A Comparison of Learning-Disabled Children and Non-Learning-Disabled Children on the Rorschach
An Information Processing Perspective

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Abstract. The purpose of this study was to examine the differences between learning-disabled (LD) and non-learning-disabled (non-LD) students on the Rorschach inkblot test to help determine how differently the two groups process information. Using the cognitive triad in Exner’s Comprehensive System (CS), the variables consistent with past research and most representative of each of the three stages of the cognitive triad were investigated. The sample consisted of 62 schoolchildren in the age range of 7–12 years in the US state of California. Thirty-one children were identified as LD and were matched on age, gender, and ethnicity with a student who was identified as non-LD. The groups’ responses were compared using a one-way Analysis of Variance (ANOVA) to determine whether differences existed between the groups for each of the Rorschach variables F%, W+, XA%, and WSum6. This study concluded that LD children are unable to perceive, interpret, and synthesize information from their environment in a clear and realistic way when compared with their non-LD peers.

Keywords: Rorschach, children, learning disabilities

Over the years there has been great debate about the definition of learning disabilities. Nevertheless, the definition created by the United States Office of Education has had the most historical influence within US school systems and it is adopted in this research. According to this definition, learning disability involves a weakness in basic psychological...
processes that slows the learning process and results in inadequate academic achievement (Individuals With Disabilities Education Act [IDEA], 1990). This weakness between academic potential and achievement has been typically understood as a notable or atypical difference between ability as demonstrated when intelligence test scores exceed academic achievement test scores by an improbable margin. This ability versus achievement component of learning disability is typically referred to as the discrepancy model. Most theorizing and educational test instruments utilize an information processing model for understanding learning and the processing deficits of learning-disabled (LD) children (Silver, 1993). In addition to a discrepancy between ability and achievement, identification of a processing weakness – i.e., a visual or auditory processing weakness – is required in order to label a child as LD. This widely implemented definition and assessment approach is used in this research. In the US, definitions of LD differ from state to state and even between school districts of the same state. Using the discrepancy model of learning disability was an attempt to allow this research to be generalized to many school districts across the US.

The Rorschach has been touted as a cognitive problem-solving task involving information processing as a foundation for its usefulness as a performance test of personality (Acklin & Wu-Holt, 1996; Exner, 2003). In this approach, responses are seen as solutions, and learning disability problem-solving weaknesses should be demonstrated in the responses and be detectable when responses are aggregated in protocol level scores. Accordingly, it is expected that learning-disability deficits in information processing should affect the responses on the Rorschach. This study focused on the notion that the Rorschach response process can be theoretically linked to the type of impairment in perception, integration, and interpretation of information found in LD individuals.

Few studies have investigated the response patterns of LD children on the Rorschach. Those that do exist vary considerably with respect to the operational definition of LD and also whether and how control groups were used, or if they were used at all. Some compared LD children with the available Comprehensive System (CS) norms. Recent research suggests that such comparisons may be problematic because of concerns with the norms of some variables, especially Form Quality, which addresses the accuracy and conventionality of perception (Meyer, Erdberg & Schafer, 2007; Viglione & Hilsenroth, 2001; Viglione & Meyer, 2008).

Champion, Doughtie, Johnson, and McCreary (1984) compared 20 8-year-olds and 20 11-year-olds with learning disabilities at a nonprofit
learning disabilities clinic in a large metropolitan area with Exner’s (1978) norms on nonpatient, withdrawn, and behavior-problem children for the same ages. Children were diagnosed with a learning disability at the clinic based on a full psychoeducational assessment. The authors expected the LD children experienced problems with perceptual accuracy, self-concept, reaction to emotion-laden stimuli, expression of affect, and social interactions. They found that measures of perceptual accuracy and reality testing, $F+\%$ and $X+\%$ (% of accurate and conventional form for all responses), were one standard deviation below the 1978 means for nonpatient children. Additionally, their mean Lambda (the number of Pure Form responses divided by the number of non-Pure Form responses) for LD children was at least one standard deviation above the norm. High Lambda and Pure Form are simplifications in that form but not shading, movement, color, depth, and tactile features are included in the Rorschach response as problem-solving solutions. Thus, as would be expected, the LD group demonstrated less ability to process the complexities of the blots and coped with the stimulus in the most easily managed and simplified way. Overall, the study suggested that LD children demonstrated deficits in information processing in the form of (a) distorting more or misunderstanding more of what was going on around them and (b) oversimplifying information and avoiding complexity. However, later research (Meyer et al., 2007; Viglione & Hilsenroth, 2001; Viglione & Meyer, 2008) demonstrated that the 2003 CS norms (Exner) for Form Quality scores $F+\%$ and $X+\%$ are likely incorrect in that nonpatient children produce fewer accurate responses than would be predicted by the CS norms. Thus, the levels in the present study may not be exceptional. Furthermore, Lambda distributions are typically highly skewed, so that the parametric comparisons with small samples often violate statistical assumptions (Meyer, Viglione, & Exner, 2001).

Using Rourke and Telegdy’s (1971) and Rourke, Dietrich, and Young’s (1973) neuropsychologically based approach to learning disabilities, Acklin (1990) separated students into a language LD group or a spatial LD group. The language LD group ($n = 24$) was defined by having a Performance IQ ten points greater than the Verbal IQ. The opposite relationship between the IQ scores resulted in placement in the spatial LD group ($n = 17$) Adopting an information-processing point of view, Acklin reasoned that because the Rorschach is a task requiring both visual and linguistic abilities, LD subtypes would differ from one another, but he found no such differences. However, the small number of participants in his groups greatly limited the power of the more subtle comparison
between LD subtypes, so that such small differences may have been over-
looked. Acklin then combined the LD groups and compared them with
the CS (Exner, 1978) norms. Similar to the findings of Champion et al.
(1984) and suffering from the same methodological problems, the LD
group produced significantly lower F+% values and higher X-% values
than the normative sample, suggesting but not confirming that LD chil-
dren interpret their world in a less conventional but more idiosyncratic,
personalized, and mistaken way. Lambda differences were in the opposite
direction of those found by Champion et al. (1984).

