

Chapter 1 : Individual Differences

In our study, we also tested whether there were individual differences among spellers in their mobilization of the two processing pathways (lexical vs. non-lexical) in word spelling to dictation.

Received Mar 25; Accepted Jun This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in other forums, provided the original authors and source are credited and subject to any copyright notices concerning any third-party graphics etc. This article has been cited by other articles in PMC. Abstract We report an investigation of individual differences in handwriting latencies and number of errors in a spelling-to-dictation task. Eighty adult participants wrote a list of spoken words presented in two sessions. The participants were also evaluated on a vocabulary test Deltour, Various multiple regression analyses were performed on both writing latency and errors. The analysis of the item means showed that the reliable predictors of spelling latencies were acoustic duration, cumulative word frequency, phonology-to-orthographic PO consistency, the number of letters in the word and the interaction between cumulative word frequency, PO consistency and imageability. Error rates were also predicted by frequency, consistency, length and the interaction between cumulative word frequency, PO consistency and imageability. The analysis of the participant means and trials showed that 1 there was both within- and between-session reliability across the sets of items, 2 there was no trade-off between the utilization of lexical and non-lexical information, and 3 participants with high vocabulary knowledge were more accurate and somewhat faster, and had a differential sensitivity to certain stimulus characteristics, than those with low vocabulary knowledge. We discuss the implications of these findings for theories of orthographic word production. Any theory of written spelling must account for how the cognitive system implemented in the brain goes from an auditory input, a pictured object, or an idea to the muscular realization of the spelling response. In the present study, we focused on handwritten spelling-to-dictation and addressed the general issue of individual differences in this verbal skill. This issue has recently been addressed in visual word recognition Yap et al. In order to illustrate the different issues that we wish to investigate here, we will first sketch a dual-route view of the spelling process in adults based on the recent proposals of Purcell et al. The dual-route view is the dominant view of word spelling. It posits that there are two routes available for spelling familiar words: The lexical route permits the spelling of known words through the retrieval of lexical knowledge from the output orthographic lexicon whereas the non-lexical route makes use of sublexical knowledge to provide the spelling of unknown words and non-words. This view is supported by various lines of evidence Tainturier and Rapp, for a review. Within the dual-route architecture, there are central and peripheral components. The central components consist of orthographic long-term memory, phoneme-grapheme conversion, and orthographic working memory. The word spellings that people know are stored in orthographic long-term memory. It is generally assumed that orthographic wordform representations are retrieved from the semantic codes that are activated from the auditory processing of the heard word. Word frequency is assumed to affect orthographic wordform retrieval within the lexical route and its influence on spelling performance is taken as an index of the mobilization of this route. Word frequency effects correspond to the observation that high-frequency words are produced faster and more accurately than low-frequency words e. The spelling of words can also be assembled from the phonological codes derived from auditory processing by the involvement of a non-lexical conversion procedure. Traditionally, it has been proposed that phoneme-grapheme units are involved in the conversion process Tainturier and Rapp, The ambiguity of the relationships between sound and spelling units is generally operationalized with the PO consistency variable 1. Some accounts have explained consistency effects in terms of a conflict between the different individual graphemes that, in the case of irregular words, are activated by the non-lexical and lexical routes at the grapheme level, unlike in the case of regular words e. Abstract individual letter representations are activated at the level of orthographic-working memory Rapp and Dufor, which maintains letter identity and order information active for processing by peripheral components. Word length effects in spelling are assumed to result from the involvement of this working memory system. The peripheral processes are

responsible for the generation of a written trace in handwritten spelling. It is assumed that abstract letter representations form the basis for the processing stages of allographic conversion the choice of case and specific writing style, letter shape assignment, and motor muscular programming and execution of the effector-specific muscle movements required to output letters. There is evidence supporting the idea of interactions between different central components e. In the Bonin et al. The participants had to write down, on a graphic tablet, bare nouns that were presented orally. The reliable predictors of spelling latencies were acoustic duration, objective cumulative word frequency, PO consistency and word length. As claimed above, this finding accords with the prediction of the dual-route view because it is assumed that consistency effects are the result of a competition between the outcomes of the lexical and non-lexical routes, respectively Tainturier and Rapp, Overall, the findings were consistent with the dual-route view which posits that spelling to dictation requires the interactive involvement of different types of knowledge: In word reading, where the dual-view has proved to be very influential Coltheart et al. It has sometimes been assumed that the non-lexical route is slower and less automatized than the lexical route e. Importantly to note for the purposes of our study is the claim that the non-lexical route might be under strategic control, with the result that its involvement in the processing of words might be emphasized or de-emphasized under specific conditions. Certain word reading studies have tried to identify reading profiles according to the dominant reliance on the lexical or non-lexical route. According to these studies, one type of reader relies more on the lexical route than on the non-lexical route whereas another type relies more heavily on the non-lexical route e. However, there is as yet no clear evidence in support of this view Burt and Heffernan, , while certain observations tend to contradict it e. However, readers are still often categorized in this way Burt and Heffernan, In word spelling, Weekes defined two subgroups of readers, namely lexical and non-lexical readers, and found that the lexical readers were more accurate than the non-lexical readers when spelling irregular words but that both types of readers had similar performances on non-word spelling. It is worth mentioning, however, that certain studies suggest that readersâ€™ and not subtypes of readersâ€™ might be able to more or less strategically control the type of processingâ€™lexical vs. The only work we are aware of on the issue of strategic control over the lexical vs. Finally, at the macrolevel of written text production, Levy and Ransdell identified individual writing profiles by analyzing transitional probabilities between the processes of planning, text generation, and reviewing and revising during different writing sessions. It is worthy of note that the research conducted on the issue of strategic control over the two routes in both word reading and spelling has been conducted at the level of groups of participants and not at the level of individuals. It is possible that individuals vary in terms of knowledge that is recruited to perform word reading and spelling tasks. This issue was recently addressed by Yap et al. They ran a large scale investigation of individual differences based on the lexical decision and word reading trial-levels taken from the English Lexicon Project ELP, Balota et al. The authors found relatively high between- and within-session reliability across different sets of stimuli. Interestingly, they did not find evidence of a trade-off between sensitivity to different types of information. Instead, individuals who were more influenced by one variable e. In the present study, we addressed similar issues in handwritten spelling to dictation and used certain statistical analyses that were described in Yap et al. Spelling is a less practiced skill than reading, despite the fact that the number of electronic messages sent every day has been growing steadily in recent years Rapp and Dufor, It is therefore clearly more likely that we observe individual differences in spelling than in a more practiced skill such as word reading. At the level of text production, Levy and Ransdell found evidence for individual differences in the way participants shifted between the various writing processes. Interestingly, they found that the shifts between processes exhibited by a given writer, were stable both within a writing session and across sessions. We will explore whether such stable patterns among individuals are also observed within and across sessions at the microlevel of word production. Contrary to Yap et al. Given that the French orthographic system is highly inconsistent Peereman and Content, 4 , it is not unreasonable to hypothesize that certain spellers rely more on lexical knowledge Weekes, whereas the opposite is true for other spellers. If individuals are able to control the use of the two routes, namely the lexical route, which is sensitive to word frequency, and the non-lexical route, which is sensitive to PO consistency, one prediction is that a trade-off between the word-frequency and PO consistency variables should be found.

