggested to lead to burnout.⁵ It has been suggested that maladaptive behaviors can lead to some leadership performance benefits, as well as consequences of emotional exhaustion and decreased motivation to lead.⁶

While early literature described a high prevalence of IP in high-achieving women,¹ more recent research has demonstrated high prevalence of IP in college students, pharmacy learners, and working professionals, regardless of gender.^{4,7-9} Though career transitions or learner statuses may make individuals more likely to experience IP, it is also prevalent across career stages. For example, 20% of working Dutch professionals experienced IP across the career stages, with a slightly higher prevalence in new employees (27%).¹⁰ Studies have also found that IP is experienced by racially and ethnically minoritized individuals and those at the intersection of multiple oppressed identities (e.g., gender and race).¹¹ This may be explained

Corresponding Author:

Jordan Marie Ballou
University of South Carolina College of Pharmacy
715 Sumter St
Columbia, SC 29208
jballou@sc.edu
(803) 544-0034

partially by lack of representation in specific fields or leadership roles. In fields dominated by men, for example, women may experience higher rates of IP.

There is little research on the relationship between IP and leadership. Generally, the data suggest that IP may result in less effective leadership styles. Engineering students in Spain with high levels of IP tended to exhibit more passive (e.g., addressing problems only when they become severe, or not making decisions) and transactional (e.g., monitoring and controlling followers, focusing on short-term goals) leadership behaviors. A narrative review of IP in physicians found twelve studies describing the consequences of IP.¹² These articles identified several consequences that directly impact leadership, including rejection of positive feedback, communication difficulties, and failure to seek help.¹²⁻¹⁴ Conversely, individuals demonstrating less IP tended to display more transformational leadership, which involves innovation, vision and goal setting, and leadership development among followers.¹⁵ While it has been suggested that those in formal leadership roles may be more vulnerable to IP, one study in American physicians found that those in leadership positions had lower rates of IP compared to non-leaders; those in the leadership group, however, were older, and more likely to be male and US-citizens.¹⁶ The characteristics of this population may limit generalizability of these results and poorly translate to younger populations like healthcare learners.

Some strategies have been suggested to help mitigate the effects of IP, including leveraging the mentor relationship, keeping a positive mindset, celebrating wins, and organizing a plan for success.^{5,17} But there is little evidence available to guide those in the healthcare profession, including pharmacy personnel and learners, to methods that can help them manage IP. Within the field of pharmacy, leader development efforts by the Phi Lambda Sigma Pharmacy Leadership Society (PLS) may address IP and its untoward effects.¹⁸

The presence or absence of a growth mindset may impact IP. Individuals with a growth mindset believe that their intelligence or skillset can change over time, while those of a fixed mindset believe that these are unchanging throughout life.¹⁹ Having a fixed mindset has been shown to impede growth in school and work, increase mental health symptoms, and report lower scores for psychological wellbeing.²⁰ These challenges appear to stem from an initial fear of failure, followed by acceptance that failure is a fixed characteristic.^{20,21} A survey of pharmacy students reported a correlation between a fixed mindset, measured by the Implicit Theories of Intelligence Scale (ITIS), and higher rates of IP.⁸ The study, conducted with more than 250 pharmacy students at one US-based school, found that nearly 70% of students reported “frequent or intense IP experiences” and found a negative correlation between CIPS and ITIS scores. Supporting development of a growth mindset has been suggested in the literature as a way to combat IP.^{22,23} Leaders with a growth

mindset may be more likely to proactively approach challenges, take advantage of and provide feedback, and seek to accomplish goals.²⁴ Unfortunately, there is a paucity of literature investigating leadership styles and growth mindset. Leaders in whom a growth mindset comes naturally may identify as problem solvers or future-oriented, like the “Pioneer” personality type taught in PLS leader development efforts.

PLS is an international organization focused on the celebration and development of leadership within pharmacy. For the past nine years, PLS has used the GiANT Worldwide leadership tools in various formats and from the international to individual college level.²⁵ The main focus of this training has revolved around the 5 Voices tool, which assists with identification of leadership strengths. As previously described, participants take a 5 Voices assessment and receive a report that ranks their five voices in order of ease of accessibility.²⁶ A brief description for each of the 5 Voices can be found in Table 1.

