INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE
A Brief Scale for Measuring Anti-Intellectualism

Mathew D. Marques[1], Brad Elphinstone[2], Christine R. Critchley[3], and Martin E. Eigenberger

[1] School of Psychology and Public Health, La Trobe University, Melbourne, Australia

[2] Department of Psychological Sciences, Swinburne University of Technology, Melbourne, Australia

[3] Department of Statistics, Data Science & Epidemiology, Swinburne University of Technology, Melbourne, Australia

Corresponding author:
Mathew Marques, School of Psychology and Public Health, La Trobe University, Melbourne, Victoria 3086, Australia.

Abstract

This paper describes the development of a brief scale to measure intellectualism and anti-intellectualism, the degree to which one experiences either positive or negative affect while engaged in epistemic activities such as conceptual integration. Using seven samples, the study examined several psychometric components of the measure, including equivalency across community and student/convenience populations, temporal stability, and indications of different forms of validity. The scale was designed to be a brief, reliable and valid measure of individual differences in the degree to which individuals value affect-reinforced need for intellectual engagement. These results suggest that the Intellectualism-Anti-Intellectualism Scale may provide a useful tool for the examination of differences in the desire to engage in intellectually challenging activities, and subsequent outcomes such as vocational interest, academic achievement, and democratic citizenship.

Keywords

Anti-intellectualism; Intellectualism; Need for Cognition; Intelligence; Knowledge; Values; Vocational interest

Highlights

Development of the Intellectualism-Anti-Intellectualism Scale (IAIS)

Short unidimensional scale distinct from intelligence

IAIS demonstrated as suitable for use in both student and non-student samples

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

1. Introduction

In their effort to produce a measure of anti-intellectual dispositions, Eigenberger and

Sealander (2001) developed scale items directed toward capturing the attitudes, beliefs and

sentiments of university students toward education, professors, and academe itself. The

resultant measure was called the Student Anti-Intellectualism Scale (SAIS), and while

subsequent studies have indicated the scale is capable of reliable and valid measurement of

students' anti-intellectual dispositions (Elias, 2008, 2009; Hook, 2004; Triki, Nicholls,

Wegener, Bay, & Cook, 2012), the same conclusion cannot be made for a non-student

population as they have never received the SAIS due to the education context specific nature

of the items. As a result, the current study developed a brief scale to assess intellectualistic

dispositions within the general population.

The SAIS had been designed principally as a measure of *anti*-intellectualism within

the context of academia. Theoretically, the construct of anti-intellectualism was derived from

Hofstadter's (1963) historical analysis of religious and populist attitudes toward intellectuals

and their stereotyped lifestyle. Here it is argued that anti-intellectualism is a unidimensional

construct and lies on a continuum with intellectualism at the opposite end, where the former

relates to being against the freedom of thought, creativity, and intellectual pursuits. In

addition to the wording of items restricting a wider audience, the SAIS did not adequately

capture intellectualism. Twice as many items are phrased in the negative, almost all

concerned with *unreflective instrumentalism or* the "devaluation of forms of thought that do

not promise relatively immediate practical payoffs" (Rigney, 1991, p. 444). This new brief

measure was designed with the intention of having a set of balanced items emphasizing

intellectualism and anti-intellectualism, and that intellectualism is construed as the positive

feeling one experiences while engaging in intellectually challenging activities.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

An effect of adopting the language of needs in writing items for this new scale was to shift the emphasis from item/statements reflecting (mostly negative) attitudes toward intellectualism, to those expressing an individual's affective state generated by a need to engage in intellectualistic activities such as research, concept exploration, and critical thinking. While this new construal is not inconsistent with the previous notion of anti-intellectualism as unreflective-instrumentalism (Eigenberger & Sealander, 2001), it is nonetheless a somewhat different formulation.

1.1 Intellection

Intellection is a construct denoting individual differences in the degree to which one experiences either positive or negative emotional arousal while engaged in specific epistemic activities such as conceptual integration. It can be thought of as a facet of the need for cognition that is more broadly focused on the affective qualities of a specifically *intellectual* type of engagement, as opposed to a need for cognitive activity. In comparison, this need for cognition may be motivated for example, by the fear of failing a knowledge dependent exam, by curiosity about another person, or by the motivation to avoid or resolve ambiguous, unstructured or unpredictable activities or situations (Cacioppo & Petty, 1982). This desire for someone with a high need for cognition to resolve indecision or situations with a lack of structure or ambiguity is suggestive of an underlying need for a simpler structure (Neuberg & Newsom, 1993) and cognitive closure (Webster & Kruglanski, 1994). The same cannot be said of intellection, as the structure, predictability, or ambiguity of an activity or situation is peripheral to the affective qualia of intellectual engagement.

While a number of items in Cacioppo and Petty's original Need for Cognition scale, or revision (Cacioppo, Petty, & Kao, 1984), arguably tap into a need for intellectual activity related to intelligence, many of them reference thinking in general, or thinking as a means to furthering goals or solving unspecific problems. There, the term *need* was used by Cacioppo

and Petty in a "statistical (i.e., likelihood or tendency) rather than biological (i.e., tissue

deprivation) sense" (p. 118), and indeed the majority of items are not suggestive of an affect-

imbued need. As used here, 'intellection' is defined as *the act or process of using the*

intellect; thinking or reasoning (Intellection, 2000), that results in affective arousal.

Furthermore, factor analyses of the need for cognition scale suggest the items capture several

dimensions – cognitive complexity, cognitive persistence, and cognitive confidence (Tanaka,

Panter, & Winborne, 1988). Taken together, this suggests that the intellection construct is

theoretically related but distinct from the need for cognition.

Intellection is also argued to be distinct from intelligence, and unlike need for

cognition should be considered independent of intelligence (Cacioppo & Petty, 1982).

Abstract reasoning or intelligence does not equate with knowledge and a desire for an

affective response to ideas, as people may be highly knowledgeable but may still differ in

their desire or attraction to analyzing information. This is consistent with Hofstadter's (1963)

distinction between the *Mental Technician* and the *Intellectual* who may be both highly

intelligent, but it is the latter who *lives* for ideas whereas for the former, ideas function as

extrinsic means to other practical ends.

