DOWNLOAD PDF CORRELATIONS OF MENTAL ABILITIES

Chapter 1 : Mental abilities and school achievement: A test of a mediation hypothesis Â« Analyse Economi

Editions for Correlations of Mental Abilities: (Hardcover published in), (Hardcover published in), (Hardcover.

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This hypothesis is supported by convergent evidence showing that autism and high IQ share a diverse set of convergent correlates, including large brain size, fast brain growth, increased sensory and visual-spatial abilities, enhanced synaptic functions, increased attentional focus, high socioeconomic status, more deliberative decision-making, profession and occupational interests in engineering and physical sciences, and high levels of positive assortative mating. These findings help to provide an evolutionary basis to understanding autism risk as underlain in part by dysregulation of intelligence, a core human-specific adaptation. In turn, integration of studies on intelligence with studies of autism should provide novel insights into the neurological and genetic causes of high mental abilities, with important implications for cognitive enhancement, artificial intelligence, the relationship of autism with schizophrenia, and the treatment of both autism and intellectual disability. Now we have some hope of making progress. This process, in turn, centers on determining what adaptive neural and psychological systems has been altered, and how, to result in some set of autistic traits in some individual. These patterns and theories are not mutually exclusive, but none of them includes an explicit evolutionary dimension, such that their proximate causes remain ungrounded in the one discipline that unites across all biological-psychological levels in the context of ultimate, long-term determinants of psychological adaptation and maladaptation Crespi, Risks for autism, like risks of cancer, diabetes, or arthritis, have evolved along the human lineage Crespi and Leach, As such, evolutionary biology becomes a valuable conceptual and analytic tool for connecting adaptive brain systems with the ways in which they can become altered and maladaptive in psychiatric disorders Fjell et al. So what adaptive, evolved human brain systems are changed, in what different ways, to produce the phenotypes characteristic of autism? The most prominent neurological change along the human lineage is, of course, the tripling of brain size and associated changes in brain organization and functions, and our concomitant tremendous increase in intelligence compared to other great apes Roth and Dicke, The genetical evolution of high intelligence in humans has increased scope for two main forms of dysregulation. This route generally leads to what we call intellectual disability Vissers et al. Second, the development of intelligence can be affected, by genes or environments, in the opposite direction, toward higher levels of functioning. If this change results in balanced enhancements in all of the components of high intellect, general intelligence will be increased. However, if some, or most, but not all inter-dependent general cognitive-intellectual functions are enhanced, what would we observe? Autism has long been characterized by relatively low intelligence as measured by most standard tests e. How can these paradoxical observations be reconciled? First, I provide a brief overview of the genetic, developmental and neurological bases and correlates of human intelligence, from research within this particular domain, and relate the structure of intelligence in neurotypical individuals to the differences between autistic individuals and neurotypical individuals. Second, I compare the best-validated correlates of variation among humans in intelligence with established characteristics of autistic individuals, compared to controls. These two areas of study, intelligence and autism, have thus far developed virtually independently from one another; I thus integrate and synthesize them in the context of testing the hypothesis addressed here. In doing so, I also compare results for autism with those for schizophrenia, the other primary human neurodevelopmental disorder, in light of theories for how these two conditions are related to one another Crespi and Badcock, ; Crespi, Finally, I develop a framework for consilience of these findings with previous theory on autism, and describe the implications of the results, with regard to the causes, treatments, and understanding of autism, and the structure and study of human intelligence. The primary novelty and usefulness of this synthesis is that it provides the first comprehensive connections of the causes and symptoms of autism with alterations to a specific human-elaborated adaptive system, intelligence, and thereby generates new insights and research questions into the natures and inter-relationships of intelligence, autism, and schizophrenia. The architecture and correlates of human intelligence Human intelligence has been studied predominantly from psychometric, genetic, neurological, and psychological perspectives. Between the general, primary g factor, and the diverse, specific measures of mental abilities, is a small set of secondary factors that each statistically accounts for covariation among a larger set of functionally-similar abilities. The components of the VPR model correspond on a broad scale with brain structural organization in that verbal skills are relatively left-hemispheric, spatial and non-verbal abilities are relatively right-hemispheric, and mental rotation depends, in part, on strongly bihemispheric functions associated with corpus callosum size Johnson and Bouchard, b ; Karadi et al.