Harper and Scott (1990) improved on the methods of other studies by
comparing LD students defined by an IQ–achievement discrepancy with a
matched (gender, parental socioeconomic status [SES], and school, and
IQ) non-LD group. LD status was established by an IQ–achievement dis-
crepancy. They contrasted only 12 LD children to a control group of
13 non-LD children, and thus conclusions are difficult to make.

Cruz, Brier, and Reznikoff (1997) recognized that previous studies sam-
paled primarily Caucasian, middle-class children and so they compared
44 urban, minority adolescents with Exner’s (1993) normative data. LD
status was based on a discrepancy between the adolescents’ cognitive per-
formance and academic achievement accompanied by a processing defi-
cit in attention, memory, perceptual motor function, and/or language.
All children participating in the study demonstrated average intelligence,
as measured by the Wechsler Intelligence Scale for Children (WISC). The
results of the study were found to be consistent with past studies in that
the LD group evidenced inferior Form Quality, that is, lower X+% and
higher X-% and Xu% than the CS (Exner, 1993) normative sample; how-
ever, this study was also vulnerable to the same methodological problems
and inconclusiveness.

Taken together, and if problems in normative data can be ignored,
these studies suggest that inferior Form Quality is associated with LD sta-
tus among children and adolescents. This suggests that LD children per-
ceive their worlds and process information less accurately and less
conventionally, in a more idiosyncratic or personalized way. However,
most of the studies used Exner’s nonpatient samples as comparison
groups. As noted earlier, the CS normative data are problematic, and
Form Quality is one of the most problematic for drawing conclusions.
For our study, we wanted to limit the number of variables so as to manage
the experiment-wide error rate; to make our findings more definitive, we
selected a maximum of five hypothesized variables at 0.05, so that the
experiment-wide error rate would be 0.20.
Given their central place in the interpretation of problem solving and information processing, and by extension in learning disabilities, we selected three components from the CS (Exner, 2003) cognitive triad, in addition to the available research, to select variables for study. The three components in this triad are information processing, cognitive mediation, and ideation. In the research design, it is important to analyze as few variables as possible so as to control error rates and preserve power. Accordingly, we selected the fewest variables that presumably summarize the most variance relative to LD processing within the cognitive triad clusters and had the most empirical support in LD studies. In the cognitive triad cluster, the information-processing cluster encompasses what one attends to and how one organizes incoming information. Its major variables are \( \text{Lambda} \) (Pure Form/R), the Obsessive Style (OBS) and Hypervigilant Indices (HVI), Organizational Activity (Zf), and the corresponding efficiency difference score, \( \text{Zd} \). Location (Whole [W], Common Detail [(D], Unusual Detail [Dd], Developmental Quality [DQ], and Perseveration [PSV]).

Within the information-processing cluster of the cognitive triad, two variables were investigated. The first of these, \( \text{Lambda} \), was chosen because it has been researched in the past as having significant results for the issue at hand. It is interpreted as an important stylistic variable having to do with inferior processing due to narrowing of the stimulus field, avoiding ambiguity and complexity, and simplistic thinking. Such simplification is evident in the response phenomenology or from a behavioral representation perspective in the \( \text{Pure F} \) response, focusing only on form or shape, while ignoring shading, depth, color, and suggestions of tactile sensations or movement. When predicting higher \( \text{Lambda} \) for LD children, it is inferred that LD children would have less ability to process the complexities of the blots than non-LD children. It has been recommended (Meyer et al., 2001) to use \( F\% \) instead of \( \text{Lambda} \) in research because of its superior psychometric qualities. Thus, for this study, \( F\% \) is one of the variables that is most representative of the information-processing stage and it is statistically sound.

In addition to measures of simplicity, CS information processing includes response components that are demonstrations of highly complex operations. Whole responses with synthesis (\( W+ \)) are a notably refined variable that offers important information of one’s cognitive maturation and ability to form complex concepts (Weiner, 2003). Other variables included in Exner’s information processing cluster are organizational activity (\( Zf \)) and whole-to-detail location (\( W:D:Dd \)) as well as synthesis responses (\( DQ+ \)). These three complexity features come
together in the W+ response. Rorschach (1924) proposed that W responses represented one’s ability to organize one’s environment into meaningful concepts and associations. Exner (1993) stated that, “although W can be taken as some index of motivation to deal with the entire stimulus field, its relation to more sophisticated and complex cognitive operations must be derived from a review of the DQ codes that have been included in the response” (Exner, 1993, p. 460). He was suggesting that the W+ response is a sophisticated combination of location and developmental quality. Looking at both the location and developmental quality together is what Weiner (2003) referred to as a “refined variable.” He asserted that such variables are often preferable as operational definitions in research because they more precisely capture a process or trait. In producing the refined variable, W+, one takes on the whole blot, specifies the forms involved by paying attention to the outlines, breaks down the blot into two or more objects, and reintegrates them meaningfully. Such a complex operation should happen less often with LD children.

The cognitive mediation cluster refers to accuracy and conventionality of interpretation of the blots, and by extension to problem solving and coping in the world. Among the variables in this cluster, there are two components represented, conventionality (P and to some extent X+%) and accuracy (form quality). The Form Quality scores are the more important ones in this cluster, and research has thus far suggested that Form Quality is inferior among LD children. As would be expected, LD children would misinterpret their world and process information less accurately and thus produce inferior Form Quality. Among these highly interrelated variables, we chose XA% because it includes all the well-defined responses in the record that are accurate and have a “goodness of fit.” Thus, one would expect LD children to produce a lower XA% because of their tendency to miss important information and misinterpret situations.