Thus, we should observe some spellers to be more sensitive to the word frequency variable and less sensitive to PO consistency and vice versa. However, this type of trade-off between the different types of knowledge could be modulated by the level of exposure to print among participants. As far as word spelling is concerned, it is a popular belief that individuals who read a lot and possess a rich vocabulary tend to be good spellers. However, to our knowledge, there is little evidence to support such a claim. In the present study, we used a vocabulary test Deltour, to test the hypothesis that participants with a high level of exposure to print have better spelling performances than those with a lower level of exposure.

Method Participants A total of 80 students 66 females; mean age of 20 years from University of Bourgogne participated in the two sessions of the experiment and were given course credits. All were native speakers of French with normal or corrected-to-normal vision and no known hearing deficit.

Stimuli The original stimuli consisted of nouns. All the stimuli were monosyllabic words. Table 1 Statistical characteristics of the independent variables corresponding to the items used in the multiple regression analyses.

Chapter 2 : Introduction to individual differences - An undergraduate psychology course

Individual Differences in Adult Spellers 2 Abstract Young and older adults' ability to retrieve the spellings of high- and low-frequency words was.

We report an investigation of individual differences in handwriting latencies and number of errors in a spelling-to-dictation task. Eighty adult participants wrote a list of words. The participants were also evaluated on a vocabulary test. Various multiple regression analyses were performed on both writing latency and errors. We discuss the implications of these findings for theories of orthographic word production. Any theory of written memory. It is generally assumed that orthographic wordform spelling must account for how the cognitive system implemented representations are retrieved from the semantic codes that in the brain goes from an auditory input, a pictured object, or an are activated from the auditory processing of the heard word. In the Word frequency is assumed to affect orthographic wordform present study, we focused on handwritten spelling-to-dictation retrieval within the lexical route and its influence on spelling and addressed the general issue of individual differences in this performance is taken as an index of the mobilization of this verbal skill. This issue has recently been addressed in visual word route. Word frequency effects correspond to the observation that recognition of low-frequency words is slower than high-frequency words. The that we wish to investigate here, we will first sketch a dual-route spelling of words can also be assembled from the phonological view of the spelling process in adults based on the recent proposals codes derived from auditory processing by the involvement of orthographic lexicon. Traditionally, it has been assumed that the dual-route view is the dominant view of word spelling. The lexical route The ambiguity of the relationships between sound and spelling permits the spelling of known words through the retrieval of lexicons is generally operationalized with the orthographic consistency knowledge from the output orthographic lexicon whereas the non-lexical route makes use of sublexical knowledge to provide the spelling of unknown words and non-words. This view is supported by various lines of evidence. For instance, phoneme-grapheme consistency takes into account both the frequency with which a particular phoneme is associated with a particular grapheme and the overall frequency of the grapheme whatever its pronunciation. When the phoneme is always associated with the same grapheme, the orthographic consistency ratio is equal to 1. When multiple associations exist, the ratio is less than 1. The orthographic consistency values vary between 0 and 1. Individual differences in spelling-to-dictation result that inconsistent words, and low-frequency words in particular, take longer to produce than consistent words. Some accounts have explained these effects in terms of a conflict between the different routes. According to these studies, one type of reader relies more on the lexical route than on the non-lexical route whereas another type relies more heavily on the non-lexical route. However, there is as yet no clear evidence in support of this. Abstract individual letter representations are activated at the level of orthographic long-term memory, while certain observations of orthographic-working memory suggest that readers are still often categorized in this way. Word length effects in spelling are also observed. The peripheral processes are responsible for the generation of a written trace in handwritten spelling. It is assumed that the lexical route is more accurate than the non-lexical route. Abstract letter representations form the basis for the processing of irregular words but that both types of readers had similar performances on non-word spelling. It is worth noting, however, that certain studies suggest that readers' orthographic programming and execution of the

effector-specific muscle movements required to output letters. There is evidence supporting the lexical vs. The only work we are aware of on the issue of strategic control the type of processing. Finally, at the macrolevel In the Bonin et al. The participants had to write down, on a graphic tablet, bare nouns that and revising during different writing sessions. It is worthy of note were presented orally. The reliable predictors of spelling latencies that the research conducted on the issue of strategic control over were acoustic duration, objective cumulative word frequency, PO the two routes in both word reading and spelling has been consistency and word length. It is possible that individuals vary in terms of knowledge in spelling-to-dictation latencies: This issue was recently addressed by Yap et al. They ran a large scale investigation of individual dual-route view because it is assumed that consistency effects are differences based on the lexical decision and word reading trial- the result of a competition between the outcomes of the lexical levels taken from the English Lexicon Project ELP, Balota et al. The authors found relatively high between- and within- Finally, and also in line with the dual-route view of spelling, Bonin session reliability across different sets of stimuli. Instead, individuals who were more ably with word frequency and PO consistency, with the result influenced by one variable e. In the present was most pronounced on words of low imageability. Overall, the study, we addressed similar issues in handwritten spelling to dictation and used certain statistical analyses that were described in that spelling to dictation requires the interactive involvement of Yap et al. In word reading, where the dual-view has proved to be very 2 However, this issue has been the cause of some debate since the evidence put influential Coltheart et al. It has been taken to support an alternative account i. The difference is that the tests are not only performed It is therefore clearly more likely that we observe University of Bourgogne participated in the two sessions of the individual differences in spelling than in a more practiced skill experiment and were given course credits. All were native speakers such as word reading. At the level of text production, Levy et al. found evidence for individual differences known hearing deficit. Interestingly, they found that the shifts between STIMULI processes exhibited by a given writer, were stable both within The original stimuli consisted of nouns. All the stimuli a writing session and across sessions. We will explore whether were monosyllabic words. The word stimuli were selected from such stable patterns among individuals are also observed within the LEXOP lexical database Peereman and Content, The statistical characteristics of the words are presented in Contrary to Yap et al. Cumulative frequency whereas the opposite is true for other spellers. If individuals and frequency trajectory were computed as the sum of or in the are able to control the use of the two routes, namely the case of frequency trajectory, difference between the z-scores associated with the two measures of frequency see Bonin et al. We included PO consistency variables should be found. Thus, we tency measures defined on rime units VC in the light of studies should observe some spellers to be more sensitive to the e. However, this type of trade-off between the tion performance. Imageability norms were taken from the Bonin different types of knowledge could be modulated by the level of et al. Each word was presented in uppercase and was followed by high vocabulary knowledge had faster and more accurate word six other words including a synonym. For each of the 34 words, recognition performance and generally exhibited a lower level the participants had to select for the corresponding synonym. As far as word spelling is concerned, it is a popular belief that individuals APPARATUS who read a lot and possess a rich vocabulary tend to be good The items were recorded by a female speaker and digitized using spellers. However, to our knowledge, there is little evidence to Audacity software on a Macintosh computer. The PsyScope software support such a claim. In the present study, we used a vocabulary ware Cohen et al. The computer controlled the presentation of with a high level of exposure to print have better spelling the auditory items and recorded the latencies. A graphic tablet performances than those with a lower level of exposure. The order English, the French language is characterized by the presence of the two sessions was counterbalanced across participants. In of ambiguous phoneme-grapheme mappings. Estimates indicate greater consistency in French than in English in the orthography-to-phonology both sessions, each trial corresponded to the following events. In particular, of the screen. Next, the indefinite