Table 1: GiANT 5 Voices Descriptions

Voice	Strengths	Challenges
Pioneer	Logical Future-oriented Champions strategic vision, results, and problem solving	Powerful presence can be viewed as arrogant and self-promoting
Connector	Feelings-based Future-oriented Values relational networks, internal collaboration, and effective communication	Have the potential to interpret the challenge of their ideas as personal
Guardian	Logical Present-oriented Champions due diligence and processes Ask the difficult questions to ensure that a plan is viable	Can be viewed as uncaring because of the belief that truth is more important than feelings
Creative	May be either logical- or feelings-based Future-oriented Loves problem solving and has an “anything is possible” attitude	Can struggle to clearly share thoughts and plans with others, leading to frustration with the team

Nurturer	Feelings-based Present-oriented Enjoy celebrating others Intuitively know how others will feel about new information	Can struggle to speak up when trying to provide challenge to others due to their desire to promote relational harmony
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PLS delivers 5 Voices content through a Leader Academy program, in which participants meet in small groups to learn and apply leadership tools, while hearing about others' challenges and about opportunities for application of their accessible voices' strengths to problem solve. By learning tools and sharing challenges in a small-group setting, participants grow their self-awareness and emotional intelligence.²⁷ However, the prevalence of IP among various leadership styles, such as the 5 Voices, is not currently known.

As IP and growth mindset each have great impact on leaders, and therefore on the teams and efforts they lead, it is important to understand which leadership qualities can be developed in order to mitigate IP and promote growth mindset. The purpose of this exploratory evaluation pilot was to identify relationships between leadership strengths and imposter phenomenon, with a secondary focus on growth mindset.

Methods

This study was approved as exempt by the University of South Florida Institutional Review Board. The target population consisted of pharmacists, pharmacy students, and PLS faculty advisors who have completed the GiANT 5 Voices assessment tool to identify their voice order. Exclusion criteria included those under 18 years of age and those who did not complete the core survey content on leadership voice order or the Clance Imposter Phenomenon Scale (CIPS).

An optional, anonymous online survey was developed via Qualtrics (Provo, UT). The survey was disseminated to PLS Student Chapter Presidents, graduates of PLS Leader Academy programs, the PLS newsletter emailed to membership, and through social media (LinkedIn, Instagram). The survey included demographic information along with questions through which participants reported their GiANT 5 Voices voice order, how they have engaged in GiANT content in the past, and their perceived growth after completing training with GiANT. Participants were also asked to complete the CIPS to assess for frequency of IP, and the ITIS regarding growth mindset.

The CIPS contains 20 questions to assess presence and frequency of IP. Respondents rated agreeability to each question on a 5-point Likert scale, with 1 = not at all true and 5 = very true. Total responses are summed for a final score, with a higher score indicating greater IP frequency. IP experiences

are categorized as few (≤ 40), moderate (41–60), high (61–80), and severe (>80).²⁸

The ITIS requires participants to select their level of agreement to eight statements on a 5-point scale, from 1 — strongly agree to 5 — strongly disagree). Half of the statements assess fixed mindset (Q1, 2, 3, and 7) and half assess growth mindset (Q4, 5, 6, and 8). Higher points are awarded for strong disagreement to fixed and strong agreement to growth-based questions, with final scores averaged. A lower average score (i.e., less than 3) indicates a fixed mindset, while a higher average score (i.e., greater than 4) suggests a growth mindset. A borderline mindset is indicated by average scores between 3 and 4.²⁹

Data collection took place between September 1 and October 1, 2023, with weekly reminders. Survey responses were analyzed through both descriptive and inferential statistics.

Results

There were 54 survey attempts, with 29 excluded due to declining to participate and/or lack of responses for CIPS questions, resulting in a final inclusion population of 25. Baseline demographic data for participants are collected and presented in Table 2 on page 8. Participant Voices and leadership training experiences are summarized in Table 3 on page 10.

Additional information was gathered to assess respondent experience with and perceived impact of PLS GiANT leadership training on 5 Voices. Respondents reported training through the PLS longitudinal cohort training ($n=17$, 68%), PLS single workshop exposure ($n=12$, 48%), local/university programs ($n=9$, 36%), outside of PLS ($n=5$, 20%), and other undefined ($n=1$, 4%). Thirteen respondents (52%) reported two or more types of 5 Voices training. Responses were separated into primary voice order for final analysis of primary and secondary outcomes. Pioneer voices reported the largest range and highest average for CIPS (range 51–94, mean 67.43, SD 13.9), followed by Nurturers (range 45–81, mean 66, SD 12.4) and Creatives (range 48–71, mean 59.67, SD 11.5). Scores evaluated for frequency of IP indicated that Connectors had the least frequent IP (moderate), while Nurturers and Pioneers reported the most frequent IP (Table 4). The ITIS scores suggest that Pioneers and Creatives reported the most frequent growth mindset, while Nurturers more commonly reported a fixed mindset (Table 5 on page 11.). The Guardian and Connector voices had more variable categorizations regarding mindset.