The third cluster in the cognitive triad, ideation, describes how one thinks and what one thinks about. The most relevant construct in this cluster to LD is the capacity for clear thinking and reasoning. Presumably, LD children have less ability to think logically and coherently. The Weighted Sum of Six (WSum6) is associated with confused and illogical thinking, but also with immature and capricious thinking and reasoning and, when extremely elevated, with thought disorder (Exner, 2003).

The Rorschach variables F%, XA%, W+, and WSum6 have been shown in past studies to have adequate reliability. Variables closely related to F% (Lambda), XA% (X-%), and WSum6 were reported to have excellent
test–retest or stability reliability in a review by Viglione and Hilsenroth (2001), although Sultan, Andronikof, Réveillère, and Lemmel (2006) reported considerable lower stability for \(X\%\) and \(WSum6\) among nonpatients. The interrater reliability for these variables has been reported to be in the good to excellent ranges (Sultan et al., 2006; Meyer, Viglione, Mihura, Erard, & Erdberg, 2011; Viglione & Meyer, 2008). Hughes, Gacono, and Owen (2007) examined the current status of the Rorschach assessment within the primary and secondary educational systems. Their meta-analysis determined that the Rorschach was both reliable and valid as an assessment for children and adolescents. Hughes et al. (2007) concluded that using the Rorschach and the CS met the criteria for both ethical and professional standards set for test use in school settings.

Since LD children interact with their environments in less effective ways than non-LD children do, their social performance is clearly impacted. LD children may find it difficult to identify and change their behaviors that cause them to be different or unconventional, thus isolating them from others. Several studies have indicated that LD individuals participate less than their non-LD peers in formally arranged social activities. Deshler, Schumaker, Alley, Warner, and Clark (1981) conducted a survey of children in grades 7 through 12 at all different academic achievement levels regarding their social activities and peer relationships. They stated that LD students reported significantly less involvement than low-achieving and normally achieving children in the activities of interacting with classmates. They also found that LD children participated less in extracurricular activities when compared with their non-LD peers.

Schumaker (1992) hypothesized as to why these social differences exist. She stated that the research evidenced that LD children interact as frequently with their peers as their non-LD counterparts do; however, “the quality of their interactions lacks whatever is necessary to enable them to be socially accepted to such an extent that they become involved in, are encouraged to become involved in, or are included in more formal social activities” (Schumaker, 1992, p. 391). Because the current study highlights the differences between how LD children differ from non-LD children in the ways in which they navigate through their environment, process information, and react in situations, it becomes clear that LD children will be misunderstood socially. The Rorschach allows clinicians to obtain information about the way in which the processing impairments of LD children impact their behaviors in a systematic way.

This study investigated whether LD students experience the world in a different, more simplistic, less accurate, and confused way than do
non-LD students. It is predicted that LD processing limitations will be demonstrated by simplistic responses (high \( F\% \)), with a notable lack of complex and comprehensive approaches (\( W^+ \)), with less accurate and conventional perception of outside stimuli (\( XA\% \)), and more confusion and poor reasoning (\( WSum6 \)). As has been demonstrated with the social and emotional problems related to learning disability (Schumaker, 1992), children who produce these patterns of Rorschach variables would clearly function in an impaired way, for these patterns of Rorschach variables are typically seen in people who experience psychopathology. Children classified with a learning disability should demonstrate higher \( Form\% \), lower \( W^+ \) responses, lower \( XA\% \), and higher \( WSum6 \) than their non-LD age-, gender-, and ethnicity-matched peers on the Rorschach. Thus, the Rorschach potentially provides a link between processing and personality in understanding learning disabilities.

**Method**

**Participants**

From a large, ethnically diverse school in California in the US, 31 LD students (LD group) and the same number of individually matched, non-LD students participated in this study. Children were matched on age (within 6 months of each other) and ethnicity, determined by the parents’ report of both on the elementary school’s enrollment card. The LD students were first identified at the school through a special education evaluation whereby they were classified as having a learning disability as described in the next paragraph. The researcher then invited students who were the same age within 6 months and of the same gender and ethnicity to participate in the study by giving them a parental consent form. This procedure led to the inclusion of 40 boys and 22 girls ranging in age from 7 to 12 years. Their mean age was 9 years 5 months with a standard deviation of 1.3 years. The sample was quite culturally and racially diverse with 61% nonmajority children (see Table 1).

Participation was on a voluntary basis with consent obtained from the parent(s) prior to enrolling in the study. Students in the LD group had qualified for special education services based on the discrepancy model and had demonstrated the need for an Individualized Education Plan (IEP) to sustain academic progress. Students met qualifications for a
learning disability if they had a disorder in one or more of the basic psychological processes involved in understanding or using language and a severe discrepancy between intellectual ability and achievement in one or more academic areas as measured by standardized tests. The discrepancy was defined as at least a 1.5 standard (22.5 points) difference between their tested cognitive ability and their achievement test scores to qualify for special education. The discrepancy could not be the result of limited school experience or poor school attendance and could not be corrected through regular services within the regular instructional program. The discrepancy was determined according to the protocol of the local school district.

Assignments to groups were based on available records from each student’s special education and cumulative records. This information was obtained when reviewing the student’s special education file. Each file reviewed was documented on data sheets and each child was assigned a number. Students who were categorized as non-LD students were at grade level and had achieved grade-level standards as measured by their report cards. Their national standardized achievement tests were not lower than the average range or within one standard deviation of average (percentile ranks ranging from no less than 16) for all academic subjects measured (reading, mathematics, language).

Any child who had been considered for retention in the past was excluded from participating in the non-LD group. LD and non-LD children who were diagnosed with attention-deficit hyperactivity disorder were excluded from the study through records review to ensure that the hypothesized differences between the two groups were due to their
LD or non-LD status, and not by attention-deficit hyperactivity disorder. Children were also excluded from the study if there were significant expressive language delays noted on the IEP. That is, children who were classified as LD and had speech and language services noted on their IEP because of severe expressive language problems were not invited to participate.