article corresponding to the in spelling many inconsistencies are located at word endings in French. The difference in consistency scores is not high between words which otherwise could have been treated as verbs instead the different orthographic renderings of the same phonological unit and of nouns. Individual differences in spelling-to-dictation Table 1 Statistical characteristics of the independent variables corresponding to the items used in the multiple regression analyses. Vocabulary test scores are by participants, other measures are by items. The participants then had to write down correlations were lower for the error scores. This could be the stimulus as quickly as possible on the graphic tablet using a due in part to the relatively restricted range of this vari- contact pen. For each written response, a line was drawn and the able. Although the same pattern was observed for between- participant had to position the stylus directly above the start of session reliability scores, all the correlations were lower than the line. The participants were instructed to write down a cross those that were computed on the within-session scores. Yap when they could not identify the stimulus. The time that elapsed et al. The inter- data however, the values of the various individual parameters trial interval was 4 s. Each experimental session started with 20 that they took into account were generally higher than in our practise trials. Each session lasted about 1 h. The vocabulary test was administered after the spelling to dic- tation task in session 2 and took about 5 min to complete. Although the corre- Two participants, who did not return to the lab for the second lation between the mean error rates and the mean latencies was session, were eliminated from the analyses. Of the 12, total positive and reliable, with the result that words with longer laten- potentially correct latency trials, 5. Among the error types, 0. The trials within each frequency values were log-transformed before being entered in session were labeled as odd and even trials depending on the the regression equations. Overall, the results on the latencies alphabetical order of the items. The comparison of S1 and S2 tri- were consistent with those found by Bonin et al. The most important determi- of within-session reliability. Within-session action terms , we consider that multicollinearity problems could not have reliability scores were very high for the mean latencies and, drastically affected the results of the regression analysis including all variables to a lesser extent, for the standard deviations. Individual differences in spelling-to-dictation Table 2 Upper Mean percentages of errors, mean latencies and standard deviations in ms overall and as a function of sessions and for the odd and even trial within sessions; Lower Correlations between session 1 S1 and session 2 S2 and between odd and even trials for errors and for the means and standard deviations of the latencies. Means and standard deviations are those corresponding to the mean RT by subject in each subset of items. Table 3 Correlations between the variables.

Chapter 3 : What are the Different Types of Individual Differences?

JOURNAL OF EXPERIMENTAL CHILD PSYCHOLOGY 37, () Individual Differences among Children in Spelling and Reading Styles REBECCA TREIMAN Indiana University Previous studies have found differences among children in their relative reliance on spelling-sound rules and word-specific associations in reading words.

How and why they differ is less clear and is the subject of the study of Individual differences IDs. Although to study individual differences seems to be to study variance, how are people different, it is also to study central tendency, how well can a person be described in terms of an overall within-person average. Indeed, perhaps the most important question of individual differences is whether people are more similar to themselves over time and across situations than they are to others, and whether the variation within a single person across time and situation is less than the variation between people. A related question is that of similarity, for people differ in their similarities to each other. Questions of whether particular groups e. Personality psychology addresses the questions of shared human nature, dimensions of individual differences and unique patterns of individuals. Research in IDs ranges from analyses of genetic codes to the study of sexual, social, ethnic, and cultural differences and includes research on cognitive abilities, interpersonal styles, and emotional reactivity. Methods range from laboratory experiments to longitudinal field studies and include data reduction techniques such as Factor Analysis and Principal Components Analysis, as well as Structural Modeling and Multi-Level Modeling procedures. Measurement issues of most importance are those of reliability and stability of Individual Differences. Research in Individual Differences addresses three broad questions: Taxonomies of individual differences Taxonomic work has focused on categorizing the infinite ways in which individuals differ in terms of a limited number of latent or unobservable constructs. This is a multi-step, cyclical process of intuition, observation, deduction, induction, and verification that has gradually converged on a consensual descriptive organization of broad classes of variables as well as on methods for analyzing them. Most of the measurement and taxonomic techniques used throughout the field have been developed in response to the demand for selection for schooling, training, and business applications. Test Theory Consider the case of differences in vocabulary in a particular language e. Words are seen as random replicates of each other and thus individual differences in total vocabulary size are estimated from observed differences on these smaller samples. The Pearson Product Moment Correlation Coefficient r compares the degree of covariance between these samples with the variance within samples. As the number of words sampled increases, the correlation of the individual differences within each sample and with those in the total domain increases accordingly. Although CTT and IRT estimates are highly correlated, CTT statistics are based on decomposing the sources of variance within and between individuals while IRT statistics focus on the precision of an individual estimate without requiring differences between individuals. CTT estimates of reliability of ability measures are assessed across similar items internal consistency , across alternate forms, and across different forms of assessment as well as over time stability. Tests are reliable to the extent that differences within individuals are small compared to those between individuals when generalizing across items, forms, or occasions. CTT reliability thus requires between subject variability. IRT estimates, on the other hand, are concerned with the precision of measurement for a particular person in terms of a metric defined by item difficulty. The test theory developed to account for sampling differences within domains can be generalized to account for differences between domains. Just as different samples of words will yield somewhat different estimates of vocabulary, different cognitive tasks e. Using multivariate procedures such as Principal Components Analysis or Factor Analysis, it is possible to decompose the total variation into between domain covariance, within domain covariance, and within domain variance. One of the most replicable observations in the study of individual differences is that almost all tests thought to assess cognitive ability have a general factor g that is shared with other tests of ability. That is, although each test has specific variance associated with content e. Tests of ability are viewed as maximal performance measures. Ability is construed as the best one can do on a particular measure in a limited time speed test or with unlimited time power test. Personality measures are estimates of average performance and typically include reports of preferences and estimates of what one

normally does and how one perceives oneself and is perceived by others. The same procedures used to clarify the structure of cognitive abilities have been applied to the question of identifying the domains of personality. Many of the early and current personality inventories use self-descriptive questions. Although there is substantial consistency across inventories developed this way, some of this agreement could be due to conceptually overlapping item pools. Other researchers have advocated a lexical approach to the taxonomic problem, following the basic assumption that words in the natural language describe all important individual differences. This shifts the taxonomic question from how are individuals similar and different from each other to how are the words used to describe individuals. Dimensional analyses of tests developed based on lexical, rational, or theoretical bases suggest that a limited number between three and seven of higher order trait domains adequately organize the thousands of words that describe individual differences and the logically infinite way that these words can be combined into self or peer report items. The broadest domains are those of introversion-extraversion and emotional stability-neuroticism, with the domains of agreeableness, conscientiousness and intellectual openness or culture close behind. These domains can be seen as asking the questions that one wants to know about a stranger or a potential mate: Measures of ability and personality reflect observations aggregated across time and occasion and require inferences about stable latent traits thought to account for the variety of observed behaviors. However there are other individual differences that are readily apparent to outside observers and require little or no inference about latent traits. The most obvious of such variables include sex, age, height, and weight. Differences that require some knowledge and inference are differences in ethnicity and social economic status. These obvious group differences are sometimes analyzed in terms of the more subtle measures of personality and ability or of real life outcomes.

Predictive Validity Individual differences are important only to the extent that they make a difference. Does knowing that people differ on a trait X help in predicting the likelihood of their doing behavior Y? For many important outcome variables the answer is a resounding yes. In their review of 85 years of selection in personnel psychology, Frank Schmidt and John Hunter *Psychological Bulletin*, , , show how differences in cognitive ability predict differences in job performance with correlations averaging about .50. These correlations are moderated by job complexity and are much higher for professional-managerial positions than they are for completely unskilled jobs. These relationships diminish as a function of years of experience and degree of training. General mental ability *g* also has substantial predictive powers in predicting non-job related outcomes, such as likelihood of completing college, risk for divorce and even risk for criminality. The non-cognitive measures of individual differences also predict important real life criteria. Extraversion is highly correlated with total sales in dollars among salespeople. Similarly, impulsivity can be used to predict traffic violations. Conscientiousness, when added to *g* substantially increases the predictability of job performance. Although the size of the correlation is much lower, conscientiousness measured in adolescence predicts premature mortality over the next fifty years.