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Chapter 2 : Editions of Correlations of Mental Abilities by Benjamin Roy Simpson

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Based on information processing approaches to intelligence, we tested a mediation hypothesis, which states that the complex cognitive abilities of reasoning and divergent thinking mediate the influence of the basic cognitive abilities of mental speed and short-term memory on achievement. We administered a comprehensive test battery and analyzed the data through structural equation modeling while controlling for the cluster structure of the data. Our findings support the notion that mental speed and short-term memory, as ability factors reflecting basic cognitive processes, exert an indirect influence on academic achievement by affecting reasoning and divergent thinking total indirect effects: Strong positive correlations between intelligence and academic performance are a frequently replicated finding in numerous studies and in several meta-analyses. Intelligence has been shown to be one of the best predictors of academic success Neisser et al. Particularly strong correlations have been identified in analyses combining values from different intelligence scales e. The nature of the relationship between intelligence and academic achievement, however, is still a matter of debate among educational researchers and in the literature on intelligence. Current models and taxonomies of intelligence describe a large number of different specific cognitive abilities, which â€” to varying degrees â€” comprise general intelligence e. These specific cognitive abilities differ, among other things, in the complexity of the cognitive processes they require. Fluid reasoning, for instance, requires far more complex cognitive processes than, for example, mental speed. While fluid intelligence often involves diverse mental operations e. In this paper, we analyze the interplay between complex and basic cognitive abilities in their impact on academic performance in school. Cognitive abilities and academic achievement Traditionally, general cognitive ability g has been considered to be the best single predictor of academic achievement e. The attempts to identify specific intelligence factors that could improve the prediction of academic achievement beyond the impact of a g-factor typically failed since g appeared to account for virtually all sources of predictable variance in academic achievement Jensen, Advances in both intelligence models and statistical modeling have created new possibilities for determining the possible explanatory power of specific intelligence factors. Recent publications on this topic stress the important role of more specific cognitive abilities in the prediction of achievement e. In the following, we discuss the relationship between basic and more complex cognitive processes from a theoretical perspective. We then present empirical findings on their relationshipswith each other and with academic achievement. These models typically do not specify functional or causal relationships between their components, e. The BIS model, for instance, describes four cognitive operations, two of which might in fact be classified as reflecting rather elementary, basic processes namely, the operations of mental speed and short-term memory and two reflecting higher-order, more complex cognitive processes i. These differences in complexity are also reflected in the simple vs. Mental speed tasks are easy in the sense that virtually all test-takers would be able to solve them correctly if they had enough time to work on them; it is the tight time limits that make them difficult and that enable the researcher to differentiate among test-takers. Short-term memory tasks only require the storage of information for a short period of time and the mere reproduction or retrieval of that information. Test-takers do not need to use higher-order cognitive processes to solve these kinds of tasks. Divergent thinking also denoted as divergent production or fluency; Carroll, can generally be described as the ability to generate numerous diverse ideas Runco, Despite the different levels of complexity between processing speed or short-term memory tasks on the one hand and reasoning or divergent thinking tasks on the other, recent models of the structure of intelligence generally place these different aspects of intelligence on the same level within the hierarchy of abilities, based on the results of factor analysis. Danthiir, Roberts, Schulze, and Wilhelm distinguish two approaches to analyze the relationship between basic cognitive abilities and more complex cognitive abilities: These approaches have emerged from the research on individual differences and have given rise to rather different research traditions, but have only rarely been combined. Researchers using the descriptive approach apply factor-analytic methods to describe the structure of human abilities based on correlations between a range of different cognitive tasks mostly paper-and-pencil test items , and on this basis, they develop models of the structure of intelligence. In this research approach, basic cognitive abilities like mental speed and short-term memory are considered at the same hierarchical level as other, more complex cognitive abilities. In the explanatory approach, on the other hand, the focus is on identifying basic cognitive processes that are the source of higher-order cognitive processes and that can help explain the individual differences found in intelligence tests. The typical research methods used here employ a few basic cognitive tasks, often stemming from the experimental paradigm of cognitive psychology, as predictor variables, as well asmeasures of one or more complex cognitive ability factors as dependent variables often equated with intelligence. Within this explanatory framework, researchers develop information-processing models of intelligence. In an early information-processing model of intelligence, Campione and Brown conceived of the speed of information processing as well as memory as basic building blocks of the cognitive system. They described processing speed as a determinant of