**Measures**

*The Rorschach*

The Rorschach Ink Blot test was administered according to the CS procedures at the time (Exner, 1995). The researcher administered and scored all the Rorschach tests. To ensure that the researcher remained blind to group membership, a research assistant determined which children were eligible to participate in the study and made all contacts with the child and their families. The researcher was employed at the time in the school district in which the study was undertaken. If the researcher was familiar with which group a child might be assigned to, that child was excluded from the study.

As noted earlier, $F\%$, as a substitute for $\Lambda$, and also $W+$, $XA\%$, and $WSum6$ were selected as dependent variables. Additionally, the Rorschach tests were then scored by other research assistants who were doctoral graduate students with masters’ degrees in clinical psychology.

To assess the interrater reliability in this study, 14 subjects (seven LD subjects and seven non-LD subjects) were randomly selected and coded by an additional rater. Intraclass correlation coefficient (ICC) coefficients were calculated for the four variables and two other variables (perseveration, $PSV$, and Animal Content only %, $Aonly\%$). They ranged from .79 to .96 with a mean of .89. Overall they are in the excellent range (Shrout, & Fliess, 1979)

*Wechsler Abbreviated Scale of Intelligence*

To ensure that all children who participated in this study had the cognitive ability to produce minimally complex answers on the Rorschach, the Wechsler Abbreviated Scale of Intelligence (WASI) was administered to children whose cognitive potential was unknown or undocumented in their files. If a child’s intelligence quotient (IQ) was below 85, they were
excluded from the study, for they were less likely to have the ability to produce rich, complex responses. Because African-American students are prohibited from taking intelligence tests in the California school setting, the two African-American children were not given the WASI. Instead, the non-LD child’s cumulative file, statewide achievement assessments, and report cards were reviewed to verify grade-level standards and performance commensurate with the 85 standard score cut-off. Additionally, the African-American LD child who participated in the study demonstrated scores at least in the average range on the psychoeducational tests that are typically used to estimate cognitive potential. Because of the variation in the ethnicities of the participants in this study, we are able to generalize the findings to diverse groups.

**Procedure**

The test administrations took place in the school psychologist’s office at the school attended by the children. Upon meeting with the child, he or she child was briefed about the study and assent was obtained. For those students without an IQ score in their records, a research assistant administered the WASI. Thus, the researcher who subsequently administered the Rorschach remained unaware of the child’s intellectual ability.

To keep the Rorschach administrator blind to the groups, a research assistant arranged the groups prior to test administration. A research assistant organized the groups by assigning a number to all of the children considered for the study. The groups were entirely arranged by a research assistant in order to ensure the reliability of the Rorschach administration process. Upon completion of the Rorschach, and the WASI if appropriate, the examiner scored the two protocols.

**Results**

For this static group-comparison study, a one-way Analysis of Variance (ANOVA) was used to evaluate whether differences existed between the groups for each of the four Rorschach dependent variables: $F\%$, $W+$, $XA\%$, and $WSum6$. The LD group was significantly different from the
non-LD group on all four of the individual Rorschach variables in the expected direction. The ANOVA results and effect sizes are presented in Table 2, with descriptive data shown in Table 3. All hypothesized results for the four major variables were supported by the findings. The LD group demonstrated higher $F\%$ scores than the non-LD group. The LD group had lower $W+$ and lower $XA\%$ percent ratios than the non-LD group. Finally, the LD group demonstrated higher $WSum6$ scores than the non-LD group, with Cohen’s $d$ at .5 and greater (Table 2).

A number of supplementary analyses were undertaken with the number of response ($R$), Animal only ($Aonly\%$), and repeated preservative responses ($PSV$). As discussed, simple, less complex, briefer records were expected for the LD children. Low $R$ is characterized by brief records and is a crucial psychometric variable and possible moderator and confounder to other findings (Viglione & Meyer, 2008). As seen in Table 2, there is a significant difference between the groups on $R$ (number of responses). However, it is not in the expected direction, because the number of responses for the LD group ($M = 19.65$) was greater than that of their non-LD peers ($M = 16.77$).

This unexpected finding with $R$ led to the speculation that response productivity rather than differences in the dependent variables themselves and the underlying processes may have resulted in the group differences. This led us to explore the association of $R$ with the four dependent variables. Correlations between $R$ and the dependent variables were calculated for the entire sample and each group separately, as shown in Table 4. The only significant correlation in the combined sample was between $R$ and $WSum6$, $r = .290$, $n = 62$, $p < .01$. Moreover, the $WSum6$
correlation with $R$ was significant in the non-LD control group, $r = .548$, $n = 62$, $p < .01$, but not in the LD group, $r = .103$, $n = 62$, $p > .05$. Accordingly, $R$ might be associated with the smaller elevations in $Wsum6$ in the control group, but it does not explain such elevations in the LD group. To be conservative and to partially control for $R$, $W SUM 6$ was divided by $R$. The difference between groups on this new variable was no longer significant but approached significance at $p = .063$.

Given that $R$ is not correlated with the other three variables, $W+$, $F\%$, and $XA\%$, $R$ cannot account for group differences. LD respondents produced fewer $W+$ but more $R$, so that $R$ cannot account for the reduction in $W+$ with the LD group. For two of the four variables, $F\%$ and $XA\%$ are proportions of $R$, so that $R$ is taken into consideration in the analysis.

1 The second author, DJV, recalls calculating similar correlations with John Exner comparing the association between $W sum 6$ and $R$ with child and adult samples. These unpublished correlations with children were notable and similar to the findings within the non-LD group in this sample. Among adults, the relationship between $W sum 6$ and $R$ was negligible.
Because less complex records typically include the production of simple animal responses, animal content was included in a supplemental analysis by using $A_{\text{only}}\%$. $A_{\text{only}}\%$ is the number of responses that include only an animal content ($A$), an animal detail content ($Ad$), mythological animal content ($A$), or mythological animal detail content ($Ad$) divided by the number of total responses ($R$). ANOVA (Table 3) demonstrated a significant difference between the groups in the expected direction. LD children demonstrated higher $A_{\text{only}}\%$ than their non-LD matched peers (Table 2).