The intellection construct is suggested as having much in common with Berlyne's

(1954, 1957) notion of specific or diversive epistemic curiosity. Specific epistemic curiosity

described a need for knowledge, and would be exemplified by biologist's need to investigate

the ultimate cause of ageing, or a philosopher's quest for a solution to a theoretical puzzle –

in many cases reducing incongruity or satisfying a need for what is not known by gaining

new knowledge. Intellection certainly resembles this, with its aversion to boredom and need

for stimulation; we suggest there is a kind of intellectual sensation-seeking element within the

notion of intellection. Furthermore, this epistemic curiosity should be linked to epistemic

style or preference (Eigenberger, Critchley, & Sealander, 2007). Specifically, high levels of

intellection should overlap with intellective processing (e.g., complex, effortful thinking)

whereas lower levels of intellection should overlap with default processing (e.g., effortless,

expedient thinking).

Diverse and incongruous conceptual stimuli describe the types of information sought

and encountered during activities prompted by intellection, but their particular satisfaction or

solutions do not function as end points that once reached, extinguish the need. This affective

stimulation derived by intellection should be akin to that gained by open-mindedness and not

dogmatic unchangeable and unjustified certainty (Altemeyer, 2002), but the need is not

satisfied by the type of cognitive closure typified by discomfort with ambiguity or

unpredictability (Webster & Kruglanski, 1994). Individuals with higher levels of intellection

would engage in more schema remodeling (e.g., recreating old knowledge into new), have

cognitive flexibility (Martin & Rubin, 1995); that is, awareness of options and alternatives

and a willingness to be flexible in their approach, and this process would be experienced as

rewarding and positive. Those lower on intellection, or considered anti-intellectual, should

view these experiences as negative or without value, and even aversive in some instances.

Consistent with Berlyne's (1957) notion of curiosity as a drive, is the assumption that,

as with curiosity, the *need* in anti-intellectualism operates as a motivational drive designed to

achieve an optimal level of arousal through intellectual challenges. However, it is also akin to

a 'growth need' that cannot be satiated by merely resolving an incongruity, answering a trivia

question, or finding an interesting hobby. On one hand, this ongoing need for growth in

knowledge and understanding should overlap with abstract value priorities of stimulation and

self-direction as important guiding principles in one's life (Schwartz, 1992); priorities that

could be interpreted as goal-orienting values for individuals with high intellection. On the

other hand, abstract value priorities relating to conservation values, which encompass

maintaining tradition and complying with the permanence of societal norms, should be goal-

orienting values for individuals with low intellection. Importantly however, intellection should not be related to a willingness to submit to established authorities, or favour authoritarian conventions or norms given that experiencing positive or negative emotional arousal while carrying out epistemic activities or tasks should be independent of authoritarian attitudes. What one feels as a result of engaging in intellectualistic activities should not necessarily be indicative of whether one believes you or others should submit to authority.

1.2 Intellectualism-Anti-Intellectualism Scale

The scale introduced here, the Intellectualism-Anti-Intellectualism Scale (IAIS) consists of items that are worded to correspond with dispositional proclivities regarding the kind and degree of arousal one may experience when faced with or engaged in intellectual activities. The nature of the arousal connoted by the items is that of experiencing an organismic, or primary personological need, which is resolved by taking cognitive action in the form of inference-generating thinking, intended to produce the acquisition and accommodation of new information. The scale's items are worded to suggest engagement with conceptual material as either rewarding, or aversive and uninteresting. The general connotative tone of the items suggests an element of *sensation seeking* as described by Zuckerman (1971). All of the IAIS items use phraseology that calls attention to the affective nature of engaging in intellectual activity. Positively worded items contain descriptors such as "stimulating" or "thrilling", while negatively worded items reference opposite states such as feeling "bored" or "impatient".

The main intent of developing the scale was to produce a brief self-report measure using items that unambiguously link stimulus-seeking, reward, and intellectual engagement. For the true, physical sensation seeker, it might be said that the thrill or 'rush' is found among risky and challenging activities, whereas for those with a high intellection – for 'intellectual

thrill-seekers' as it were, the rush is found within the exploration, challenge, and stimulation of ideas.

While Need for Cognition (Cacioppo & Petty, 1982) may be broadly construed as implicating a need to exercise one's intellect, the IAIS is targeted at intellectual activities and the affective states that are generated by intellectual activities. As in sensation seeking, the notion of intellection assumes that cognitive operations employed to satisfy the need are reinforced by affective rewards. As an activity, intellection is used to designate those cognitive operations involved in the comprehension, creation, and manipulation of concepts.

The starting assumption of investigating a specific intellection was that it *is* intrinsically rewarding to engage in a cognitive process, which results in understanding. The construct of intellection then, describes that feature of cognition which directs the process of concept formation and intellectual manipulation through observation and logical inference, motivated, at least in part, by the pleasurable arousal attendant upon the production of new concepts, and mastering higher levels of understanding.

1.3 Present Study

Given the aforementioned theories, the main aim of this paper was to develop and validate a brief measure of intellectualism-anti-intellectualism suitable for general use. Specifically, we did this by testing factorial validity and measurement invariance of the IAIS across student/convenience samples and a large representative community sample. Next, we validated the measure against a well-established measure of values (Schwartz, 1992), predicting that intellection would be positively related to motivational goals relating to openness to change, and negatively with conservation goals. Convergent validity was also tested by measuring the IAIS alongside an existing measures of student anti-intellectualism (Eigenberger & Sealander, 2001) and cognitive flexibility (Martin & Rubin, 1995). In addition, we tested discriminant validity by examining the relationships of the scale with

social desirability and right-wing authoritarianism (Altemeyer, 2006), as it was predicted that intellection would not be related to support for authorities or societal conventions and norms.

In order to demonstrate that the IAIS was distinct from a need for cognition (Cacioppo & Petty, 1982), we hypothesised no overlap with a measure of intelligence, and tested our brief measure concurrently with need for cognition and other relevant scales. It was predicted that while the IAIS would be positively correlated with need for cognition, the two scales would differentially predict aspects of need for cognitive closure (Webster & Kruglanski, 1994) and a personal need for structure (Neuberg & Newsom, 1993). Specifically, it was predicted that the IAIS would not relate to a need for structure whereas need for cognition would. Additionally, dimensions of need for cognitive closure would be differentially related with the IAIS and need for cognition given that intellection does not share the same focus to resolve or avoid unstructured or unpredictable situations or activities. Finally, we explored the stability of the IAIS over time, and the relationship between the scale and demographics such as age, gender, and education.