intelligent behavior, meaning that more intelligent people are faster in processing information. This parallels the modern mental speed theory e. More recently, Woodcock , Dean, Decker, Woodcock, and Schrank and Mather and Woodcock proposed a model that combines features of both information processing models and structure of intelligence models for a critical review, see Floyd, The model conceives of short-term memory and mental speed as relatively low-level, automatic processes determining cognitive efficiency during information processing. Information that is registered by the senses enters the system and, if attended to, is encoded into immediate awareness, which is represented in the model by the CHC ability short-term memory. Mental speed has the function of a valve, which helps to control the speed of information flow within the system. After the encoding of information, information is then processed in a processing loop involving several CHC thinking abilities i. These thinking abilities interact with stores of declarative and procedural knowledge. Although this model has been criticized for several reasons e. Empirical findings on the relationship between basic and complex cognitive processes and school achievement There is some empirical evidence that different first-order abilities in hierarchical models of intelligence vary in their relation to general school achievement and specific subject domains, but the results are inconsistent. For example, several studies have found that reasoning predicts academic achievement better than mental speed, and that mental speed is a better predictor than divergent thinking, while others have found divergent thinking to be a better predictor than speed e. In the following, we address the empirical findings on the relationships between different aspects of intelligence in greater detail. First, we document the construct and criterion validity of mental speed and short-term memory for the prediction and explanation of academic achievement. Second, we briefly address the question of how basic and complex cognitive processes interact in affecting academic achievement. In the first section dealing with this interaction, we compare findings on the criterion validity of mental speed and short-term memory with those found for higher-order cognitive processes. In the second, we present findings for models in which the influence of a particular cognitive ability on academic achievement is mediated by another more basic or more complex cognitive ability. Mental speed A considerable body of research testifies to the strong relationship between mental speed â€" mostly assessed via basic cognitive tasks â€" and general intelligence for recent reviews, see: Although a number of studies may slightly overestimate the strength of the relationship between mental speed and reasoning due to the common practice of speeded assessment of reasoning i. The relationship between mental speed and creativity, however, has not been studied extensively to date. Preckel, Wermer, and Spinath in press assessed divergent thinking under power conditions in ninth and tenth grade students. Several studies have investigated the validity of mental speed, assessed using either basic cognitive tasks or psychometric tasks, to predict academic achievement e. Strong relationships between mental speed and academic achievement have been found e. Short-term memory As with mental speed, the finding of a strong relationship with general intelligence has also been replicated frequently for short-term memory, and short-term memory measures are part of many intelligence test batteries. Common sense suggests that a good short-term memory should be decisive for successful learning, and hence for academic achievement since remembering new facts and concepts seems to be an important part of classroom learning. Therefore, the use of short-term memory measures for the prediction of academic achievement seems plausible. Jensen suggests improving the prediction of academic achievement by g by incorporating measures of short-term memory, especially for low-intelligence students. His findings provide evidence that achievement levels of participants with low-intelligence can be predicted using a short-term memory test. Other researchers have not been able to corroborate the incremental validity of short-term memory beyond g. In a study of Dutch and immigrant children in the Netherlands, te Nijenhuis, Resing, Tolboom, and Bleichrodt were unable to find evidence supporting the assumption that measures of short-term memory add information beyond g in predicting school achievement. To sum up, mental speed and short-term memory correlate substantially with general intelligence and academic achievement in school. When looking at investigations in which short-term memory operates as the only predictor of complex cognitive abilities and school achievement, there is evidence of predictive validity; however, in studies with multiple predictors, the incremental validity of short-term memory seems to be limited, and the proportions of direct and indirect predictive effects are largely unknown. General versus specific cognitive abilities as predictors of academic achievement Some recent studies have aimed at simultaneously analyzing the impact of different cognitive abilities on academic achievement using structural equation modeling. These models specify second-order intelligence factors as well as one general factor for data from an intelligence battery, and use both simultaneously i. In the first such study, Gustafsson and Balke used a nested factor model to analyze the predictive power of various intelligence factors for school achievement. In these hierarchical models, cognitive ability tasks load on broad CHC ability factors, which in turn load on a g-factor. The direct path between g and achievement was statistically non-significant. Direct age-specific effects of several CHC abilities on achievement were found, but only indirect effects of general intelligence. Mental speed had direct effects on achievement only in children: For achievement in mathematics, Taub et al. Short-term memory, however, affected reading decoding skills directly in children and adolescents