Sources of individual differences The taxonomic and predictive studies of individual differences are descriptive organizations of thoughts, feelings, and behaviors that go together and how they relate to other outcomes. But this categorization is descriptive rather than causal and is analogous to grouping rocks in terms of density and hardness rather than atomic or molecular structure. Causal theories of individual differences are being developed but are in a much earlier stage than are the descriptive taxonomies. Descriptive taxonomies are used to organize the results of studies that examine genetic bases of individual differences. By applying structural modeling techniques to the variances and covariances associated with various family constellations it is possible to decompose phenotypic trait variance into separate sources of genetic and environmental variance. The most common family configurations that are used are comparisons of identical monozygotic with fraternal dizygotic twins. Additional designs include twins reared together or apart, and biological versus adoptive parents, children and siblings. Conclusions from behavioral genetics for most personality traits tend to be similar: Additional results suggest that genetic sources of individual differences remain important across the lifespan. However, this should not be taken to mean that people do not change as they mature but rather that the paths one takes through life are similar to those taken by genetically similar individuals. Genes do not code for thoughts, feelings or behavior but rather code for proteins that regulate and modulate biological systems. Although promising work has been done searching for the

biological bases of individual differences it is possible to sketch out these bases only in the broadest of terms. Specific neurotransmitters and brain structures can be associated with a broad class of approach behaviors and positive affects while other neurotransmitters and structures can be associated with a similarly broad class of avoidance behaviors and negative affects. Reports relating specific alleles to specific personality traits emphasize that the broad personality traits are most likely under polygenic influence and are moderated by environmental experience. Subtle differences in neurotransmitter availability and re-uptake vary the sensitivity of individuals to cues about their environment that predict future resource availability and external rewards and punishments. It is the way these cues are detected, attended to, stored, and integrated with previous experiences that makes each individual unique. With time we can expect to increase our taxonomic and predictive power by using these causal bio-social theories of individual differences. Prentice Hall Press; A thoughtful introduction to the broad field of personality. Arnold A broad overview of the field that includes a review of measurement methodologies. The neuropsychology of individual differences. W Personality and individual differences: Although dated, perhaps the best treatment of the scientific method as applied to the study of personality and individual differences. Eds Handbook of Personality Psychology. The definitive handbook of the field includes chapters on evolutionary, biological, and social bases of individual differences. The science of mental ability. Praeger Review of the importance of general intelligence for performance on tasks. A concise tutorial on genetic modeling and personality taxonomies. International handbook of personality and intelligence.

Chapter 4 : Spelling: Approaches to Teaching and Assessment - Peter Westwood - Google Books

impaired when they were poor spellers, resulting in age differences among poor spellers. In contrast, no age differences occurred when comparing good spellers in both age groups.

Resources, education, language, nutrition, health, etc. Lifecycle phases, age Gender In addition, the results of ethnic group comparisons may not be consistent across the lifecycle. For example, Muthen and Muthen observed that gender and ethnicity effects related to alcohol consumption patterns among individuals in their twenties did not follow the same trajectory as for individuals in their thirties. Furthermore, American Indian experiences may vary tremendously depending on where they reside during different periods of their lives-in large urban centers, rural areas, within reservation areas, or as youths living in boarding schools. The White non-Hispanic and Black non-Hispanic groups had a similar rate 3. The rates of alcohol dependence were lower among other Hispanic respondents Caribbean, 1. Makimoto, like the National Household Survey, also found that the group of Asian Americans had higher rates of abstinence and lower rates of heavy alcohol consumption compared to Whites, African Americans, and Hispanics. Moncher, Holden and Trimble observed that an aggregate sample of Native Americans who used alcohol did so at an earlier age and drank more heavily, compared to other ethnic groups in the United States. Diversity in drinking patterns also exists between subgroups of the same racial or ethnic group. The National Household Survey data concerning Hispanic groups reinforces the importance of disaggregating data on heterogeneous ethnic and cultural populations. Caetano and Raspberry observed that Mexican Americans born in the U. Furthermore, subgroups are also defined by age drinking decreases with age, gender men tend to drink more often than women, and national origin Delgado, ; SAMHSA, Similarly, Makimoto reported that Japanese Americans describe themselves as drinking more frequently and more heavily than do Chinese Americans, though these two groups are usually combined in research into a single "Asian American" category. Furthermore, Hawaiians in Hawaii have the highest rate of binge and chronic drinking, compared to Whites, Filipinos, Japanese, and other Hawaiian groups Mokuau, Some groups, such as the Chippewa Ojibwe have rates of alcohol use disorders that are similar to the general population Draguns, Prevalence rates vary by tribe and location-urban, rural, and reservation Draguns, , and problems with alcohol vary between reservations, depending on individual attachments to family and to the Native American community Milbrodt, Impact of Alcohol on Ethnic and Cultural Groups In addition to differences in drinking patterns, differences in the consequences of alcohol use may exist among various ethnic and cultural groups. The differential consequences may, in part, be a function of different vulnerabilities and resiliencies conferred by biological and genetic factors NIAAA, Or, differences in outcomes and impacts may be related to disparities in the timing and types of services experienced by individuals from various ethnic and cultural groups. Differential consequences of alcohol consumption can be related to: Differing vulnerability intrinsic, biological Service disparities access to intervention and prevention resources Differential rates of alcohol-related medical problems Differential rates of alcohol-related mortality Differential impacts may relate to "drink of choice" Differential impacts may relate to physiology As the U. David Satcher issued a statement concerning health disparities and service inequities that exist across our nation. His position is that some communities, defined by race and ethnicity, disproportionately bear the burden of disability from under- or poorly-treated mental health problems. For example, Hispanics in the U. For example, significant disparities in age and ethnicity appear among individuals who are served in, and complete, public sector alcohol treatment programs. Native Americans were more likely to complete treatment The authors conclude that these discrepancies are the result of several important interactive factors, including variable rates of under-diagnosing drinking problems and social class distinctions between the groups in terms of who receives public sector versus private alcohol treatment services. African Americans currently have higher rates of alcohol-related medical problems and mortality than Whites, despite having higher rates of alcohol abstinence Gray, They were three times more likely to develop cirrhosis of the liver and esophageal cancer, one of several alcohol-related cancers. Similar findings have been reported from research with Native Americans who use alcohol. Rates of vehicular