2 Method

2.1 Samples

The present study comprised of seven samples; a community sample and five undergraduate university student and convenience samples. Sample 1 consisted of 458 adults (53.7% female), from an initial telephone interview of 1208 Australians from the general community (see Critchley, 2008, for a full sample description). Of those that agreed to receive the follow-up survey ($N = 873$), there was a 55.44% response rate, with a total of 458 useable returned surveys. For those who returned surveys, there was a slight difference in return rate across some demographics, with females, non-tertiary educated, and older persons more likely to return surveys.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

The participants in the remaining five samples (N = 717) were a mix of online and hardcopy convenience samples and undergraduate students from psychology courses at two universities in Melbourne, Australia.

2.2 Materials

2.2.1 Values

Values are general beliefs or guiding principles that people hold about desirable or undesirable modes of conduct and end states of existence (Rokeach, 1973). These were assessed with the Schwartz Value Survey (SVS; Schwartz, 1992), across 56 values that are based on the analysis of motivational goals to make up a grouping of 10 higher order values (e.g., Stimulation, Self-Direction). Participants were asked to respond on a 9-point scale (1 = *opposed to my values* to 9 = *of supreme importance*). Example items for Stimulation and Self-Direction are, "Curious (interested in everything, exploring)" and "Freedom (freedom of action and thought)" respectively. Reliability estimates ranged from .07 (for Tradition) to .63 (for Universalism), similar to previous research (Schwartz & Rubel, 2005).

2.2.2 Student Anti-Intellectualism

The Student Anti-Intellectualism Scale (Eigenberger & Sealander, 2001) was used to assess anti-intellectual attitudes towards learning experiences. Examples of positive and negative items are, "I would like to deepen my intellectual pursuits after graduation" and "I prefer classes without a lot of critical thinking or analytic activities", respectively. Each of the 25 items in the scale is measured on a 7-point Likert-type format from 1 = *I agree very much* to 7 = *I disagree very much.* A total score is calculated by averaging items after reverse scoring the positively worded items. Reliability was excellent, α = .87.

2.2.3 Cognitive Flexibility

The Cognitive Flexibility scale (Martin & Rubin, 1995) was used to assess awareness of options and alternatives in a situation, willingness and adaptability to be flexible, and self-

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

efficacy beliefs of that flexibility. It consists of 12 items rated on a 6-point Likert scale from 1 = *Strongly disagree* to 6 = *Strongly agree*. An example item is, "I am willing to listen and consider alternatives for handling a problem". A total score was calculated by averaging all items after reverse scoring. Reliability was acceptable, α = .68.

2.2.4 Social Desirability

Social desirability was measured using the Short Form A of the Marlowe-Crowne Social Desirability Scale (Reynolds, 1982). The 11 statements were measured on 6-point Likert scale from 1= *Strongly agree* to 7 = *Strongly disagree*, with six statements phrased in the reverse of a desirable response[1]. An example reversed item is, "I sometimes try to get even rather than forgive and forget". Average scores were calculated after reverse scoring items. Reliability was acceptable, α = .68.

2.2.5 Right Wing Authoritarianism

Right Wing Authoritarian (RWA) belief relates to a willingness to submit to established authorities, societal conventions and norms. It was measured using the revised 20-item RWA scale (Altemeyer, 2006), and statements were measured on a 9-point Likert scale, from 1 = *Very strong agreement* to 9 = *Very strong disagreement*. An example of a positively worded item is, "The "old-fashioned ways" and the "old-fashioned values" still show the best way to live". Items were averaged after reverse scoring half of the items. Reliability was high, α = .83.

2.2.6 Abstract Reasoning and Intelligence

The Raven's Advanced Progressive Matrices (APM; Raven, Court, & Raven, 1994) was used to measure general intelligence and reproductive ability, in particular abstract reasoning. The 36-item multiple choice version was used, where participants identified the missing item from

---

[1] Typically social desirability is measured using a True/False scale, however in this instance it was measured on a Likert-scale continuum.

a selection of four responses that completes a pattern. Previous research has demonstrated

good reliability and validity (Court & Raven, 1995), as was the case in the current sample

(*KR20* = .81).

2.2.7 Need for Cognition

Need for Cognition (NfC) measures the extent to which individuals are inclined towards and

enjoy effortful cognitive activities. It was measured using the revised 18-item NfC scale

(Cacioppo et al., 1984), and statements were measured on a 9-point Likert scale, from 1 =

Very strong disagreement to 9 = *Very strong agreement*. An example of a positive item is, "I

would prefer complex to simple problems". Items were averaged after reverse scoring

negatively phrased items. Reliability was excellent, α = .90.

2.2.8 Dogmatism

Dogmatism refers to a "relatively unchangeable, unjustified certainty" (Altemeyer, 2002 , p.

713). It was measured using the 20-item DOG scale (Altemeyer, 2002) where statements

were presented on a 9-point Likert scale, 1 = *Very strong agreement* to 9 = *Very strong

disagreement*. An example of a positively worded item is, "My opinions are right and will

stand the test of time". Scores were averaged after reverse scoring negative items. Reliability

was high, α = .90.

2.2.9 Epistemic Preference

The Epistemic Preference Indicator-Revised (EPI-R; Elphinstone, Farrugia, Critchley, &

Eigenberger, 2014) is a brief 8-item revision of the Epistemic Preference Indicator

(Eigenberger et al., 2007). Half of the items measure a dual-process cognitive model

comprising of Intellective processing (EPIR-IP), which is a preference for elaborated forms of

thinking and judgment, and the other half Default processing (EPIR-DP), which is a general

preference for automatic or effortless problem solving strategies. Items are measured on a 5-

point Likert-type scale from 1 = *Completely disagree* to 5 = *Completely agree*. An example

EPIR-IP item is "I have a strong need to understand the past and the ideas people had", whereas an example EPIR-DP item is "If given a choice, I prefer to deal with smaller, concrete projects that have immediate results". The reliability for EPIR-IP and EPIR-DP was .79 and .68, respectively.