from ages seven to 19 but not in adults , while it produced no significant direct effect on mathematics achievement in any of the age groups under examination. Similar findings have been reported by Benson , who also analyzed the impact of several CHC broad abilities as well as a CHC g-factor on reading comprehension and reading fluency in students K In his initial model, he hypothesized that mental speed and short-term memory, in addition to g, directly influence reading fluency, and that memory also directly influences reading comprehension. The expected influence of speed on reading fluency fitted the data well, but the causal paths from memory to the two reading abilities were not confirmed. Instead, only an indirect effect of short-term memory on reading fluency, mediated by some basic reading skills which, in turn, were influenced by g , could be corroborated. To summarize, when g and specific intelligence factors were jointly specified in a single higher-order model estimating their impact on academic achievement, mental speed had direct effects on achievement in young children, whereas short-term memory failed to impact achievement directly in most subsamples. Also, g had no direct effect on achievement in most of the studies. Mediator models Some recent studies have investigated possible mediator effects when jointly analyzing the impact of different cognitive abilities on academic achievement. Rindermann and Neubauer , studying a sample of high school students, analyzed the structural relations between mental speed, reasoning, divergent thinking, and school achievement. There are very few studies, however, investigating the impact of divergent thinking on academic achievement. Rindermann and Neubauer reported rather low correlations between a combined score from two divergent thinking tests and school achievement e. In their mediator study, Rindermann and Neubauer found the influence of mental speed to be mediated by reasoning and divergent thinking with the effect on school achievement being rather strong for reasoning and weaker for divergent thinking. Based on results from structural equation modeling, they proposed a speed-factor model in which mental speed influences school achievement only indirectly. Specifically, they argued that the more fundamental intellectual ability of mental speed had only an indirect impact on school achievement, since the relationship between mental speed and achievement was fully mediated by the higher cognitive abilities of reasoning and divergent thinking. These findings, based on data on younger school children, are in line with the findings of Floyd et al. In the model proposed by Luo et al. There are, however, findings reported in the literature, as documented above, indicating that the relationships between each of these constructs and school achievement differ widely in strength. Substantial positive correlations between mental speed and academic achievement seem to be a more or less consistent finding in the research literature of recent years. Yet the empirical evidence on the impact of short-term memory processes on academic achievement is less conclusive. Research aims of the present study In the present study, we build on the mediator studies documented above. The primary objective of this study is to describe more specifically the relationships between school achievement on the one hand and reasoning, divergent thinking, short-term memory, andmental speed on the other, and to test a mediation hypothesis for these relationships. Drawing on theoretical constructs that underlie information processing approaches to intelligence Deary, ; Neubauer, ; Woodcock, , we conceive of mental speed and short-term memory as lower-order, basic cognitive abilities, and reasoning as well as divergent thinking as higher-order, more complex abilities. We assume that the basic cognitive abilities are the basic building blocks for the more complex cognitive processes. Based on the findings reported by Rindermann and Neubauer and Luo et al. That is, we expect to find the impact of mental speed and short-term memory on academic achievement to be mediated by reasoning and divergent thinking. As the original aim of the assessment was to standardize the BIS-HB test,we aimed to draw a sample that was as representative as possible of the general student population in Germany.

Chapter 3 : Autism As a Disorder of High Intelligence

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Specific domains assessed by tests include mathematical skill, verbal fluency, spatial visualization, and memory, among others. This finding has since been replicated numerous times. Spearman referred to this common factor as the general factor, or simply g. By convention, g is always printed as a lower case italic. These correlations are known as g loadings. Full-scale IQ scores from a test battery will usually be highly correlated with g factor scores, and they are often regarded as estimates of g. Tests of vocabulary and general information are also typically found to have high g loadings. For example, in the forward digit span test the subject is asked to repeat a sequence of digits in the order of their presentation after hearing them once at a rate of one digit per second. The backward digit span test is otherwise the same except that the subject is asked to repeat the digits in the reverse order to that in which they were presented. The backward digit span test is more complex than the forward digit span test, and it has a significantly higher g loading. Similarly, the g loadings of arithmetic computation, spelling, and word reading tests are lower than those of arithmetic problem solving, text composition, and reading comprehension tests, respectively. Tests that have the same difficulty level, as indexed by the proportion of test items that are failed by test takers, may exhibit a wide range of g loadings. For example, tests of rote memory have been shown to have the same level of difficulty but considerably lower g loadings than many tests that involve reasoning. Several explanations have been proposed. However, he thought that the best indicators of g were those tests that reflected what he called the eduction of