During the scoring of the responses, it was common for LD children to be repetitive in the perceptions and concepts they reported seeing. Because of this observation, PSV responses were analyzed in a supplemental analysis, and were found to be significantly different between the groups, as the LD children produced more perseverations than the non-LD group (Table 2).

**Discussion**

**Processing Differences Between the LD and Non-LD Groups**

As predicted, the differences between the LD and non-LD groups on the selected Rorschach variables suggest that LD students demonstrate significantly more simplistic and less conventional responses than non-LD students. This was demonstrated by the LD group responding with higher $F\%$, lower $W+$, lower $XA\%$, and higher $W_{\text{sum6}}$ responses than the non-LD group.

$F\%$, an algebraic improvement over Lambda, measures the extent to which a person is willing to become involved with novel stimuli or new
information. Children producing high Lambda or high F% prefer to reduce stimulating situations to the most easily managed level. In addition to form, Rorschach stimuli also offer color, shading, depth, movement, and tactile visual components. When doing this, the child minimizes the importance of or disregards some elements of the stimulus field and narrows and simplifies their perception to include only shape, outline, and relative positioning (Exner, 2003; Meyer et al., 2011). As expected, the LD children gave more concrete, less complex responses that focused on the shape of the blot, demonstrating their apprehension and/or limitations with becoming too involved in the process or too descriptive about the cards presented to them. The LD group tended to simplify the problem-solving process of the Rorschach, ignoring the complexities of the inkblot stimulus. Such implications have been associated with a wide variety of less effective cognitive and problem-solving processes (Exner, 2003; Mihura, Meyer, Dumitrascu, & Bombel, 2013).

The higher Aonly% scores with the LD children functions as a content analog to the formal or structural simplification found with Form only responses. Instead of, for example, nature, household, scientific, artistic, or human objects and multiple-content responses, LD children more readily confined themselves to the easy-to-find and less mature animal contents. In terms of what they think about, or contents of consciousness, again they are more limited and inflexible. Such inflexibility, rigidity, and simplicity are further demonstrated by the finding of more perseveration responses (PSV) among LD children.

LD children demonstrated, as expected, fewer W+ responses than their non-LD peers. They were less able to work with the blots and to compose a multiple-object, synthesized, cohesive impression involving the entire blot. The non-LD group took on the whole stimulus and broke down the blot into separate objects, then supplied a relationship among the parts in a more complex way. For example, for Card III, one non-LD child gave the response, “These are two ladies setting a table, and these are butterflies flying around them.” This example demonstrates a whole response where the child takes the entire stimulus, breaks it down into separate parts, and then formulates a relationship among the parts. An example for Card III taken from an LD child’s protocol is as follows: “A crab, because of the two pinchers, and the legs here and here.” This response is a more simple, concrete, and descriptive, which focuses on the form of the blot to create an object with little elaboration about possible relationships among the parts. This example demonstrates the complex relational thinking that is more readily available to non-LD children.
Learning Disabled Children and the Rorschach

XA% quantifies the proportion of responses with an appropriate, accurate use of the Form features. It involves a capacity to interpret information and stimuli in an accurate way, more readily shared with others. LD children produced significantly lower XA% responses than their matched peers did, illustrating that they are less conventional and accurate in their responses. LD children were more likely to give responses that did not fit the shape contours of the blot as well or were not appropriate to the blot. Thus, these are considered to be the “wrong answers,” for they did not fit the blot as others have seen them. It should be pointed out that relative to adjustments to CS normative data supported by reviews of the research literature (Meyer et al, 2011; Viglione & Hilsenroth, 2001; Vilgione & Meyer, 2008), the mean in the LD group of 0.69 is not particularly low, so that it is the unusual, individualistic, or personalized interpretive range rather than the extreme range.

Last, the Weighted Sum of Six (WSum6) is the weighted sum of the frequency of six cognitive Special Scores, a variable sometimes associated with confusion and disordered and illogical thinking. As anticipated, LD children demonstrated higher WSum6 scores than their non-LD peers, illustrating their tendency for immature and ineffective thought processes. As the LD children reasoned about the blot, justifying their perceptions of what they saw, they tended to become mildly confused. Their thought processes were more likely to be fragmented and scattered rather than logical, coherent, and goal directed. An example of a response given by an LD child that would elevate the WSum6 score is as follows (response to card VII): “Here’s the bunny rabbit with the ears right here and then right here it turns into a squirrel because of the shape.” A more logical thinker might break this response into two pieces or two separate responses, one with the bunny ears and one with the squirrel body. Alternatively, the more organized and complex thinker might offer a more complicated response adding an imaginary context that makes the mix between the bunny and squirrel more reasonable and also more understandable to the examiner: “It’s an imaginary animal like you might see in a children’s fantasy book, a funny animal with bunny ears and a squirrel’s body.” These last two alternatives would not contribute any points to the WSum6. Another finding is that cognitive confusion is low in records from the non-learning disordered subjects but also from the learning-disordered when their thinking is simplistic. Increased complexity of thought processes and Rorschach responses is accompanied by confusion among LD youth.
Implications of the Research for LD Children

The variables chosen above have direct implications for processing and neuropsychological difficulties. However, they also have personality and social impacts. Indeed, the simplistic processing associated with the $F%$, $W+$, $Aonly\%$, and $PSV$ findings is typically interpreted to suggest inadequate coping, social ineffectiveness, and immaturity. The $XA\%$ and $WSum6$ findings have been associated with severity of psychopathology and in extreme forms with psychosis and schizophrenia. Accordingly, these Rorschach processing variables provide a link from processing problems in learning disorders from a psychoeducational perspective to the personality, social, and emotional problems experienced by LD youth. Moreover, the results of this study therefore have implications for the modifications, interventions, and support necessary for children with learning disabilities.

