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Assessment 1994; 1; 209
DOI: 10.1177/1073191194001002011

ASSESSMENT
1994, Volume 1, Number 2, 209-217

ASSESSMENT OF ADOLESCENTS WITH THE RORSCHACH: A CRITICAL REVIEW

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This paper critically reviews 48 studies which examine the use of the Rorschach in adolescent populations. Several methodological concerns present in this literature are addressed, including (a) small sample sizes, (b) wide age ranges within the samples, (c) limited generalizability due to narrowly defined constructs and examination of highly specific groups, (d) frequent reliance on recorded diagnosis to determine group membership, and (e) limited comparability across studies due to the use of highly variable scoring and interpretation systems. In spite of these difficulties, there is some evidence that the Rorschach does provide useful and valid measures of reality testing, cognitive complexity, and disordered/psychotic thinking; general psychological distress; disturbance in object relations; and depression in specific adolescent groups. Clinical implications and directions for future research are discussed.

User surveys have repeatedly shown that the Rorschach is the most widely employed projective personality measure among practitioners who work with adolescents (e.g., Archer, Maruish, Imhof, & Piotrowski, 1991). Although the inferences drawn from Rorschach variables are consistent across age groups, the normative values and frequencies often vary widely due to the plasticity of cognitive and affective development associated with childhood and adolescence. In other words, although Rorschach variables are indicative of similar psychological factors across age groups, correct interpretation must account for developmental appropriateness. For example, poor affective modulation, represented as $CF + C > FC$ in the Comprehensive System (Exner, 1972, 1986), is generally age-appropriate for a 5-year-old child, whereas it is often pathological for an adult. Therefore, a clear understanding of age-appropriate response patterns is necessary for the accurate interpretation of Rorschach findings with adolescents.

Archer (1992) cautioned that mere extrapolation from research devoted to the assessment of children or adults is insufficient. First, a number of physiological and sexual changes occur during adolescence and uniquely characterize this stage of human development. Second, cognitive and psychological differences (the ability to reflect on cognition, the formation of ego identity, etc.) distinguish this group from both children and adults. Archer argued that simply treating adolescents either as large children or as young adults diminishes the important issues this population faces. Further, he demonstrated that instruments designed to evaluate psychopathology in adults are insensitive to many of the age-specific problems of adolescents.

Exner and Weiner (1982) reported consistent differences in the frequencies of Rorschach responses across the developmental years from 5 to 16. Intuitively, we expect the protocol of 5- and 15-year-olds to vary dramatically, but the nature of those differences must be clearly delineated to assure the validity and reliability of our clinical interpretations.

Thus, research devoted to the assessment of adolescents using the Rorschach (1942) is both warranted and necessary. The purpose of this

study is to critically review the latest research regarding adolescent Rorschach assessment, beginning in 1982 when Exner and Weiner published their book on this topic.

Inclusionary Criteria

Literature searches were conducted using the PsychLIT and MedLine databases. Reference lists in the articles listed in these databases were used to identify additional relevant studies. Only papers published in English and studies designed to examine more than a single subject were reviewed. In addition, studies in which adolescents (aged 13-20) did not comprise a majority of the subjects were excluded from review.

Table 1 summarizes the 48 articles reviewed. The studies fell into two categories. The first examined the utility of the Rorschach in differentiating among various diagnostic classifications. These studies (n = 18) primarily employed clinical populations and compared Rorschach scores with scores from other instruments of known reliability and validity. The remainder of the studies (n = 30) investigated the response patterns of specific groups of adolescents, or those demonstrating particular psychological characteristics.

Three studies of specific groups investigated response patterns among adolescents with superior intellect as assessed by standard IQ tests (Adhikari, Adhikari, & Tripathi, 1986; Gallucci, 1989; Jindal & Panda, 1982). Two others included teenage girls who were considered to be at high risk for pregnancy or who already had children (Hart & Hilton, 1988; Landy, Schubert, Cleland, Clark, & Montgomery, 1983), while another examined sexually abused girls (Leifer, Shapiro, Martone, & Kassem, 1991). One study examined the therapeutic outcome and follow-up of a group of adolescent psychiatric inpatients (Kowitt et al., 1989). Two investigated the response patterns of special medical populations (Peri & Molinari, 1983; Ropponnen, Aalberg, Rautonen, Kalmari, & Siimes, 1990). Three included the probands of identified psychiatric patients (Beck & Worland, 1983; Decina et al., 1983; Last, Mandel, Shapiro, & Belmaker, 1989). Finally, two studies examined juvenile delinquent populations (McCraw & Pegg-McNab, 1989; Ritvo, Shanok, & Lewis, 1983).