relations and correlates, which included abilities such as deduction , induction , problem solving, grasping relationships, inferring rules, and spotting differences and similarities. Spearman hypothesized that g was equivalent with "mental energy". However, this was more of a metaphorical explanation, and he remained agnostic about the physical basis of this energy, expecting that future research would uncover the exact physiological nature of g. According to Jensen, the g factor represents a "distillate" of scores on different tests rather than a summation or an average of such scores, with factor analysis acting as the distillation procedure. Wechsler similarly contended that g is not an ability at all but rather some general property of the brain. Jensen hypothesized that g corresponds to individual differences in the speed or efficiency of the neural processes associated with mental abilities. Thorndike and Godfrey Thomson , proposes that the existence of the positive manifold can be explained without reference to a unitary underlying capacity. According to this theory, there are a number of uncorrelated mental processes, and all tests draw upon different samples of these processes. The intercorrelations between tests are caused by an overlap between processes tapped by the tests. Similarly, high correlations between different batteries could be due to them measuring the same set of abilities rather than the same ability. Based on the sampling theory, one might expect that related cognitive tests share many elements and thus be highly correlated. Another problematic finding is that brain damage frequently leads to specific cognitive impairments rather than a general impairment one might expect based on the sampling theory. Thus there is no single process or capacity underlying the positive correlations between tests. During the course of development, the theory holds, any one particularly efficient process will benefit other processes, with the result that the processes will end up being correlated with one another. Thus similarly high IQs in different persons may stem from quite different initial advantages that they had. Each small oval is a hypothetical mental test. The blue areas correspond to test-specific variance s , while the purple areas represent the variance attributed to g. Factor analysis is a family of mathematical techniques that can be used to represent correlations between intelligence tests in terms of a smaller number of variables known as factors. The purpose is to simplify the correlation matrix by using hypothetical underlying factors to explain the patterns in it. When all correlations in a matrix are positive, as they are in the case of IQ, factor analysis will yield a general factor common to all tests. The general factor of IQ tests is referred to as the g factor, and it typically accounts for 40 to 50 percent of the variance in IQ test batteries. Initially, he developed a model of intelligence in which variations in all intelligence test scores are explained by only two kinds of variables: Later research based on more diverse test batteries than those used by Spearman demonstrated that g alone could not account for all correlations between tests. Specifically, it was found that even after controlling for g, some tests were still correlated with each other. This led to the postulation of group factors that represent variance that groups of tests with similar task demands e. The broad abilities recognized by the model are fluid intelligence Gf , crystallized intelligence Gc , general memory and learning Gy , broad visual perception Gv , broad auditory perception Gu , broad retrieval ability Gr , broad cognitive speediness Gs , and processing speed Gt. Carroll regarded the broad abilities as different "flavors" of g. Through factor rotation , it is, in principle, possible to produce an infinite number of different factor solutions that are mathematically equivalent in their ability to account for the intercorrelations among cognitive tests. These include solutions that do not contain a g factor. Thus factor analysis alone cannot establish what the underlying structure of intelligence is. In choosing between different factor solutions, researchers have to examine the results of factor analysis together with other information about the structure of cognitive abilities. These include the existence of the positive manifold, the fact that certain kinds of tests generally the more complex ones have consistently larger g loadings, the substantial invariance of g factors across different test batteries, the impossibility of constructing test batteries that do not yield a g factor, and the widespread practical validity of g as a predictor of individual outcomes. The g factor, together with group factors, best represents the empirically established fact that, on average, overall ability differences between individuals are greater than differences among abilities within individuals, while a factor solution with orthogonal factors without g obscures this fact. Moreover, g appears to be the most heritable component of intelligence. These include exploratory factor analysis, principal components analysis PCA , and confirmatory factor analysis. Different factor-extraction methods produce highly consistent results, although PCA has sometimes been found to produce inflated estimates of the influence of g on test scores. At the lowest, least general level there are a large number of narrow first-order factors; at a higher level, there are a relatively small number â€" somewhere between five and ten â€" of broad i. Any test can therefore be used as an indicator of g. Following Spearman, Arthur Jensen more recently argued that a g factor extracted from one test battery will always be the same, within the limits of measurement error, as that extracted from another battery, provided that the batteries are large and diverse. Thus a composite score of a number of different tests will load onto g more strongly than any of the individual test scores, because the g components cumulate into the composite score, while the uncorrelated non-g components will cancel each other out. Theoretically, the composite score of an infinitely