homicide, homicide, and suicide that are attributable to alcohol are higher among Native Americans than the general population Milbrodt, The incidence rate of esophageal cancer in Hawaii is much higher among Native Hawaiians than among Whites, and this may be attributable to a difference in the "drink of choice" between these two groups. Native Hawaiians choose beer and Whites are more likely to choose wine and spirits Mukuau, A fair amount of discussion about the drinking patterns among Asian Americans and Pacific Islanders addresses "flushing" reactions to alcohol consumption. This is a physiological response or sensitivity that many individuals experience to varying degrees in response to drinking alcohol, and may include a variety of chemically-induced, physically uncomfortable symptoms Kuramoto, ; NIAAA, While flushing has no apparent long-range health impact, it may or may not be related to the frequencies with which affected individuals choose to drink. Studies indicate that some individuals with this response drink less, while other individuals develop alcohol-related problems despite its presence NIAAA, Mental Health and Other Social Effects: Intimate partner violence IPV is one problem that has been associated with alcohol abuse. This is not true among White women perpetrators; their alcohol-related problems continue to predict the IPV that they perpetrate, but not IPV perpetrated against them. However, among Black couples, alcohol-related problems of men and women continue to be strong predictors of IPV. It should be noted that the key variable is the presence of alcohol-related problems, not the amount of alcohol consumed Cunradi et al. Some authors address the issues of social control and economic incursions that may be tied to alcohol use among members of certain ethnic and cultural groups. This history reports ways in which alcohol has been used to maintain and preserve an inequitable social order and to reinforce patterns of oppression. Milbrodt also describes historical roots of alcohol problems among Native Americans that are tied to interactions between Native people and Europeans. Alcohol was recognized by some tribal leaders as a source of their increasing vulnerability, poverty, persecution, and loss of traditional social order and resources Mancall, This conclusion was based on a set of observations of Navajo Indians. Many interventions are based on assumptions that do not recognize the importance of these norms, practices, and influences on alcohol consumption and abuse. Such a lack of cultural relativity may result in a misinterpretation of intervention outcomes Heath, For these reasons, Adrian cautions researchers to be alert to implicit assumptions about relationships between ethnicity and addiction, particularly in reference to differences in prevalence rates, associated problems, and use-related attitudes. Some cultures abhor any alcohol use. For example, among non-drinking adolescents, religion often plays a central role in life. In cultures that accept some alcohol consumption, norms govern what types are consumed. There are also norms concerning how much is consumed, and what are acceptable forms of intoxicated behavior. Thus, any specific type of substance use could be differentially viewed as normative, deviant to some degree, or quite deviant behavior, depending on the cultural context Oetting et al. Furthermore, socialization theory explains how specific drinking customs and rituals are transmitted across generations and from one individual to another within a family, ethnic, or cultural group Oetting et al. Drinking and other drug use behavior are also associated with the perception of risk associated with consumption, and the risk perception may differ among ethnic and cultural groups. Gutmann urges caution, however, in drawing conclusions about the role of acculturation in shaping alcohol consumption patterns: The process of acculturation alone may not be the primary factor shaping alcohol abuse patterns, but the stress of the acculturation process within hostile environments may influence alcohol use and abuse patterns. This is of concern, because practitioners and researchers may unwittingly and inadvertently contribute to the problematic drinking patterns through: In fact, a content analysis of empirical studies led to the conclusion that there is no support for a contention that substance use, substance-related problems, or substance-encouraging attitudes differ significantly between representatives of mainstream U. This is important because misrepresentation and over-inflation of the differences contributes to "further problematizing" the status of individuals from these groups p. However, it is also difficult to separate the effects of cultural norms and values from other contextual influences, such as unemployment and the loss of status that accompanies the loss of traditional tribal roles of importance. Relevant cultural norms may apply either to the actual consumption of alcohol, or more to the threshold of acceptable behavior while under the influence of alcohol Draguns, The Hispanic community has strong cultural prohibitions about women drinking. These community injunctions do not exist

for Hispanic men—a fact that is offered as a potential explanation for their significantly higher drinking rates when compared to Hispanic women. McNeece and DiNitto describe a culturally specific definition of alcohol and other drug problems that exists within segments of the Latino community. There is a perception of such problems as being the result of extrinsic, spiritual intervention, rather than as a phenomenon under individual control. In addition to addressing issues of religion and spirituality, culturally competent practice with Hispanic and Latino individuals should address issues of: Similarly, the influence of the Confucian and Taoist philosophies has been considered as an explanation for the low rate of alcohol consumption among Asian Americans. The degree of acculturation to American cultural patterns may also serve as a means of explaining differences in drinking behavior across Asian and Pacific Islander groups. Studies of youth and young adults generally associate higher degrees of assimilation with higher levels of drinking, particularly among men Kuramoto, Risk factors that have been identified through key informant surveys among Asian American groups include: Makimoto suggests that alcohol problems among Asian Americans are often related to struggles with the transition to Western culture. The transition process creates stress, disrupts traditional family structures and the extensive support system provided by extended family members, and can hinder self-identity development. Some individuals use alcohol to cope with the stress associated with these difficulties. West African traditions involved alcohol as an integral part of medicine, religion, and special celebrations, but placed high value on moderate drinking and disapproved of drunken behavior Gray, Slavery, emancipation, abolition, and civil rights have since intervened, and one contemporary result is a tremendous degree of variability and ambiguity in attitudes, meanings, norms, and behaviors related to alcohol consumption Gray, A large segment of the African American community is characterized by abstinence Herd, The cultural-specific approach to understanding alcohol use disorders leads to an awareness of where people seek and receive help with their problems. It is important to note that the research concerning drinking patterns among African Americans does not tend to employ ethnographic approaches or to address cultural theories, and therefore is limited in its usefulness for "within group" comparisons Gray, Caetano, Clark, and Tam indicate that drinking patterns observed among some Native American groups are consonant with the use of alcohol as a means of coping with low self-esteem, anxiety, and feelings of frustration, powerlessness, hopelessness and despair resulting from experiences with discrimination and oppression. Individuals at all socioeconomic levels experience racism and discrimination, which may explain why alcohol use patterns within some ethnic and cultural groups tend to cross over socioeconomic boundaries. Dixon adds that, particularly among African Americans, alcohol is often valued for the escape it provides, while the problems that its use may create are underestimated. Access to Alcohol Another factor that contributes to drinking patterns within an ethnic or cultural group is the extent to which alcohol is easily accessible. Highly segregated, low-income neighborhoods tend to have a high degree of access to liquor and density of liquor outlets NIAAA, For example, among a group of 7th grade White, African American, and Mexican American teenagers, Mexican Americans received the greatest number of substance offers. They were most likely to be offered substances by peers in the family and at parties. African Americans received offers of substances from their dates especially among girls and their parents, and were more likely to receive offers in parks. African American adolescents were the most likely to resist the offers and to use explanations in their refusal repertoires. Gender differences also appeared among these variables Moon et al. Prevention and Intervention The Social Work Code of Ethics directs social work professionals to acquire and adopt culturally competent practices see Section 1. This includes consideration of client language preferences and abilities. There are two general approaches to prevention and intervention of alcohol use disorders among members of specific ethnic or cultural groups. The first involves applying evidence-based practice and adapting interventions that have been empirically tested and proven to work with the general population. The second involves creating culturally specific programs "from the ground up. Those who do, often enter treatment for alcohol abuse as a result of seeking treatment for some other problem, such as an alcohol-related medical condition Booth et al, Therefore, the initial intervention objective may involve helping the client to enter alcohol treatment. The AOD Cultural Framework outlined by Amodeo and Jones specifically addresses the cultural dynamics involved with seeking help for problems.

Chapter 5 : Module10H-Ethnicity, Culture and Alcohol

Peter Westwood has completely revised and updated all chapters of his practical teaching resource on spelling. Filled with up-to-date information, references and research-based teaching methods, the second edition provides an overview of effective ways to help students develop and improve their spelling skills and strategies.