The findings support the hypotheses that LD children have weaknesses in their ability to perceive, process, and respond to information in their environments in a way that is conventional and socially acceptable. LD children may ignore, misinterpret, misunderstand, and inappropriately respond to occurrences within their surroundings. Because the Rorschach is a problem-solving test in which there are few guidelines or rules for the task, it provokes responses similar to those that may be seen in unstructured situations (Viglione & Rivera, 2012). It can be used as a bridge to real-world interpretations and responses that the LD child may experience. In more ambiguous situations, such as on the playground or in social settings, the LD child may be uncertain of their environment or misunderstand what is expected of them or what is appropriate. Thus, these findings suggest that the processing problems not only interfere with learning in the structured classroom, but also coping and relating in the less structured playground and with peers in and outside of school.

Because LD children produced higher $F\%$ and lower $W+$ responses, it is concluded that LD children are less able to interpret and process information about stimuli in complex and synthetic ways. Accordingly, LD children may interpret information in a way that is less conforming to the mainstream view of peers and teachers. The $WSum6$ finding in this study highlights the confused, illogical thinking LD children experience. They may be unclear, confused, or fragmented in the way in which they perceive, think, and communicate, thus being less able to “fit in” with other
children. Because LD children perceive and interpret information in a more simplistic and less conventional way, their behaviors will at times be significantly different than those of non-LD children.

Treatment and Support of LD Children Based on Findings of the Research

Mental health providers who treat LD children may provide support for them in many ways. For instance, they might encourage the child to take extra time in all situations before reacting in any way in order to help allow them to absorb the whole interaction occurring around them. They could also enlighten the child about the existence of subtle, concealed meanings of communications. Additionally, mental health providers are encouraged to educate teachers and parents of LD children about their difficulties in interpreting and responding to everyday situations. Training that includes the opportunity for extra time, frequent reminders to take their time, positive feedback when responses are typical and appropriate and when they are not appropriate, and more conventional behaviors should be modeled for the child.

The findings of this study are particularly impactful for mental health professionals in educational settings. This study has shown that many LD children process information in an immature, less conventional way than non-LD children do. Thus, the differences in the style and coping mechanisms of the two groups indicate that LD children will usually behave in ways that are a manifestation of their disability. These weaker problem-solving abilities are highlighted in stressful or ambiguous situations where the child may become overwhelmed or overstimulated. In structured, controlled situations, many LD children are better able to cope, do what is expected of them, and conform to the environment. However, when situations are such that the child becomes inundated and uncertain or unclear of the circumstances in their environment, faulty and fragmented behavior may occur. These indefinite situations are those that are typically addressed in the manifestation determination process. That is, occurrences on the playground or during free time are often those evaluated in manifestation determination. It can often be the case that children with a learning disability have an impaired ability to understand the impact and consequences of their behavior and that the child’s disability impacted the child’s ability to control that behavior. The way that children with a learning disability process and respond to
the environment is usually faulty, therefore most occasions where they are 
suspended for their behavior would have to be included in this type of 
faulty thinking and responding. Thus, mental health professionals in edu-
cational settings must always assess the behaviors and offer appropriate 
modifications, interventions, and support to remediate the misbehaviors 
for the LD child rather than punish or discipline the child.

Study Limitations and Suggestions for Future Research

The study did not include an analysis or procedure to establish social, 
behavioral, and emotional difficulties among the LD children with regard 
to manifest determination as required in the US. However, similar pat-
terns of processing results have been related to such challenges in other 
populations (Meyer et al., 2011; Exner, 2003). All of the children who par-
ticipated in the study were from one elementary school in southern Cal-
ifornia. The school is located in a relatively low SES area, perhaps 
impacting the generalizability of the findings to all SES areas. A more var-
ied sample of children, perhaps from many different schools and areas, 
would improve the generalizability of the findings. However, relative to 
many studies, the ethnic diversity of our study was strong, and thus it 
may better represent a variety of ethnic backgrounds.

Having only one examiner also limits the generalizability of the results 
to the population at large. Another limitation is associated with this exam-
iner being employed at the participants’ elementary school. Procedures 
were taken to eliminate any experimenter bias by keeping the examiner 
blind to LD group status and by excluding participants about whom the 
examiner had prior knowledge or acquaintance. A second research assis-
tant was used to score the responses in order to minimize bias on part of 
the examiner in scoring the responses. However, some of the children 
involved in the study knew who the examiner was, simply because of 
her role at the school. This knowledge may have influenced their 
responses.

Although the LD classification was verified by a research assistant, there 
was no attempt to categorize the type of processing deficit each child had. 
That is, all of the children with processing deficits were put into one 
group, rather than separating each type of processing deficit into sub-
groups. Therefore, each processing deficit was not distinguished as being 
unique. It is important to undertake Rorschach studies that support 
well-defined LD subtypes, especially when considering the cognitive and
neuropsychological aspects of the Rorschach. It would also be interesting to examine older children to investigate whether the findings are more or less evident with adolescents. This study also did not include children with obvious deficits in speech, language, communication, and expression in order to minimize simplistic Rorschach records resulting from language expression issues. This limits the generalizability of our results to children who have these deficits.