large, diverse test battery would, then, be a perfect measure of g. Thurstone argued that a g factor extracted from a test battery reflects the average of all the abilities called for by the particular battery, and that g therefore varies from one battery to another and "has no fundamental psychological significance. This can be done within a confirmatory factor analysis framework. The second study found that g factors derived from four of five test batteries correlated at between. They attributed the somewhat lower correlations with the CFIT battery to its lack of content diversity for it contains only matrix-type items, and interpreted the findings as supporting the contention that g factors derived from different test batteries are the same provided that the batteries are diverse enough. The results suggest that the same g can be consistently identified from different test batteries. The distributions of scores on typical IQ tests are roughly normal, but this is achieved by construction, i. It has been argued[who? In particular, g can be thought of as a composite variable that reflects the additive effects of a large number of independent genetic and environmental influences, and such a variable should, according to the central limit theorem , follow a normal distribution. More specifically, SLODR predicts that the g factor will account for a smaller proportion of individual differences in cognitive tests scores at higher scores on the g factor. SLODR was originally proposed by Charles Spearman , [54] who reported that the average correlation between 12 cognitive ability tests was. Detterman and Daniel rediscovered this phenomenon in The most common approach has been to divide individuals into multiple ability groups using an observable proxy for their general intellectual ability, and then to either compare the average interrelation among the subtests across the different groups, or to compare the proportion of variation accounted for by a single common factor, in the different groups. Tucker-Drob [58] extensively reviewed the literature on SLODR and the various methods by which it had been previously tested, and proposed that SLODR could be most appropriately captured by fitting a common factor model that allows the relations between the factor and its indicators to be nonlinear in nature. He applied such a factor model to a nationally representative data of children and adults in the United States and found consistent evidence for SLODR. A recent meta-analytic study by Blum and Holling [59] also provided support for the differentiation hypothesis. As opposed to most research on the topic, this work made it possible to study ability and age variables as continuous predictors of the g saturation, and not just to compare lower- vs. Results demonstrate that the mean correlation and g loadings of cognitive ability tests decrease with increasing ability, yet increase with respondent age. SLODR , as described by Charles Spearman , could be confirmed by a g-saturation decrease as a function of IQ as well as a g-saturation increase from middle age to senescence. Specifically speaking, for samples with a mean intelligence that is two standard deviations i. The question remains whether a difference of this magnitude could result in a greater apparent factorial complexity when cognitive data are factored for the higher-ability sample, as opposed to the lower-ability sample. It seems likely that greater factor dimensionality should tend to be observed for the case of higher ability, but the magnitude of this effect i. Practical validity[edit] The practical validity of g as a predictor of educational, economic, and social outcomes is more far-ranging and universal than that of any other known psychological variable. The validity of g is greater the greater the complexity of the task. The correlation between test scores and a measure of some criterion is called the validity coefficient. One way to interpret a validity coefficient is to square it to obtain the variance accounted by the test. For example, a validity coefficient of. This approach has, however, been criticized as misleading and uninformative, and several alternatives have been proposed. One arguably more interpretable approach is to look at the percentage of test takers in each test score quintile who meet some agreed-upon standard of success. For example, if the correlation between test scores and performance is. This is apparently because g is closely linked to the ability to learn novel material and understand concepts and meanings. At more advanced educational levels, more students from the lower end of the IQ distribution drop out, which restricts the range of IQs and results in lower validity coefficients. In high school, college, and graduate school the validity coefficients are. The g loadings of IQ scores are high, but it is possible that some of the validity of IQ in predicting scholastic achievement is attributable to factors measured by IQ independent of g. According to research by Robert L. Thorndike , 80 to 90 percent of the predictable variance in scholastic performance is due to g, with the rest attributed to non-g factors measured by IQ and other tests. The correlations ranged from. The correlation between g and a general educational factor computed from the GCSE tests was. In a study of , students at 41 U. At the level of individual employees, the association between job prestige and g is lower â€” one large U. Mean level of g thus increases with perceived job prestige. It has also been found that the dispersion of general intelligence scores is smaller in more prestigious occupations than in lower level occupations, suggesting that higher level occupations have minimum g requirements. The average meta-analytic validity coefficient for performance in job training is. Research also shows that specific aptitude tests tailored for each job provide little or no increase in predictive validity over tests of general intelligence. It is believed that g affects job performance mainly by facilitating the acquisition of job-related knowledge.

Chapter 4 : Benjamin Roy Simpson (Author of Correlations of Mental Abilities)

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