This study found evidence for a Phoenician-Chinese continuum in spelling as well as in reading. Ability to spell nonsense words e. Children who were skilled at rules tended to overgeneralize them to exception words. In addition, a measure of rule use in spelling correlated with measures of rule use in reading. Previous investigations of individual differences in reading have shown that children vary in the way in which they pronounce printed words. At one end of the continuum are individuals who rely heavily on spelling- sound correspondence rules. Phoenicians can decode nonsense words e. They do less well with exception words e. OO Copyright 0 by Academic Press. All rights of reproduction in any form reserved. To a greater degree than Phoenician readers, Chinese readers seem to recognize words on the basis of their overall shape Guttentag, Earlier studies of the Phoenician-Chinese continuum in children have focused primarily on reading. The present study examined spelling as well as reading, using a population of third and fourth graders. To assess individual differences in spelling, this study employed a kind of test analogous to that developed for reading by Baron The nonsense words are unfamiliar and cannot be pronounced by previously memorized associations. The present study used, in addition to such a reading test, a spelling test of analogous design. Since these items are unfamiliar, previously learned associations will not suffice. Differences among children in their relative reliance on rules versus specific associations should be apparent in the pattern of pairwise correlations between scores on regular words, exception words, and nonsense words. Three interrelated hypotheses may be tested. First, if children use rules to spell regular words, and if they differ in their use of rules, r_{NR} i. Nonsense words and regular words should correlate highly if children who are skilled at rules use them for both nonsense words and regular words. Nonsense words and exception words should correlate less highly if use of rules and use of word-specific associations characterize different types of children. Thus, the finding that nonsense words correlate more highly with regular words than with exception words would suggest that the spelling of nonsense words and the spelling of regular words require many of the same rulebased processes, while the spelling of exception words involves different processes. The comparison between r_{RE} and r_{NE} permits a test of a second hypothesis-that children use word-specific associations to spell regular words. If exception words correlate more highly with regular words than with nonsense words, one could suggest that the spelling of exception words and the spelling of regular words both involve word-specific associations, while associations are less important for nonsense words. On the other hand, the finding that r_{RE} is as low as r_{NE} would suggest that word-specific associations do not play a role in the spelling of regular words. Finally, the comparison between r_{NR} and r_{RE} indicates which mechanism-rules or specific associations-is the major determinant of ability to spell regular words. If rules are more important, r_{NR} should be greater than r_{RE} . If word-specific associations are more important, r_{RE} should be greater than r_{NR} . Thus, the Comparison between r_{NR} and r_{RE} should indicate whether children who are good at nonsense words i. This result emerged for the sample of poorly reading fourth graders studied by Baron , Experiment 1 , for the entire sample in the Baron study, and for the sample studied by Baron and Treiman b. Following the reasoning outlined above, these findings indicate that both rules and associations are used to read regular words. The relatively low correlations between nonsense words and exception words suggest that children who are good at rules are not necessarily also good at word-specific associations. This result supports the view that readers differ in their relative reliance on the two mechanisms, with some specializing in rules and others relying to a greater degree on word-specific associations. For only one of the three samples mentioned above the entire sample in the Baron, , study did r_{NR} significantly exceed r_{RE} . Thus, it is not clear whether rules are more important de- terminants of ability to read regular words than are associations; that is, whether Phoenicians read regular words more accurately than do Chinese. Baron reported that the tendency to make sound- preserving errors in reading-errors in which exception words are pro- nounced like the corresponding

regular words e. In other words, Phoenicians appeared to make more sound-preserving errors than Chinese. Since the present study included both spelling and reading tests, the consistency of individual differences across the two domains could be investigated. However, the results from populations of reading-disabled children or adults do not necessarily generalize to nondisabled children. Indeed, Baron et al. To further examine the generality of individual differences, this study included a third test, the rapid reading test. Baron first used this test to measure use of rules in the oral reading of known words for speed. The rapid reading test included two types of word lists-confusing lists and control lists. Baron reported that fourth-grade readers, particularly Phoenician ones, took longer to read the confusing lists than the control lists. As a result of their greater reliance on spelling-sound rules, Phoenicians seemed to be more impaired by the inconsistent spelling-sound relations. The rapid reading test was given to only the fourth graders in the present study, the words being judged too difficult for some third graders. Of interest is the correlation between the effect of confusing lists relative to control lists and performance in the spelling and reading tests. According to these investigators, a phonological strategy plays a major role in spelling. In reading, a visual strategy is more important. In other words, spelling-sound rules predominate in spelling, whereas word-specific associations predominate in reading. If this suggestion is correct, the pattern of correlations between regular, exception, and nonsense words should differ in the spelling and reading tests. Note that differences between spelling and reading could exist even if individual differences correlated across the two domains. For example, a child who relied on rules in spelling to a greater extent than his or her peers might also show a greater than average use of rules in reading. The average reliance on rules, however, could be greater for spelling than for reading. A final concern of the present study was with sex differences. Baron reported the posthoc finding that boys were more likely to rely on rules than girls. The sex differences were most apparent in the rapid reading test, in which boys showed a larger time difference between confusing lists and control lists than girls. This result was unexpected, since American boys are generally reported to be poorer readers than girls e. The present investigation sought to replicate the previous finding of a sex difference in reading style. It also asked whether sex differences exist in spelling. The subjects were 24 third graders mean age 9;4, range 8;;9 and 22 fourth graders mean age 10;1, range 9;;9 attending regular school classes. At each grade level, equal numbers of girls and boys participated. The fourth graders were given the spelling test, the reading test, and the rapid reading test. The third graders were given the spelling test and the reading test. Due to scheduling problems, one fourth grader did not take the rapid reading test and one third grader did not take the spelling test. The spelling test contained 96 items. The items were constructed in sets of three. Each set contained a regular word, an exception word, and a nonsense word, as shown in Table 1. The exception words were, of course, also more common than the nonsense words, which had a zero frequency. The 32 sets of stimuli were divided into three subsets of increasing difficulty. The reading test contained 96 items. The items were constructed in sets of three, each set containing a regular word, an exception word. Examples are shown in Table 1. The items were divided into three subsets of increasing difficulty, using the criteria described above. Each item was printed on a separate index card using large upper- case stick-on letters. The rapid reading test included four lists of 18 words each. These lists were identical to those previously used by Baron There were two confusing lists, which contained consecutive words with identical spelling patterns and different pronunciations, and two control lists. Portions of these lists are shown in Table 2. Each list was typed on a separate sheet of paper in large upper-case letters. For both the spelling and reading tests, the items at each level of diaculty were presented in the order regular, exception, nonsense. A single order was used to minimize the contribution of order effects, if any, to individual differences. She used the real word items in a phrase or sentence. If the child repeated an item incorrectly, the experimenter said it again. The child then attempted to spell the item. Before presenting the nonsense items, the experimenter told the child that they were not real words but to try to spell them as well as possible. The child spelled the nonsense words on the opposite side of paper from the corresponding real words. This was done so that the child could not see his or her spellings of the real words while deciding how to spell the nonsense words. For the reading test, the experimenter held up each card and asked the child to try to read the item. Before presenting the nonsense items, the experimenter told the child that they were not real words but to try to read them as well as possible. Throughout the spelling and reading

tests, the child received general encouragement but no specific feedback. For the rapid reading test, the child was asked to read each list of words quickly and without errors. The lists were presented in a fixed sequence confusing 1, control 2, confusing 2, control 1. This sequence was repeated five times. After each reading, the experimenter corrected any errors that the child had made. The session was tape-recorded and times and errors for the reading of each list were later scored from the tape. Each child took the reading test first and the spelling test second- immediately after the reading test if he or she was not tired; otherwise on a subsequent day. The rapid reading test was given to the fourth graders in a final session.