2.2.10 Need for Cognitive Closure

The Need for Cognitive Closure (NfCC) refers to a motivated tendency or need to seek out a concrete answer to a question and aversion toward ambiguous situations. Forty-two items of the NfCC scale (Kruglanski, Webster, & Klem, 1993), measured on a 6-point Likert-type scale from 1 = S*trongly disagree* to 6 = *Strongly agree*, capture five dimensions of need for cognitive closure. Examples, number of items, and reliability for each dimension are as follows: Preference for order (10-items; α = .80), "I hate to change my plans at the last minute"; Preference for Predictability (8- items; α =.84), "I dislike unpredictable situations"; Decisiveness (7-items; α = .86), "I would describe myself as indecisive; Discomfort with ambiguity (9-items; α = 77), "I don't like situations that are uncertain"; and, Closed-mindedness (8-items; α = .68), "I always see many possible solutions to problems I face". Dimension and scale totals are calculated by averaging all items after reverse scoring negative items. Overall, the reliability for the NfCC scale was excellent, α = .86.

2.2.11 Personal Need for Structure

Personal Need for Structure (PNS) refers to a desire and a need to structure the world into a simplified and more manageable form. It was measured using the 11-item PNS scale (Neuberg & Newsom, 1993), which consists of two subscales measuring desire for structure (4-items) and lack of structure (7-items) on a 6-point Likert scale from 1 = S*trongly disagree* to 6 = *Strongly agree*. An example item of desire for structure is "I enjoy having a clear and structured mode of life", whereas an example item for lack of structure is "I don't like situations that are uncertain". A scale total was also calculated by averaging responses after

reverse scoring items. Reliabilities were acceptable for desire ($\alpha = .78$), lack of structure ($\alpha = .87$), and scale total ($\alpha = .89$).

2.3 Item Construction and Selection

An initial collection of items was generated using a rational/statistical method. This process consisted of initially producing a series of 20 logically related statements derived from descriptive literature on anti-intellectualism (Eigenberger & Sealander, 2001; Hofstadter, 1963; Rigney, 1991), and then revising them to 10 items. A total score was calculated by averaging responses after reverse scoring negative items on the 5-point Likert scale from 1 = *Completely false* to 5 = *Completely true*.

3 Results

Descriptive statistics for each sample, reliability of the IAIS, and a list of the measures in each sample are presented in Table 1.

3.1 Descriptive statistics and measures for each sample

[INSERT TABLE 1 APPROXIMATELY HERE]

3.2 Factorial Validity and Measurement Invariance across Community and Convenience/Student Samples

The aim of these analyses was to demonstrate equivalency across sample populations in order to develop a brief measure of intellectualism-anti-intellectualism capable of being used across student and non-student samples. The 10 items were then submitted to a Multi-Sample Confirmatory Factor Analysis (MSCFA), to demonstrate the factorial validity of the scale across a representative community and six combined student/convenience samples. It was expected that one factor would best explain the variance in all 10 items and that this structure would not be significantly different across samples.

A MSCFA was used to test the factorial validity of the IAIS by examining the degree of equivalence, or invariance, in the factor loadings and correlations across samples. Via

Mplus Version 7.4 (Muthén & Muthén, 2005) a Maximum Likelihood Robust estimator was used (to account for multivariate skewness) to test a 1-factor model with the latent variable represented by the positive and negative items respectively. Invariance of the model was tested across the samples to provide evidence that participants interpreted and responded to items in a similar manner, with the same factor structure across different samples (Van de Schoot, Lugtig, & Hox, 2012).

In accordance with the process outlined by Van de Schoot et al. (2012), a number of nested models, each with increasingly strict constraints were assessed. First, the model was assessed separately in the community and student/convenience sample to determine whether model fit was similar. The model was good fit with the community sample data, $\chi^2 = 121.16$, $df = 35$, $p < .001$, $CFI = .92$, $TLI = .89$, $SRMR = .05$, $RMSEA = .07$ (90% CI = .06, .09), and the student/convenience sample data, $\chi^2 = 125.97$, $df = 35$, $p < .001$, $CFI = .95$, $TLI = .93$, $SRMR = .04$, $RMSEA = .06$ (90% CI = .05, .07). Next, a baseline or configural model (configural variance) was assessed by examining a model with no constraints (i.e., all parameters vary freely between groups) to determine if the model fits for the samples combined. This model was a good fit with the data, $\chi^2 = 247.00$, $df = 70$, $p < .001$, $CFI = .94$, $TLI = .92$, $SRMR = .04$, $RMSEA = .07$ (90% CI = .06, .08).

Factorial invariance (i.e., metric invariance) was then assessed by constraining factor loadings to be equal across samples. Again, this model was a good fit with the data, $\chi^2 = 258.27$, $df = 79$, $p < .001$, $CFI = .93$, $TLI = .93$, $SRMR = .05$, $RMSEA = .06$ (90% CI = .05, .07). Evidence of invariance is obtained from adjusted likelihood ratio tests (difference in χ^2 between two models when a robust estimator is used; Muthén & Muthén, 2005). Metric invariance, or the difference between the configural model and the constrained factor loadings model was non-significant, $\Delta\chi^2 = 8.87$, $df = 9$, $p = .45$. Therefore metric invariance was demonstrated for the scale across samples. Since we expected students and the community to

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

be different (Eigenberger et al., 2007), a test of invariance for the intercepts was not needed.

Standardized Regression Weights for all scale items (i.e., an indication of how much variance

is shared with the other items, or is accounted for by the factor), and a calculation of variance

explained by the 1-factor model (i.e., construct reliability) across samples are presented in

Table 2.

[INSERT TABLE 2 APPROXIMATELY HERE]

3.3.1 Convergent and Discriminant Validity with Values

Pearson correlations coefficients were used to test the relationship of the IAIS against the

Schwartz Value Survey (SVS; Schwartz, 1992). Values function like needs to influence goal

directed behavior, and the strength of a person's values may affect how much effort a person

puts into or persists at an activity, as well as the ways in which situations are construed

(Feather, 1992).

It was predicted that the IAIS would positively correlate with the SVS higher order

value types of relating to Openness to Change, namely self-direction and stimulation which

are discrete values that describe actions and principles related to an intellectual need.

Conversely, it was also predicted that there would be a negative relationship with

Conservation higher order value types of security, conformity, and tradition, as these are

argued to relate to lack of interest in intellectual exploration given their focus on maintaining

tradition, conforming, and acquiescing to the permanence of societal norms. No relationships

were predicted with the higher order values types relating to self-enhancement, specifically

achievement and power, or hedonism which would demonstrate good discriminant validity.