Table 4. Imposter Syndrome (IP) Experiences

Primary Leadership Voice	IP Experiences			
	Few (≤40)	Moderate (41–60)	High (61–80)	Severe (>80)
Connector (n=3)	0	3 (100%)	0	0
Creative (n=3)	0	2 (67%)	1 (33%)	0
Guardian (n=3)	0	2 (67%)	1 (33%)	0
Nurturer (n=9)	0	3 (33.3%)	4 (44.4%)	2 (22.2%)
Pioneer (n=7)	0	3 (42.9%)	3 (42.9%)	1 (14.3%)

Most participants (n=19, 76%) agreed or strongly agreed with the assertion that training increased awareness of the likelihood of self-doubt pertaining to accomplishments and/or work. Few participants (n=2, 8%) disagreed, while four participants (10%) did not respond. Similarly, the majority of participants (n=20, 80%) agreed or strongly agreed that PLS GiANT training allowed for better self-appreciation of their accomplishments and/or work. One participant (4%) disagreed, while four participants (16%) did not answer. Regarding the ability of PLS Giant training to impact self-identified beliefs that hold participants back, 19 participants (76%) agreed or strongly agreed with the training's ability to do so. Two participants (8%) demonstrated neutrality and no participants disagreed, while four participants (16%) did not respond to this prompt.

Discussion

The study aimed to explore the relationship between the leadership voice of PLS Leader Academy participants and the incidence of IP, with a secondary outcome focusing on the reported prevalence of growth mindset delineated by leadership voice. Overall, 48% of the respondents reported either high (61–80) or severe (>80) IP. High IP scores are associated with negative well-being outcomes, including anxiety, depression, and low self-esteem.³⁰

A notable majority of the respondents (60%) were either students or new practitioners. This demographic detail is significant and, given prior evidence of high IP found in other learner populations, may have impacted the reports of IP found in this study.^{4,7–9} Mentors of learners and early career pharmacists should be encouraged to discuss IP with their mentees. It has been suggested that mentors of pharmacy learners may help to mitigate the effects of IP by bringing

awareness of the concept, and sharing how they overcame struggles or failures to model the process of navigating through barriers. These discussions would serve the mentee in two ways: learning strategies to overcome challenges and learning that even successful professionals experience setbacks.⁵ There are a myriad of articles and blogs that describe strategies individuals may use to overcome IP, including keeping a positive mindset, celebrating wins, and organizing a plan for success.¹⁷ Additionally, organizations can consider targeting mentees when advertising leadership development resources.

A further noteworthy aspect of the demographic data is the age range of the participants, with the majority falling between 20–29 years. This finding could support the assumption that people of younger ages are less likely to have self-awareness and therefore could be considered less mature in their leadership voices. As this study did not assess IP by gender or career stage, we are unable to determine if these results align with other literature about these subgroups. Regardless, our recommendation to target learners and early career pharmacists with IP-related intervention is also supported by our study population age demographic.

Delving into the specific leadership voices, the study revealed that individuals with Pioneer and Nurturer leadership styles exhibited the most frequent rates of high to severe IP. Pioneers, characterized as powerful communicators and visionaries, show a tendency toward results-focused approaches and sometimes a lack of sensitivity.²⁵ This trait, coupled with their inclination towards a “winning” mentality, may contribute to higher levels of IP, especially among less experienced Pioneers who may come across as arrogant or overly eager to prove themselves. The need for constant high-level performance, along with the expectation to always display leadership and confidence, may exacerbate feelings of being an imposter. Organizations and supervisors should be aware of this and encourage participation in leadership training for all personality types, including Pioneers.

The reportedly high level of IP among Nurturers aligns with their tendencies to resist change and undervalue their contributions.²⁵ As pragmatic realists who strive for thoroughness in idea execution, Nurturers may feel like imposters when time constraints or incomplete information hinder their ability to fully prepare or contribute, reinforcing the central tenets of IP. This group may be more likely to practice maladaptive behaviors to self-manage IP and may therefore be at higher risk of burnout. Supervisors and mentors should be sensitive to this potential, frequently assessing and addressing these tendencies in Nurturers.