Chapter 6 : Strategy Choice Mediates the Link between Auditory Processing and Spelling

The second chapter discusses how children acquire spelling skills, and the third chapter discusses individual differences among spellers. The fourth chapter recommends several teaching approaches, and the fifth chapter gives guidelines for assessing spelling.

Find articles by Tru E. Brachman Find articles by Kyle J. The authors have declared that no competing interests exist. Conceived and designed the experiments: Contributed to the writing of the manuscript: Received Apr 2; Accepted Aug Abstract Relations among linguistic auditory processing, nonlinguistic auditory processing, spelling ability, and spelling strategy choice were examined. Sixty-three undergraduate students completed measures of auditory processing one involving distinguishing similar tones, one involving distinguishing similar phonemes, and one involving selecting appropriate spellings for individual phonemes. Participants also completed a modified version of a standardized spelling test, and a secondary spelling test with retrospective strategy reports. Once testing was completed, participants were divided into phonological versus nonphonological spellers on the basis of the number of words they spelled using phonological strategies only. Results indicated a moderate to strong positive correlations among the different auditory processing tasks in terms of reaction time, but not accuracy levels, and weak to moderate positive correlations between measures of linguistic auditory processing phoneme distinction and phoneme spelling choice in the presence of foils and spelling ability for phonological spellers, but not for nonphonological spellers. These results suggest a possible explanation for past contradictory research on auditory processing and spelling, which has been divided in terms of whether or not disabled spellers seemed to have poorer auditory processing than did typically developing spellers, and suggest implications for teaching spelling to children with good versus poor auditory processing abilities. Introduction Does what people hear affect how they spell? Certainly in an extreme case, such as when one mistakes one word for another e. What, however, of less extreme cases? For instance, what should one expect from a person who does not distinguish between two different phonemes speech sounds as accurately as does another person? Moreover, if linguistic auditory processing does affect spelling ability, the question remains as to why. Are such problems specific to language, or does this difficulty have roots in more basic level sounds? The ability to distinguish between two tones may seem quite removed from the ability to perceive and spell phonemes. However, could this basic auditory ability or disability be representative of some lower level of processing? In the case where basic auditory processing is compromised, this issue may be considered a possible underlying cause for linguistic auditory processing difficulties and may result in spelling difficulties. The goals of the current research were threefold: Much of the research in this area has been conducted with children learning to spell and with children and adults experiencing reading difficulties. The present study extends these lines of research to examine the role of auditory processing in spelling for nondisabled adults. Linguistic Auditory Processing The literature concerning the effects of linguistic auditory processing on spelling is largely clear and consistent, at least with regard to learning to spell in English. Researchers [54] compared speakers of different English dialects and found that differing pronunciations of certain words led to differing spellings among beginning spellers. Research [51] has found that the effect of pronunciation on spelling may persist into adulthood. The effects of pronunciation on spelling in other contexts have also been examined. In these studies, it was found that beginning spellers often omitted the preceding vowel in cases like this e. How common is it, though, for two phonemes to be confused? In cases where the pronunciation of two phonemes differs only in one characteristic, such as voicing whether or not the vocal cords vibrate during articulation, young children often have difficulty distinguishing between the two [53]. Is it reasonable to assume, then, that these confusions affect their spelling? Other researchers [55] found that children who had difficulty discriminating between confusable phonemes had lower spelling accuracy, not only when attempting to spell words that contained those phonemes, but also for other words. It has been found that phonological awareness, measured in preschool children, predicted reading and spelling in Grade 1 in Both English and Dutch children [19]. A study with English-speaking Grade 1 children, showed a relationship between phonemic segmentation ability

and spelling [16]. It has also been found that early phonological awareness tested in preschoolers correlated with spelling skills at school age [33]. When considering research focused on reading, much of it focusing on reading disabilities, we see perhaps an even clearer influence of auditory processing than when looking at spelling. For instance, it has been repeatedly demonstrated different ERP responses to presentation of phonemes for infants who are at familial risk for dyslexia and those who are not [21], [22], [30] – [32], [39]. A longitudinal study of children with familial risk for dyslexia yielded evidence of a relationship between linguistic auditory processing and literacy skills. The 5-year-olds included in the initial study were more likely to show deficits in speech-in-noise perception if they were from families with risk of dyslexia [6]. Their performance on these tasks not only correlated with their literacy skills at that point in time, but predicted literacy skills in Grade 1. In another follow-up with the same participants, the researchers found that impaired phonological awareness in Kindergarten predicted the diagnosis of dyslexia by Grade 3 [7]. Researchers working with English-speaking adults have found deficits on almost all measures of speech perception among reading disabled participants [57]. In one study, children with reading disabilities performed more poorly on phoneme discrimination tasks than did those with no disabilities [10]. In another, children who were poor but not necessarily diagnosed as disabled readers, showed deficits in phoneme discrimination as well [15]. It has also been shown that children who are poor readers have more difficulty in phoneme discrimination than do good readers [37]. Taken together, the presented research suggests a general agreement that baseline linguistic auditory processing is lower in individuals diagnosed with disabilities in reading or spelling. In the case of nonlinguistic auditory processing, however, there is considerably less agreement.

Nonlinguistic Auditory Processing There is considerably less agreement concerning the effects of nonlinguistic auditory processing on spelling than there is concerning linguistic auditory processing. Over 30 years ago, Tallal and her colleagues were investigating possible links between nonlinguistic auditory processing and reading and writing skills. Studies finding an effect Tallal found that primary school children with reading disabilities performed as well as normal readers when the tones were presented relatively slowly, but not when tones were presented rapidly [48]. Working with colleagues, she found that performance on auditory tasks could be used to classify primary school children as having or not having language impairments with near-perfect accuracy [50]. Children who had language impairments almost always performed significantly more poorly on the task than did those who did not. Since then, researchers have found differences between individuals with and without reading or language impairment in terms of ability to detect frequency changes in a sound [7] – [8], ERP event-related potential responses to tones differing in rise times [25], performance on tasks involving rise time and temporal order of sounds [41], frequency discrimination [24], [27], [36]. In a study with university students, adults with good auditory temporal processing ability as determined by tasks such as gap detection and determining the order in which two tones have been presented were better readers and spellers than those with poor auditory temporal processing [3].

Both of the auditory impairments i. One group of researchers found that adults with dyslexia were less able to discriminate between tones of differing frequencies; they required larger differences between two tones, on average, in order to detect a difference [34], [46]. Others found that adults with dyslexia had more trouble with pitch discrimination tasks when the interstimulus interval (ISI) was brief [17]. Another group found that 7- to 10-year-old children who had language impairments were less accurate in their recollection of tone sequences than were unimpaired controls [5]. Several other research groups have found similar impairments when, as in [17], the ISI is brief, e. Specifically, they did not find significant differences between readers with dyslexia and normal readers in the ability to detect very brief gaps between presentations of a tone, contrary to another of their predictions. Also, as discussed below, other researchers have reported evidence that contradicts their findings. These researchers found that, once outliers were removed, most significant differences between participants with and without dyslexia disappeared; with the exception of a subgroup of participants with dyslexia, all of the differences disappeared. They concluded that any phonological deficit that may exist in dyslexia could not be reasonably connected to a low-level auditory deficit based on current evidence [28]. Some other researchers [10], [37] found no evidence of impaired frequency discrimination or temporal order judgment of non-speech sounds in reading disabled children compared to controls. Some researchers have

found no difference between the gap-detection threshold for groups with spelling disabilities and for control groups [44]. Others have found that children with dyslexia performed significantly worse than did the control group children on speech segmentation, but not on the non-speech tasks [38]. Some of the contradictory results reported regarding the effects of nonlinguistic auditory processing on reading and spelling may be due to different measures of nonlinguistic auditory processing. Nonlinguistic auditory processing has been operationalized in terms of frequency discrimination, temporal order judgment, gap detection, and rise time discrimination, to name just a few. However, there has not been complete agreement of results even when similar measures have been used. Their discovery of a subgroup of individuals with dyslexia for which there was a significant correlation, though, does suggest that the conflicting results could be explained, at least partially, by differences in participant groups. Specifically, participants who have less accurate nonlinguistic auditory processing may be compensating for this impairment to different degrees. Another possibility is that different ISI lengths contributed to different results, and that temporal issues determining order of presentation, or length of gap between tones, rather than simple discrimination whether or not two tones are of the same frequency are responsible for some of the results.