In the community sample ($N = 458$) convergent validity was demonstrated between

the IAIS and self-direction ($r = .33, p < .001$), and to a lesser degree stimulation ($r = .10, p <$

.05), suggesting that those higher on the scale also value independent thought and action-

choosing, creating, exploring, as well as excitement, novelty, and challenge in life to a lesser

degree. The IAIS also correlated negatively with security ($r = -.22$, $p < .001$), the safety, harmony and stability of society, of relationships, and of self, and negatively with conformity ($r = -.26$, $p < .001$), the restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms. Unexpectedly, it did not correlate with tradition ($r = -.07$, $p = .16$), which relates to the respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self.

As predicted there was no relationship with the self-enhancement values of achievement ($r = .07$, $p = .16$) and power ($r = -.04$, $p = .41$). There was an unpredicted relationship with universalism ($r = .16$, $p < .001$), as well as hedonism ($r = .-13$, $p < .001$), suggesting that those with a greater need for intellectual stimulation also had higher understanding, appreciation, tolerance and protection for the welfare of all people and for nature, and rated pleasure and sensuous gratification for oneself lower. As predicted, no relationship was found with benevolence ($r = -.03$, $p = .58$), the preservation and enhancement of the welfare of people with whom one is in frequent personal contact.

3.3.2 Convergent Validity: Student Anti-Intellectualism and Cognitive Flexibility

Convergent validity of the IAIS was also tested against an existing validated measure of anti-intellectualism in a student sample and against cognitive flexibility in another. It was expected that the IAIS would show a significant negative correlation with a measure of SAIS, a measure of anti-intellectual attitudes towards learning experiences (Eigenberger & Sealander, 2001). As predicted, there was a strong negative correlation with the SAIS ($r = -.64$, $N = 183$, $p < .01$), indicating that those who scored highly on the IAIS scored lower on the SAIS, indicating good convergence[2]. Cognitive flexibility was also significantly and positively correlated with the IAIS as expected, $r(59) = .35$, $p < .01$.

---

[2] The negative relationship between the AIS and the SAIS is due to how the latter is scored, from 1=I agree very much to 7=I disagree very much, with higher scores indicating anti-intellectualism.

3.3.3 Discriminant Validity: Right Wing Authoritarianism, Intelligence, and Social Desirability

The IAIS was measured against Right-Wing Authoritarianism (Altemeyer, 2006). Previously this scale has been shown to be correlated with measures of anti-intellectualism and epistemic styles (Eigenberger et al., 2007; Eigenberger & Sealander, 2001), and is associated with support for authorities, societal conventions and norms. However, the IAIS does not share the same focus given it considers unreflective instrumentalism against a need for intellectual curiosity. As predicted, no relationship was found with RWA ($r = .17$, $N = 81$, $p = .13$), suggesting this new measure of intellectualism-anti-intellectualism is distinct from this construct.

Another student sample was used to test the discriminant validity of the IAIS with a measure of general intelligence. Given that the IAIS is a measure of intellectual curiosity and desire for knowledge, and not abstract intelligence, it was predicted there would be no relationship between the IAIS and the Advanced Progressive Matrices (APM; Raven et al., 1994). From a possible APM score of 36, scores ranged from 3 to 32 correct responses ($M = 20.64$, $SD = 5.08$). As predicted there was no significant relationship between the IAIS and the APM ($r = -.10$, $N = 182$, $p = .20$), supporting the hypothesis that intellectual curiosity is distinct from intelligence.

A final comparison was made between the short form A of the Marlowe-Crowne social desirability scale (Reynolds, 1982) and the IAIS. No significant relationship was found between socially desirable responding and the current measure, $r(59) = -.21$, $p = .11$.

3.3.4 Concurrent Validity: Need for Cognition, Dogmatism, Epistemic Preference, Need for Cognitive Closure, and Personal Need for Structure

In order to demonstrate that the IAIS is related to another valid and widespread measure, the Need for Cognition (NfC) scale (Cacioppo et al., 1984), a student sample ($N = 212$)

responded to these scales in addition to the revised Epistemic Preference Indicator (EPI-R;

Elphinstone et al., 2014), the five Need for Cognitive Closure sub scales (NfCC; Webster &

Kruglanski, 1994), and the Personal Need for Structure scale (PNS; Neuberg & Newsom,

1993). The results of the inter correlations are presented in Table 3.

[INSERT TABLE 3 APPROXIMATELY HERE]

As expected, the IAIS was correlated highly with NfC. Both the IAIS and NfC were

positively correlated with the EPI-IP, a measure of preference for elaborated forms of

thinking and judgment, and negatively correlated with EPI-DP, a general preference for

automatic or effortless problem solving strategies (Elphinstone et al., 2014). Both measures

were also correlated with dogmatic beliefs. However, the IAIS and NfC showed a different

pattern of relationships with both NfCC and PNS.

The IAIS showed no significant correlation with either the PNS total, or its subscales

of desire and lack of structure. Need for Cognition was however significantly and negatively

correlated both with PNS total, and lack of structure but not with desire as predicted. These

results suggest that while those high on NfC are also significantly more likely to express a

lower need for structure across situations and experiences, while scores on the IAIS are

unrelated to this need. Furthermore, differential relationships between the IAIS and NfC with

NfCC total and some subscales suggest the IAIS is measuring a theoretically distinct concept

to NfC less concerned with a need to resolve ambiguity or situations with a lack of structure.

While both scales are significantly and negatively related close mindedness, only NfC

correlates significantly with the predictability and ambiguity scale of NfCC. That is, similar

to NfC's relationship with lack of structure, those higher in NfC also report lower support and

preferences for ambiguity and predictability in situations, whereas the IAIS is not related to

either of these two subscales or the total.

3.4 Test-retest reliability

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

In order to test the temporal stability of the IAIS over time, all participants from convenience samples 3 and 4 ($N = 140$) were invited to participate to in a follow-up online study where they completed the measure after two weeks. On average respondents were just above the midpoint ($M = 3.47$, $SD = .67$), the second administration of the scale was reliable ($\alpha = .89$), and results indicated excellent test-test reliability, $r(33) = .88$, $p < .01$.

3.5 Criterion Validity: Age, Gender, and Education level

The relationship of the IAIS with several key relevant demographics was investigated, and results of gender and age relationships are presented in Table 4.