The findings of this study are particularly impactful for school psychologists and personnel when conducting and understanding manifestation determination assessments as understood in the US. According to the country’s 1997 amendments of the IDEA, a child with a disability cannot be suspended long-term or expelled from school for behavior that is a manifestation of his or her disability. A review known as a manifestation determination must be conducted to evaluate the relationship between the child’s disability and the behavior that is the subject of the disciplinary action. The child’s behavior shall be considered to be a manifestation of his disability unless it is determined that the child’s disability had no impact on the behavior that is the subject of the review. Likewise, it must be shown that the child’s disability did not impair his or her ability to understand the impact and consequences of the behavior and the child’s disability did not impair the child’s ability to control that behavior. If it is determined that the child’s behavior was not a manifestation of his or her disability, the child may be disciplined in the same manner as would children without disabilities. If it is determined that the child’s misbehavior is related to their disability, the team must assess the behaviors and offer appropriate modifications, interventions, and support to remediate the misbehaviors. The child is, then, not disciplined, but rather supported to prevent the behaviors in the future.

In terms of future variables to be investigated, as mentioned above, the Rorschach Perseveration Scale as outlined in Perry, Potterat, Auslander, Kaplan, and Jeste (1996) would most likely detect the subtle perseverative responses given by the LD population. Future research might continue to explore the unexpected finding of more R responses with the LD group and the relationship of R and WSUM6 in this population. Implementing the Rorschach Performance Assessment System with this population also holds promise (Meyer et al., 2011).

Since this study was completed, the new internationally and evidence-based Rorschach Performance Assessment System (R-PAS) was introduced (Meyer, Viglione, Mihura, Erard, & Erdberg, 2011). It measures the variables and constructs used in this study in very similar ways.
The weighted sum of cognitive special scores, \( W^{\text{Sum6}} \), is called \( W^{\text{SumCog}} \) and is measured in essentially the same way, although more specification on how to code it is offered. A different Form Quality system is used, but it correlated highly with the CS system. \( FQ\%-\% \) and \( WD\%-\% \) are the R-PAS counterparts to \( X\%-\% \) and \( WDA\%-\% \). \( F\% \) is found in R-PAS, and therefore this finding should be replicated in the R-PAS. \( W_{+}, Aonly\%-\% \), and \( PSV \) will probably be encompassed by the summary Complexity variable, especially if it were divided by \( R \), to incorporate the positive relationship between \( R \) and LD. Although there is reason to believe that these results will carry over to the R-PAS, further research is necessary to establish this conclusion.

References

Learning Disabled Children and the Rorschach


Summary

The purpose of this study was to examine the differences between learning-disabled (LD) and non-learning-disabled (non-LD) child students on the Rorschach inkblot test to help to determine how differently the two groups process information. Applying the cognitive triad in the Comprehensive System (CS), this study investigated whether LD students experience the world in a different, more simplistic, less accurate, and confused way than do non-LD students. It was predicted that LD processing limitations will be demonstrated by simplistic responses (high $F\%$), with a notable lack of complex and comprehensive approaches ($W+$), with less accurate and conventional perception of outside stimuli ($XA\%$) and more confusion and poor reasoning ($WSum6$). As has been demonstrated with social and emotional problems with LD children who produce these patterns of Rorschach variables would clearly function in an impaired way, for these patterns of Rorschach variables are typically seen from people who experience psychopathology. Children classified with a learning disability should demonstrate higher $Form\%$, lower $W+$ responses, lower $XA\%$, and higher $WSum6$ than their non-learning-disabled age, gender, and ethnicity matched peers on the Rorschach. Thus, the Rorschach potentially provides a link between processing and personality in understanding LD.

The sample consisted of 62 children within the age range of 7–12. Thirty one children were identified as learning-disabled (LD) and were matched on age, gender, and ethnicity with a student who identified as non-LD. The groups’ responses were compared using a one-way Analysis of Variance (ANOVA) to determine whether differences exist between the groups for each of the Rorschach variables $F\%$, $W+$, $XA\%$ and $WSum6$. This study concluded that LD children perceive, interpret, and synthesize information from their environment in a more simplistic, less accurate, and more confused way, when compared to their non-LD peers. In their environments, LD children may ignore, misinterpret, misunderstand, and inappropriately respond to occurrences within their surroundings.
Because the Rorschach is a problem solving test in which there are few guidelines or rules to the task, it provokes responses similar to those that may be seen in unstructured situations. It can be used as a bridge to real world interpretations and responses that the LD child may experience. In more ambiguous situations, such as on the playground or in social settings, the LD child may be uncertain of their environment or misunderstand what is expected of them or what is appropriate. Thus, these findings suggest that the processing problems not only interfere with learning in the structured classroom, but also coping and relating in the less structured playground and with peers in and outside of school.

Résumé

Le but de cette étude est d'examiner les différences entre un groupe d'enfants présentant des troubles de l’apprentissage (GTA) et un groupe contrôle (GC) afin de déterminer leur processus d’analyse de l’information.

Grâce à l’application de la triade cognitive du système intégré, les auteurs de cette étude tentent de montrer si les élèves GTA ont une perception du monde moins complexes et précis et plus confus. Ils prédissent que les sujets donneront des réponses simples (F% élevé), moins complexe dans leur approche (W+ bas), avec une perception moins précise et conventionnelle (X%A) et plus de confusion (X%A) et un raisonnement pauvre (WSum6).

62 enfants entre 7 et 12 ans composent l'échantillon de cette recherche dont 31 dans le groupe contrôle. Les réponses furent comparées par une analyse de variance (ANOVA) afin de déterminer les différences sur les variables F%, W+, XA %, et WSum6.

Cette étude a permis de mettre en évidence que les enfant GTA perçoivent, interprètent et synthétisent l’information de manière plus simpliste et moins précise comparés aux enfants GC.

Ils peuvent alors mal interpréter et mal comprendre leur environnement, et cela va influencer leurs conduites. Étant donné que le test du Rorschach nécessite une certaine activité mentale de résolution de problème, il permet d’observer la réponse du sujet à une situation peu structurée. Il peut être utilisé comme un pont entre l’interprétation du monde réel et des réponses données par les enfants GTA.