In investigating particular psychological constructs, some studies examined body boundaries and field dependence (del Miglio, 1984), perceptual rotations (O'Neill, 1989), hostility (Singh, 1986), and religiosity (Vianello, 1991). Others assessed the utility of the Rorschach in identifying particular psychodynamic and developmental constructs (Fritsch & Holmstrom, 1990; Kalliopuska, 1982; Koide, 1982; Lehtinen, 1981; Lehtinen-Railo, 1983; Urist & Shill, 1982; Wenar & Curtis, 1991). Finally, a number of studies assessed the reliability and validity of variables which were previously identified as important in the literature on use of the Rorschach with adults (Exner, Thomas, & Mason, 1985; Finch, Imm, & Belter, 1990; Ridley, 1987; Ridley & Bayton, 1983; Zgourides, Frey, Camplair, Tilson, & Ihli, 1989).

Summary of Methodology

Several methodological concerns are relevant in reviewing the adolescent research (see Table 2). Particularly problematic were (a) the use of small samples, (b) nonstandardized administration of the Rorschach, (c) the use of wide age ranges within samples, (d) limited generalizability of findings, (e) high attrition rates and/or unusual subject recruitment procedures, and (f) the inconsistent use of standardized diagnostic classification systems in the formation of clinical groups.

Total sample size varied widely across studies, ranging from a low of 9 (O'Neill, 1989) to a high of 1,580 (Wenar & Curtis, 1991). Of the 18 studies in which groups were formed according to diagnostic category, 9 have subject-to-variable ratios of less than 5 to 1. Additionally, 13 of the 30 studies in the second group have similar subject-to-variable ratios. Because low subject-to-variable ratios undermine the reliability of the results of any empirical investigation, the topic warrants serious consideration.

Acklin, McDowell, and Orndoff (1992) concluded that Rorschach researchers have largely neglected the importance of statistical power. These authors examined the general Rorschach literature from 1975 to 1991 and found the power of the studies in this area to be consistent with that in other areas of behavioral research—often too low to guard against the occurrence of Type II errors (i.e., failing to reject the null hypothesis when population differences truly exist). As the sample size, effect size, or alpha level decrease, the likelihood of a Type II error increases. Thus, Type II errors may be directly related to the large number

Table 1
Sample Characteristics

Citation	*n*	Gender	Population[c]	Groups compared[d]
Abraham, Mann, Lewis, Coontz, & Lehman (1990)	15	Both	I	D
Adhikari, Adhikari, & Tripathi (1986)	8	Male	NC	S
Archer & Gordon (1988)	15-41	Both	I	D
Archer & Krishnamurthy (1993)	197[a]	Both	M	D
Arffa (1982)	12	Both	I	D
Armstrong, Silberg, & Parente (1986)	14-79	Both	I	D
Ball, Archer, Gordon, & French (1991)	67-99	Both	M	D
Beck & Worland (1983)	28-116	Both	NC	S
Belter, Lipovsky, & Finch (1989)	65[a]	Both	I	D
Caputo-Sacco & Lewis (1991)	3-17	Both	I	D
Decina, Kestenbaum, Farber, Kron, Gargan, Sackeim, & Fieve (1983)	18-31	Both	NC	S
del Miglio (1984)	77[b]	Female	NC	S
Duricko, Norcross, & Buskirk (1989)	46[a]	Both	O	D
Exner, Thomas, & Mason (1985)	57[a]	Both	NC	S
Finch, Imm, & Belter (1990)	146	Both	I	S
Fritsch & Holmstrom (1990)	84[a]	Both	I	S
Gallucci (1989)	18-72	Both	NC	S
Gordon, Halmi, & Ippolito (1984)	10	Female	I	D
Hart & Hilton (1988)	32-60	Female	NC	S
Jindal & Panda (1982)	60	Both	NC	S
Kalliopuska (1982)	15[a]	Female	NC	S
Kelly (1986)	10	Female	I	D
Koide (1982)	20-21	Female	NC	S
Kowitt, Sachs, Lowe, Schuller, Rubel, & Ellis (1989)	58[a]	Both	I	S
Landy, Schubert, Cleland, Clark, & Montgomery (1983)	12-14	Female	NC	S
Last, Mandel, Shapiro, & Belmaker (1989)	20-35	Both	NC	S
Lehtinen (1981)	11-46	Female	NC	S
Lehtinen-Railo (1983)	11-46	Female	NC	S
Leifer, Shapiro, Martone, & Kassem (1991)	32-79	Female	O	S
Lipovsky, Finch, & Belter (1989)	25-35	Both	I	D
McCraw & Pegg-McNab (1989)	38	Male	NC	S
O'Neill (1989)	9[a]	Both	O	S
Peri & Molinari (1983)	48[a]	Female	NC	S
Pierloot et al. (1988)	35	Female	I	D
Ridley (1987)	134[b]	Both	I	S
Ridley & Bayton (1983)	134[b]	Both	I	S
Ritvo, Shanok, & Lewis (1983)	27-70	Male	NC	S
Ropponen, Aalberg, Rautonen, Kalmari, & Siimes (1990)	25-28	Male	NC	S
Salwen, Reznikoff, & Schwartz (1989)	26	Both	I	D
Shapiro, Leifer, Martone, & Kassem (1990)	32-53	Female	NC	D
Silberg & Armstrong (1992)	25-28	Both	I	D
Singh (1986)	20	Both	NC	S
Trenerry & Pantle (1990)	5-40	Both	I	D
Urist & Shill (1982)	60[a]	Both	M	S
Vianello (1991)	96[b]	Both	NC	S
Weber, Meloy, & Gacono (1992)	30-48	Both	I	D
Wenar & Curtis (1991)	110-150	Both	NC	S
Zgourides, Frey, Camplair, Tilson, & Ihli (1989)	35[a]	Both	O	S