[INSERT TABLE 4 APPROXIMATELY HERE]

With the exception of a marginally significant difference between females and males in sample 2, the IAIS does not suggest a gender difference in the desire to engage in intellectual activities. In half of the samples (and trending in another), age was positively correlated with higher scores on the IAIS, suggesting that older persons report higher levels of affect-reinforced intellectual stimulation.

Finally, it was expected that tertiary educated participants would report higher intellection when compared with non-tertiary educated students, given that universities provide an environment to encourage and nurture intellectual curiosity and learning supporting previous research (Eigenberger et al., 2007). As predicted, it was found that tertiary educated participants ($M = 3.31$, $SD = .62$) were significantly more likely to report a higher IAIS, $t(456) = 7.45$, $p < .001$, *Cohen's d* $= .70$, when compared with non-tertiary educated participants ($M = 2.88$, $SD = .61$).

4 Discussion

Generally our analyses have offered evidence suggesting that the IAIS is capable of producing reliable measurements of a construct we have named Intellection, suggested as a source of motivation for knowledge-acquiring and understanding-seeking activities through

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

the medium of concepts and theories - and that such activities produce positively felt arousal, and are valued as ends in themselves.

The IAIS appears to represent an improvement in the measurement of intellectualistic dispositions as a shorter measure and usable in a more general population beyond that offered by the SAIS, which had been structured for university students. The MSCFA provided support for the validity of the IAIS across both student/convenience and community populations. In addition, arguably theoretically consistent findings were reported. Here intellectualism was generally shown to be higher for older, in comparison with younger persons, those who are tertiary educated when compared with non-tertiary educated, and not related to gender. Thus, whilst there are demographic factors that apparently bear upon an individual's intellectualism or anti-intellectualism, these variations are reasonably predictable. The equivalency of item performance across student/convenience and community samples, the brevity of the measure, stability of scores over time demonstrated in test-retest reliability, along with the overall psychometric performance of the scale suggest it is suitable and robust for measuring the construct in a general population.

In our examination of the data relevant to convergent validity, we found that the IAIS correlated in both strength and direction as predicted with relevant existing measures of motivational goals expressed as higher order values. The higher order values of Stimulation and Self Direction reflect aspects of intellectual need, in that the quest for richly understood concepts necessitates schema changes – a continual resorting or remodeling of conceptual architectures. The goal, or the end aimed at by means of intentional schema change is not completely clear, but it may be reasonably speculated that individuals who actually occupy themselves with this process, find it enjoyably stimulating and to that end this process likely overlaps with Berlyne's (1954, 1957) notion of curiosity as a drive. Conversely, diametrically opposed higher order values of Security and Conformity, which are akin to aspects reflecting

anti-intellectualism, were negatively correlated with intellection. Unsurprising given that intellectual stimulation often involves the possibility of having to accommodate information inconsistent with ones established worldview.

The IAIS also demonstrated predicted overlap with existing scales of anti-intellectualism attitudes by students, cognitive flexibility, dogmatism, and epistemological styles as well as differentiation from right-wing authoritarianism, and socially desirable responding. These findings suggested the IAIS theoretically fits into a family of constructs related to adaptability, flexibility, and awareness of options, epistemology, and to anti-intellectualism. The results also suggest that intellection is distinct from beliefs relating to authorities, societal conventions and norms. Importantly, the transparent nature of the scale does not introduce a biasing of responses to the IAIS in an effort to form a favorable impression with anonymous responses.

With respect to intelligence or abstract reasoning, our test also demonstrated that IAIS is distinct from intelligence. Abstract reasoning or intelligence does not equate with knowledge and a desire for ideas, as people may be highly knowledgeable but may still differ in their desire or attraction to analyzing information consistent with Hofstadter's (1963) distinction between the Mental Technician and the Intellectual. The results of this study support the argument that the IAIS taps into a need for intellectual stimulation and depth of processing, as opposed to the purely pragmatic, superficial concerns described by Rigney (1991) as 'unreflective instrumentalism', and is therefore different from need for cognition which has been validated as positively correlated with intelligence (Cacioppo & Petty, 1982).

Our new general and brief measure demonstrated good concurrent validity with need for cognition, but the different patterns of relationships with personal need for structure and predictability and ambiguity further suggest that the IAIS is measuring discrete construct. Need for cognition is concerned with a need for cognitive closure and structure, whereas the

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

IAIS is not. Both constructs are concerned with epistemological styles, and those high in need for cognition and intellection prefer intellective processing and disapprove of default processing, and both are about problem solving and decision making and against close-mindedness. However, the responses on the IAIS are not susceptible to ideas concerning a response to a lack of structure and ambiguity, and predictability, and therefore capture the affective and motivational nature of engaging in intellectual activity distinct from peripheral needs related to certainty. Intellection is concerned with an affect-imbued need that arises out of intellectual stimulation.

Given the aforementioned psychometric properties, we suggest the IAIS as a useful measure for students or the general population where there is a need or benefit from understanding an individual's affective response to engaging in intellectually challenging activities. In the academic context, previous studies have demonstrated support for the relationship between anti-intellectualism and academic adjustment (Hook, 2004), as well as achievement (Triki et al., 2012). Similarly, we would expect that an individual's level of intellection should be positively related to adjustment at college or university, both in terms of social and academic areas which would be important to lessen attrition or even failure, as well as under achievement. Previous research on related measures of epistemic styles have been able to characterize students' preference for intellective and default processing across courses (Eigenberger et al., 2007). The utility of the IAIS in vocational assessment, would be to ascertain individual preference for intellectual activities that may be satisfied by specific courses, or professions. More generally, beyond academe and vocational settings, measuring individual and group levels of intellection may provide benefit to researchers. For example, it is suggested that those higher on intellection are likely to be citizens more interested in, or seek satisfaction from, democratic engagement and participation given that these activities

afford opportunities for engagement with conceptual material that should be seen as rewarding and serve that affect-imbued need.

4.1 Limitations

A minor concern with some of the samples is that they were convenience samples, and were neither representative of the general population or student samples. It was decided to consider them alongside and together with the other student samples in analyses, given in the convenience samples the mean scale score was similar to other student samples and there were no differences in scale means across gender.