The study also investigated mindset orientations through the ITIS, revealing that Pioneers and Creatives typically aligned with a growth mindset, whereas Nurturers more often exhibited a fixed mindset. This finding was expected, given

that Pioneers and Creatives are future-oriented, embracing challenges and innovation, which are hallmarks of a growth mindset.²⁵ Nurturers, on the other hand, being more present-oriented and resistant to change, align with the characteristics of a fixed mindset.²⁵

These findings may have notable implications for leadership development, emphasizing the need for tailored support and training based on individual leadership voices and their propensity towards IP. Additionally, the study highlights the potential benefits of interventions encouraging a shift from a fixed to a growth mindset, especially in Nurturers. The broader application of these findings across professional and educational settings could inform strategies to foster more effective and confident leaders, accommodating diverse leadership voices and their associated challenges.

There are limitations of this study that should be noted, including the fact that this was a new survey tool not previously piloted. Despite efforts to disseminate the survey through different channels as well as the use of weekly reminders, the number of respondents was limited, and it was not possible to calculate a response rate. Additionally, many of those who did respond to the survey did not fully complete the CIPS questions; therefore, they were not able to be included in the study. This small sample size limited the ability to perform statistical analysis on the data, preventing a more robust interpretation of the findings. Many participants did not respond to all questions within the demographic section of the survey, a degree of nonresponse that may impact the generalizability of study findings. Significant diversity was noted among the survey respondents in terms of professional status and age, which could potentially confound the interpretation of the results as it would be anticipated that the occurrence of IP and growth mindset may shift throughout the course of an individual's career. In addition, the racial and ethnic demographics of the study population are not representative of U.S. student pharmacist demographics and would thus limit generalizability of the results.

Although the 5 Voices Assessment is not a validated tool at this time, it has been utilized in leadership training worldwide, including in the area of pharmacy.^{26,27} The breakdown of percentage of respondents for each of the primary leadership voices does not match the estimated proportion of the general population that identifies with each of the primary voices, which may introduce selection bias. For example, 28% of study respondents noted "Pioneer" as their primary voice, but it is estimated that only 7% of the general population is represented by this voice.²⁵ Although information was collected regarding the participant's secondary voice, this information was not evaluated in relation to the occurrence of IP and growth mindset. The combination of the primary and secondary voice may offer more robust insight into an individual's natural tendencies and preferences. It is also important to note that all individuals included in this study

have completed GiANT leadership training, which may have resulted in volunteer bias to a population not necessarily reflective of the entire pharmacy profession. The marketing and administration of this study by the PLS organization may have also affected the demographics of participants.

Future studies with a larger sample size are warranted to confirm the findings from this exploratory study. It would also be impactful to analyze cohorts based on their career stage to determine if progression through their pharmacy careers impacts Leadership voice order, frequency of IP, or prevalence of growth mindset. Investigation as to whether an individual's level of engagement with the GiANT training programs impacts the occurrence of IP would be helpful to evaluate if participation in this program could serve as a tool to help mitigate the impacts of IP. Additionally, future studies evaluating the impact of both the primary and secondary voices would provide more insight into the relationship between individual leadership voices and the occurrence of IP and growth mindset.

Conclusion

Imposter phenomenon is a challenge among leaders, professionals, and learners. A better understanding of how IP shows up within individual leadership voices can be helpful in shaping future leadership development, particularly for programs using GiANT 5 Voices. This study's preliminary findings indicate that the prevalence of IP may not be assumed based on the volume or perspective (future versus present orientation) of individual leadership strengths. Additionally, there appears to be no clear predicted association between reported IP and growth mindset, although these findings are based on a limited sample size and require further investigation. Leadership development and training can be beneficial at increasing self-awareness around IP and mindset. Future studies are needed to evaluate and validate IP and mindset and their correlation to leadership strengths and tendencies.

Conflict of Interest Statement: Some authors (AD, BJ, JC) receive financial compensation for leadership programming as certified GiANT Facilitators.