Des situations plus ambiguës, tel que le terrain de jeux ou des situations sociales, peut conduire ces enfants à mal interpréter et ne pas comprendre comment répondre à de telles situations. Cette recherche suggère que les difficultés d’analyse de l’information interfèrent non seulement sur leur capacité à apprendre, mais aussi sur leurs relations aux autres.

Resumen

El propósito de este estudio fue examinar diferencias en la prueba Rorschach entre niños con discapacidad de aprendizaje y niños sin discapacidad de aprendizaje para
ayudar a determinar qué tan diferente son los dos grupos para procesar información. Aplicando el triado cognitivo en el sistema comprensivo, este estudio investigó si los estudiantes con discapacidad de aprendizaje entienden el mundo de una manera diferente, más simple, menos exacta y confusa que estudiantes sin discapacidad de aprendizaje. Se predijo que las limitaciones de procesamiento de los niños con discapacidad de aprendizaje se demostrarían por respuestas simplistas (alta $F\%$), con una falta notable de enfoques más complejos y amplios ($W+$), con la percepción menos precisa y convencional sobre los estímulos externos ($XA\%$), y más confusión y bajo razonamiento ($WSum6$). Como se ha demostrado los niños con discapacidad de aprendizaje con problemas sociales y emocionales que producen estos patrones de variables Rorschach tienen problemas de funcionamiento, estos patrones de variables Rorschach se suelen ver en personas que sufren de psicopatología. Los niños clasificados con una discapacidad de aprendizaje deben demostrar más alto $Form\%$, más bajo $W+$, más bajo $XA\%$, y más alto $WSum6$, que niños sin discapacidad de aprendizaje de la misma edad, del mismo género, y mismo origen étnico, en el Rorschach. Así, el Rorschach potencialmente proporciona un vínculo entre el procesamiento de información y personalidad en la comprensión de discapacidades de aprendizaje.

Los participantes fueron 62 niños dentro del rango de edad de 7-12. Treinta y un niños fueron identificados como discapacitados en el aprendizaje y fueron emparejados por edad, género y grupo étnico, con un estudiante que se identificó como un niño sin discapacidad de aprendizaje. Las respuestas de los grupos se compararon mediante un análisis unidireccional de varianza (ANOVA) para determinar si existen diferencias entre los grupos para cada uno de los variables del Rorschach $F\%$, $W+$, $XA\%$ y $WSum6$. Este estudio concluyó que los niños con discapacidad de aprendizaje perciben, interpretan y sintetizan información de su entorno de una manera más simple, menos precisa y más confusa, en comparación a los niños sin discapacidad de aprendizaje. En su entorno, los niños con discapacidad de aprendizaje pueden ignorar, mal interpretar, tener problemas de entendimiento, y no responder a los acontecimientos que suceden a su alrededor de una manera apropiada. Debido a que el Rorschach es una prueba que indica la solución de problemas con pocas directrices o reglas, provoca respuestas similares a las que pueden verse en situaciones no estructuradas. Se puede utilizar como un puente a las interpretaciones del mundo real y respuestas de niños con discapacidad de aprendizaje. En situaciones más ambiguas, tales como en el patio de recreo o en entornos sociales, los niños con discapacidad de aprendizaje pueden sentirse inciertos de su entorno o mal interpretar lo que se espera de ellos o lo que es apropiado. Por lo tanto, estos resultados sugieren que los problemas de procesamiento no sólo interfieren con el aprendizaje en el aula estructurada, sino también para hacer frente y relacionarse en un sitio menos estructurado, como el patio de recreo y con compañeros dentro y fuera de la escuela.
要約

要約本研究の目的は、ロールシャッハインクブラッドテストにおいて学習障害（LD）と学習障害でない子どもの差異を検討し、この二つのグループの情報処理がどのように異なっているのかを判断するために役立つことがある。包括システム（CS）の認知の三角面をもとに、本研究は、ロールシャッハの生徒がLDではない生徒よりもこの世界を異なって、より単純に、あまり正確でにく、混合した仕方で体験しているか否かが調べられた。LDの処理の限界が単純化された反応（高いF%）や、複雑で総合的な接近法（W+）が著しく欠けていること、外界の刺激をあまり正確でなく型にまった知覚（XA%）をしたり、より混乱していったり、理由が範囲であることがあるからである。学習障害に分類される子どもたちが、ロールシャッハにおいて、彼らと年齢や性や民族性を統制された学習障害でない仲間よりも、高いF%、少ないW+反応、低いXA%、高いWSum6を示すに違いない。したがって、ロールシャッハ法は、LD児を理解するにあたって、情報処理とパーソナリティの間の可能性のあるつながりを提供するかもしれない。

標本は7歳から12歳の62名の子どもからなる。31名の子どもは学習障害（LD）と判定されており、LDではないと判定される生徒たちは年齢、性、民族性が統制される。それぞれの群の反応は一元配置分散分析により比較され、グループ間においてF%、W+、XA%そしてWSum6のロールシャッハ変数に差異があるかどうかが検出された。本研究は次のことを結論付けている：LDの子どもはLDではない群と比較した際に、彼らの環境にある情報をより単純で、あまり正確でなく、より混乱した知覚をし、解釈をし、総合していることが分かった。彼らの環境において、LDの子どもが周囲の状況で起きていることに対し、無視したり、誤って解釈したり、誤って理解したり、不適切に反応している。ロールシャッハ法は、課題についてのガイダンスやルールがない問題解決検査であるので、構造化されていない状況において見られるのと同様の反応を引き起こすだろう。現実の世界の理解とLDの子どもが経験しているであろう反応の構造をするものとしてロールシャッハがもたらされるかも知れない。遊び場や社会的な設定などのよりあいまいな状況においては、LDの子どもは環境について不確定であったり、彼らに期待されていたり、適切であることを誤解するかもしれない。それゆえ、これらの発見は、情報処理の問題は構造化される教室における学習を妨害するだけでなく、あまり構造化していない遊び場において、また学校の内外の仲間との対処や関係性にまで干渉していることを示している。