5 Conclusions

Speculating, it may be offered that the aforementioned activity of schema remodeling, of constantly remaking old knowledge into something (often unpredictably) new, is a process that is simply found to be more rewarding by some and less rewarding, or even aversive by others. Understanding intellection, as measured by the IAIS, may be integral in investigating and developing this construct both in the context of academic achievement independent of intelligence, and in the general population in domains such as vocational interest and a democratic citizenship. We believe the study presented here offers some basis for considering the IAIS to be an individual difference variable worthy of consideration in a wide array of human activities and organizational operations, such as striving for person/career goodness-of-fit and learning in schools.

Author biographies:
Mathew Marques is a Social Psychologist and Lecturer in the School of Psychology and Counselling at La Trobe University in Melbourne, Australia. His research interests include attitudes towards controversial scientific research, and understanding how values and anti-intellectualism shape judgments of public figures such as tall poppies.

Brad Elphinstone is a Social Psychologist and Lecturer in the Department of Psychological Sciences in Melbourne, Australia. His research interests include examining how thinking styles and worldviews influence the pursuit of various goals and aspirations, such as those associated with materialism.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

Christine Critchley is a Social Psychologist and Associate Professor in the Department of Statistics, Data Science & Epidemiology at Swinburne University in Melbourne, Australia. Her research interests include public opinion, attitudes towards controversial scientific research and trust in scientific actors.

Martin E. Eigenberger is a retired psychology academic.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

References

Altemeyer, B. (2002). Dogmatic behavior among students: Testing a new measure of

dogmatism. *Journal of Social Psychology, 142*, 713-722. doi:

10.1080/00224540209603931

Altemeyer, B. (2006). *The Authoritarians*: Bob Altemeyer.

Berlyne, D. (1954). A theory of human curiosity. *British Journal of Psychology, 45*, 180–191.

doi: 10.1111/j.2044-8295.1954.tb01243.x

Berlyne, D. (1957). Conflict and information-theory variables as determinants of human

perceptual curiosity. *Journal of Experimental Psychology, 53*, 399-404. doi:

10.1037/h0049194

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality &

Social Psychology, 42*, 116-131. doi: 10.1037/0022-3514.42.1.116

Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for

cognition. *Journal of Personality Assessment, 48*, 306-307. doi:

10.1207/s15327752jpa4803_13

Court, J. H., & Raven, J. (1995). Section 7: Research and references: Summaries of

normative, reliability, and validity studies and references to all sections. In *Manual

for Raven's Progressive Matrices and Vocabulary Scales*. Oxford: Oxford

Psychologists Press.

Critchley, C. R. (2008). Public opinion and trust in scientists: the role of the research context,

and the perceived motivation of stem cell researchers. *Public Understanding of

Science, 17*, 309-327. doi: 10.1177/0963662506070162

Eigenberger, M. E., Critchley, C. R., & Sealander, K. A. (2007). Individual differences in

epistemic style: a dual-process perspective. *Journal of Research in Personality, 41*, 3-

24. doi: 10.1016/j.jrp.2006.01.003

Eigenberger, M. E., & Sealander, K. A. (2001). A scale for measuring students anti-

intellectualism. *Psychological Reports, 89*, 387-402. doi: 10.2466/PR0.89.6.387-402

Elias, R. Z. (2008). Anti-intellectual attitudes and academic self-efficacy among business

students. *Journal of Education for Business, 84*, 110-117. doi:

10.3200/JOEB.84.2.110-117

Elias, R. Z. (2009). The impact of anti-intellectualism attitudes and academic self-efficacy on

business students' perceptions of cheating. *Journal of Business Ethics, 86*, 199-209.

doi: 10.1007/s10551-008-9843-8

Elphinstone, B., Farrugia, M., Critchley, C., & Eigenberger, M. E. (2014). Examining the

measurement of epistemic style: The development and validation of the Epistemic

Preference Indicator-Revised. *Personality and Individual Differences, 58*, 101-105.

doi: 10.1016/j.paid.2013.10.013

Feather, N. (1992). Values, valences, expectations, and actions. *Journal of Social Issues, 48*,

109-124. doi: 10.1111/j.1540-4560.1992.tb00887.x

Hofstadter, R. (1963). *Anti-intellectualism in American Life*. New York: Alfred A. Knopf.

Hook, R. (2004). Students' anti-intellectual attitudes and adjustment to college. *Psychological

Reports, 94*, 909-914. doi: 10.2466/pr0.94.3.909-914

Intellection. (2000) *The American Heritage Dictionary of the English language* (4th ed.).

Boston: Houghton Mifflin.

Kruglanski, A. W., Webster, D. M., & Klem, A. (1993). Motivated resistance and openness to

persuasion in the presence or absence of prior information. *Journal of Personality and

Social Psychology, 65*, 861. doi: 10.1037/0022-3514.65.5.861

Martin, M. M., & Rubin, R. B. (1995). A new measure of cognitive flexibility. *Psychological

Reports, 76*, 623-626. doi: 10.2466/pr0.1995.76.2.623

Maslow, A. (1959). *New knowledge in human values*. NY: Harper New York.

Muthén, L. K., & Muthén, B. O. (2005). *Mplus: Statistical analysis with latent variables: User's guide*: Muthén & Muthén Los Angeles.

Neuberg, S. L., & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simpler structure. *Journal of Personality and Social Psychology, 65*, 113. doi: 10.1037/0022-3514.65.1.113

Raven, J. C., Court, J. H., & Raven, J. (1994). *Advanced Progressive Matrices*. Oxford: Oxford Psychologists Press Ltd.

Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of clinical psychology, 38*, 119-125. doi: 10.1002/1097-4679(198201)38:1<119::AID-JCLP2270380118>3.0.CO;2-I

Rigney, D. (1991). Three kinds of anti-intellectualism: Rethinking Hofstadter. *Sociological Inquiry, 61*, 434-451. doi: 10.1111/j.1475-682X.1991.tb00172.x

Rokeach, M. (1973). *The nature of human values*: Free press.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1-65. doi: 10.1016/S0065-2601(08)60281-6

Schwartz, S. H., & Rubel, T. (2005). Sex differences in value priorities: Cross-cultural and multimethod studies. *Journal of Personality and Social Psychology, 89*, 1010.