Spelling Strategy as a Possible Mediating Variable

One possible reason why, some researchers find a correlation between auditory processing and spelling ability while others do not may be that some individuals with less accurate auditory processing are compensating for processing deficits. One form of compensation is strategy choice. This idea is supported by findings obtained when researchers had children with and without dyslexia matched for reading level read information from a computer screen at different speeds and in both a quiet condition and a condition in which auditory masking that is, white noise presented via headphones was used [12]. These conditions combined served to enhance the reading performance of children with dyslexia only. For individuals with more accurate auditory processing, phonology may be a more viable choice, so shifting attention away from phonological strategies would thus not be helpful. Given the connection between reading and spelling, it also seems plausible that this phenomenon may generalize to spelling ability. Also, McAnally and Stein [35] found their hypothesized differences between individuals with and without dyslexia in terms of amplitude modulation following response AMFR; that is, a change in the potential recorded at the scalp following response to a tone stimulus in only one of three frequency ranges when the two groups of participants were matched for hearing sensitivity. Thus, it is reasonable to ask if something other than auditory acuity is also influencing the difference in their reading and spelling abilities. The possibility exists that it stems from differences in the strategies the participants were using to perform these tasks. The extent to which individuals who choose adaptively among spelling strategies e. Research on strategy choice, e. However, that is not likely the case for all. If more of the participants in a study who have less-accurate auditory processing are also less-adaptive spellers, any link between auditory processing and spelling is likely to be clear. Thus, they are less likely to show a deficit in spelling, as they have found ways to compensate for this potential source of spelling difficulty. In this case, even if there is a link, or potential link, between auditory processing and spelling accuracy, it would not be evident by testing these participants.

Research Needs

While there is a plethora of literature on the subject of auditory processing and its connection to reading and spelling accuracy, there are several conspicuous holes in the research. Particularly unclear is the relationship between linguistic and nonlinguistic processing. That is, it is unclear whether or not individuals with less accurate nonlinguistic auditory processing are also likely to have less accurate linguistic auditory processing. In an exception, one group of researchers found that children with better nonlinguistic auditory processing as demonstrated in a frequency discrimination task did show better literacy skills [47]. However, even this study may have been measuring a distinction between participants with and without impairments; the effect related specifically to readers in the lower quartile of their participant group, and they did not exclude participants on the basis of learning disabilities. The literature on linguistic auditory processing has been expanded to include individual differences within typically-developing populations. It has been shown that linguistic auditory processing skills affect spelling even within normal readers and spellers [55]. Light may be shed on the area of nonlinguistic auditory processing if such differences are investigated. In addition, other variables may mediate the effect of auditory processing on spelling. It is possible that there is a mediating variable, such as spelling

strategy use, influencing the link between auditory processing and spelling ability. As described above, an argument can be made for the viability of strategy choice as a means through which a person may circumvent auditory processing difficulties. It is also possible that there are other mediating variables that have not been explored.

Chapter 7 : Individual differences in adult handwritten spelling-to-dictation

Individual differences in spelling ability are the result of differences in the knowledge and use of sound-spelling information rather than differences in visual memory abilities. Poor spellers may rely.

What are the Different Types of Individual Differences? Article shared by 1. The following brief description may serve to make individual differences a simple concept that can easily be grasped. Individuals are seen differing in considerable measure in respect of their general intelligence. It is not possible to send to schools children with an intelligence quotient of below Even the small schools trouble children whose intelligence quotient varies between 70 and Children between 75 and 90 I. Generally, 40 to 60 per cent of the children in schools have I. Children who are either above or below this level of intelligences require special educational methods and conditions. Children with intelligence quotients varying between and are considered brilliant or intelligent. Abilities of this kind are concerned with mental, artistic, personality or motor ability. Differences of Background In school the differences that the children exhibit is the outcome of their different families and their communities. Attitudes towards education and authority differ in each family, culture and class. Some of these attitudes are favorable while others are unfavorable to education. In either condition, the differences of attitudes results in differences among children. Alacrity in Learning Difference in the quickness or alacrity in learning is visible not only in children of different ages but also among children in the same age group. This difference is dependent upon their maturity and educational background. Differences in the alacrity of learning result in benefits accruing from formal education. Mental Age Children of differing ages as well as children of the same age show differences in their respective mental ages. Generally speaking, all students studying in the same class differ according to their mental ages. It has been observed that in the age of 6, differences in mental age range up to 5 years. Mental age and education are intimately related. Till the individual attains adulthood, his manual dexterity, rate of muscular movement and resistance to fatigue develops continually. In this manner, the same individual in different ages and different individuals in the same age group manifest considerable differences in manual dexterity. Sex Differences Makneimer and Terman discovered the following differences between men and women, on the basis of some studies: On the other hand, men are superior in physics and chemistry. Faults of speech etc. On the other hand, boys take interest in stories of bravery, science, war and scouting, stories of games and sports, scouts stories and games of occupation and skill. Nationality Many studies have led to the conclusion that individuals of different nations differ in respect of nature, physical traits, interest and personality, etc. Such a difference is only natural since their cultural and geographic environment is distinctive. Difference in Respect of Development Difference in development is in evidence not only in individuals of different age groups but also between individuals of the same age. Differences Relating of Learning In respect of learning, children manifest such differences as past experience and learning, ability in the use of various kinds of apparatus, rate of learning, interest in learning, etc. As has been pointed out, the difference in sex leads to a difference in interests. Similarly, factors such as family background, level of development, differences of nationality and race, etc. Personality Differences in respect of personality have led psychologists to much study, and on the basis of this study individuals have been classified into many groups. In this connection, the teacher has the following advantage to derive from knowledge of individual differences: This can help him to form the proper attitude towards the brilliant and the dull-witted students. It is only too evident that very good results cannot be expected from dull-witted or mediocre students. Any effort to bring all or a majority of the students in the class to the same level is futile since some 50 or odd percentage of them will in variably remain below this level. Improvements in atmosphere, method of teaching, and the apparatus of education cannot lead to the satisfactory teaching of all students since their individual ability to learn differs widely. Knowing the presence of individual differences the teacher is not perturbed at the failure of some of his students since such failure is only to be expected from below-average students. The teacher does not come to expect successes that are impossible. Individual difference makes it clear that all aspects of the personality are mutually related and to develop any one aspect it is essential that all the aspects be developed.

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Differences among children in their relative reliance on rules versus specific associations should be apparent in the pattern of pairwise correlations between scores on regular words, exception words, and nonsense words.