CRedit Statements:

Cole - Conceptualization, Methodology, Software, Validation, Formal Analysis, Resources, Data Curation, Writing-Review & Editing, Visualization, Supervision, Project Administration

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Ballou - Conceptualization, Methodology, Investigation, Resources, Writing-Original Draft, Writing-Review & Editing, Visualization, Supervision

Brittain - Conceptualization, Methodology, Resources, Writing-Original Draft, Writing-Review & Editing

Ruble - Conceptualization, Methodology, Resources, Writing-Original Draft, Writing-Review & Editing

Sasser - Conceptualization, Methodology, Resources, Writing-Original Draft, Writing-Review & Editing

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Noble - Conceptualization, Resources, Writing-Original Draft, Writing-Review & Editing

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Table 2. Survey Respondent Demographics

Professional Status - No. (%)	No. (%)
Third Year (P3) Student Pharmacist	4 (16)
Fourth Year (P4) Student Pharmacist	6 (24)
First Year Postgraduate (PGY1) Pharmacist	4 (16)
Second Year Postgraduate (PGY2) Pharmacist	1 (4)
Pharmacy Faculty Member	3 (12)
Practicing Pharmacist	4 (16)
Nonresponse	3 (12)
Age Range	
20–24 years old	3 (12)
25–29 years old	10 (40)
30–39 years old	6 (24)
40–49 years old	2 (8)
50 or more years old	1 (4)
Nonresponse	3 (12)
Gender Identity	
Cisgender (Man)	1 (4)
Cisgender (Woman)	7 (28)
Cisgender (Unspecified)	2 (8)
Man	2 (8)
Woman	10 (40)
Nonresponse	3 (12)
Racial and/or Ethnic Identity	
Asian and/or Asian American	3 (12)
Latinx, Hispanic, and/or Spanish Origin	1 (4)
White and/or European American	17 (68)
White and/or European American (Iranian Specified)	1 (4)
Nonresponse	3 (12)

First-Generation College Student	
No	15 (60)
Yes	7 (28)
Nonresponse	3 (12)
Socioeconomic Status (current)	
Lower Class	1 (4)
Middle Class	12 (48)
Upper-Middle Class	5 (20)
Working Class	4 (16)
Nonresponse	3 (12)
Relationship Status (Partner or Spouse)	
No	9 (36)
Yes	11 (44)
Nonresponse	5 (20)
Parental Status (Children - birthed, fostered, and/or adopted)	
No	7 (28)
Yes	3 (12)
Nonresponse	15 (60)

Table 3. Participant Leadership Voices and Training Experiences

Primary Leadership Voice	
Connector	3 (12)
Creative	3 (12)
Creative-Connector	2 (67 % of Primary Voice Creative)
Creative-Pioneer	1 (33% of Primary Voice Creative)
Guardian	3 (12)
Nurturer	9 (36)
Pioneer	7 (28)
Secondary Leadership Voice	
Connector	10 (40)
Creative	6 (24)
Guardian	5 (20)
Nurturer	3 (12)
Pioneer	1 (4)
GiANT 5 Voices training programs participated in (multiple responses permitted)	
GiANT Leader Training through a chapter PLS program (local/university)	9 (36)
GiANT Training Outside of PLS	5 (20)
PLS GiANT Leader Academy (international/national cohort)	13 (52)
PLS GiANT Workshop (5 Voices, international/national webinar)	12 (48)
Other (specified as "original")	1 (4)

*PLS: Phi Lambda Sigma

Table 5. Implicit Theories of Intelligence Scale (ITIS) for Growth Mindset

Primary Leadership Voice	Second Leadership Voice	ITIS Mean Score Interpretation		
		Fixed Mindset (<3)	Borderline (3-4)	Growth Mindset (>4)
Connector	Creative		3	
Connector	Creative			4.125
Connector	Creative	1.875		
Creative	Connector			5
Creative	Connector			5
Creative	Pioneer		3.625	
Guardian	Nurturer	2.375		
Guardian	Creative			5
Guardian	Nurturer			4.375
Nurturer	Connector		3.5	
Nurturer	Guardian	1.75		
Nurturer	Connector		3.375	
Nurturer	Connector	1.5		
Nurturer	Guardian	1.875		
Nurturer	Guardian	1.75		
Nurturer	Creative		3.625	
Nurturer	Creative	1.5		
Nurturer	Connector	2.625		
Pioneer	Guardian			4.5
Pioneer	Connector			4.75
Pioneer	Connector		3.5	
Pioneer	Guardian			4.25
Pioneer	Connector		3	
Pioneer	Connector			4.125
Pioneer	Nurturer		3.5	

*ITIS: Implicit Theories of Intelligence Scale