Tanaka, J., Panter, A. T., & Winborne, W. C. (1988). Dimensions of the need for cognition: Subscales and gender differences. *Multivariate Behavioral Research, 23*, 35-50. doi: 10.1207/s15327906mbr2301_2

Triki, A., Nicholls, S., Wegener, M., Bay, D., & Cook, G. L. (2012). Anti-intellectualism, tolerance for ambiguity and locus of control: Impact on performance in accounting education. *Advances in Accounting Education, 13*, 87-107. doi: 10.1108/S1085-4622(2012)0000013009

29

Van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement

invariance. *European Journal of Developmental Psychology, 9*, 486-492. doi:

10.1080/17405629.2012.686740

Webster, D., & Kruglanski, A. (1994). Individual differences in need for cognitive closure.

Journal of Personality and Social Psychology, 67, 1049-1049. doi: 10.1037/0022-

3514.67.6.1049

Zuckerman, M. (1971). Physiological measures of sexual arousal in the human. *Psychological

Bulletin, 75*, 297-329. doi: 10.1037/h0030923

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

Table 1. Description of Sample Characteristics, Reliability, and Validity Measures

Sample number and type	N	Percentage female	Age M (SD)	α^1	Validity measures
1. Community	458	53.7%	47.81 (16.20)	.85	Schwartz Value Survey (1992)
2. Student	183	80.3%	20.81 (5.43)	.83	Student Anti-Intellectualism Scale (Eigenberger & Sealander, 2001)
3. Convenience	59	31.0%	26.26 (9.87)	.87	Cognitive Flexibility Scale (Martin & Rubin, 1995), Social Desirability Scale (Reynolds, 1982)
4. Convenience	81	24.7%	31.01 (13.90)	.86	Right Wing Authoritarianism Scale (Altemeyer, 2006)
5. Student	182	78.6%	25.94 (8.18)	.85	Raven's Advanced Progressive Matrices (Raven, Court, & Raven, 1994)
6. Student	212	53.7%	34.42 (12.50)	.78	Need for Cognition Scale (Cacioppo, Petty, & Kao, 1982), Dogmatism Scale (Altemeyer, 2002), Epistemic Preference Inventory Revised (Elphinstone, Farrugia, Critchley, & Eigenberger, 2014), Need for Cognitive Closure (Webster & Kruglanski, 1994), Personal Need for Structure (Neuberg & Newsom, 1993)

Note. [1] = Cronbach's Alpha from the Intellectualism-Anti-Intellectualism Scale.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

Table 2. *Standardized Regression Weights for all Intellectualism-Anti-Intellectualism Scale items*

Item		Community	Student/Convenience
1	Working on difficult intellectual problems is enjoyable and stimulating for me	.64	.66
2	I generally find physical or recreational activities more satisfying than intellectual activities (R)	.50	.45
3	I tend to feel somewhat bored and impatient when dealing with remote, theoretical problems (R)	.40	.48
4	Intellectual discovery is ok, but I prefer other forms of excitement (R)	.58	.63
5	I'm probably the sort of person who would find it thrilling to be engrossed in a research project	.64	.68
6	I deliberately seek out sources of intellectual stimulation	.78	.76
7	I have more exciting things to do than sit around and think all day long (R)	.57	.56
8	I feel compelled to work on conceptual problems, even when I don't have to	.62	.66
9	One of my favourite activities is discovering alternative ways of explaining a particular phenomenon	.67	.59
10	The process of examining a concept in great detail is generally unappealing to me (R)	.60	.55
Construct reliability		.85	.85
N		458	717

Notes: (R) denotes reverse scored item.

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE
All loadings are significant at $p < .001$.

Table 3. Correlations Between Intellectualism-Anti-Intellectualism Scale, Need for Cognition Scale, Dogmatism Scale, Need for Cognitive Closure Scales, and Personal Need for Structure Scales.

Measure	2	3	4	5	6	7	8	9	10	11	12	13	14
1. IAIS	.79**	.16*	.56**	-.39**	-.07	-.06	.15*	-.13	-.33**	-.12	-.02	-.11	-.09
2. NfC	-	.20**	.57**	-.44**	-.19**	-.07	.23**	-.20**	-.40**	-.17**	-.09	-.24**	-.21**
3. DOG		-	.11	-.12	-.14*	-.07	-.12	-.07	-.40**	-.24	-.11	-.09	-.11
4. EPI-R IP			-	-.34**	.30**	.22**	-.06	.05	.42**	.41**	.19**	.29**	.28**
5. EPI-R DP				-	.00	.03	-.03	.05	.28**	-.05	.00	-.02	-.01
6. NfCC: predict					-	.58**	.19**	.57**	.32**	.77**	.60**	.84**	.83**
7. NfCC: preference for order						-	.07	.41**	.18**	.79**	.82**	.61**	.75**
8. NfCC: decisive							-	.29**	.01	.23**	-.04	-.27**	-.21**
9. NfCC: ambiguity								-	.30**	.66**	.35**	.63**	.59**
10. NfCC: close mindedness									-	.53**	.18**	.30**	.28**
11. NfCC total										-	.67**	.71**	.77**
12. PNS: desire											-	.62**	.83**
13. NfCC: lack of structure												-	.95**

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

14. PNS total		-

Notes. IAIS = Intellectualism-Anti-intellectualism Scale, NfC = Need for Cognition, DOG = Dogmatism Scale; NfCC = Need for Cognitive Closure, PNS = Personal Need for Structure.

$N = 212$. $**p < .01$, $*p < .05$

INTELLECTUALISM-ANTI-INTELLECTUALISM SCALE

Table 4. Age and Gender relationships with Intellectualism-Anti-Intellectualism by Sample

Sample number and type	N	Female $M(SD)$	Male $M(SD)$	$t(df)$	p	Cohen's d	Correlation with age
1. Community	458	3.06(.69)	3.07(.61)	-.13(455.57)	.90	-.01	.04
2. Student	183	2.81(.60)	3.03(.67)	1.97(181)	.05	-.36	.38**
3. Convenience	59	3.08(.72)	3.02(.76)	.31(55)	.76	.09	.20
4. Convenience	81	3.07(.77)	3.34(.71)	-1.42(76)	.16	-.36	.03
5. Student	182	3.06(.61)	3.19(.63)	-1.14(180)	.25	-.20	.36**
6. Student	212	3.39(.53)	3.37(.50)	.25(210)	.80	.05	.17*

Note. **$p < .01$, *$p < .05$