Note. *n* = The range of sample sizes or *n*/group with equal samples.
[a]Single-group study. [b]Subgroup size not reported. [c]Population used in the study: I = Inpatient; O = Outpatient; NC = Non-Clinical; M = Mixed sample of inpatients and outpatients. [d]Groups: D = Diagnostic categories; S = Other designated groups.

Table 2
Methodological Issues

Citation	Methodological issues					
	Subject-to-variable ratio less than 5-to-1	Non-standard administration	Age range > 10 years or not reported	Generalizability limited	Attrition or subject self-selection	Diagnosis based on non-standardized assessment
Abraham, Mann, Lewis, Coontz, & Lehman (1990)	X					X
Adhikari, Adhikari, & Tripathi (1986)	X		X	X		
Archer & Gordon (1988)						X
Archer & Krishnamurthy (1993)	X					
Arffa (1982)	X		X			X
Armstrong, Silberg, & Parente (1986)	X					
Ball, Archer, Gordon, & French (1991)			X			X
Beck & Worland (1983)			X		X	
Belter, Lipovsky, & Finch (1989)			X			X
Decina, Kestenbaum, Farber, Kron, Gargan, Sackeim, & Fieve (1983)	X		X			
del Miglio (1984)		X		X		
Duricko, Norcross, & Buskirk (1989)	X		X			
Exner, Thomas, & Mason (1985)					X	
Finch, Imm, & Belter (1990)			X			
Gallucci (1989)	X					
Gordon, Halmi, & Ippolito (1984)	X					
Hart & Hilton (1988)	X					
Jindal & Panda (1982)			X	X		
Kalliopuska (1982)	X			X		
Kelly (1986)	X					
Koide (1982)	X		X	X		
Landy, Schubert, Cleland, Clark, & Montgomery (1983)	X				X	
Last, Mandel, Shapiro, & Belmaker (1989)	X		X	X		
Lehtinen (1981)				X		
Lehtinen-Railo (1983)				X		
Leifer, Shapiro, Martone, & Kassem (1991)	X		X		X	
Lipovsky, Finch, & Belter (1989)	X					X
McCraw & Pegg-McNab (1989)	X		X			
O'Neill (1989)	X		X			
Peri & Molinari (1983)				X		
Ritvo, Shanok, & Lewis (1983)	X		X			
Ropponen, Aalberg, Rautonen, Kalmari, & Siimes (1990)	X		X	X		
Salwen, Reznikoff, & Schwartz (1989)						X
Shapiro, Leifer, Martone, & Kassem (1990)			X		X	
Silberg & Armstrong (1992)	X					X
Singh (1986)		X		X		
Trenerry & Pantle (1990)	X					
Vianello (1991)				X		

Note. Studies were included in this table only if methodological issues were identified.

of nonsignificant results reported in the literature on use of the Rorschach with adolescents.

As an example, Kelly (1986) tested 30 adolescent females who were divided equally into three groups based on clinical diagnosis: borderline personality disorder, conduct disorder, and depression. Numerous univariate statistical tests, including chi-square analyses and analyses of covariance, revealed differences between the borderline and the other two groups on the basis of only 3 of the 13 variables investigated. According to Cohen (1992), however, statistical power of .80 requires sample sizes of 107 and group sizes of 52 for chi-square ($df = 2$) and three-group ANOVA statistics, respectively (assuming a medium effect size and an alpha of .05). A three-group ANOVA with 10 subjects each would result in a power estimate of approximately .20, again assuming a medium effect size. The chances of rejecting the null hypothesis, then, would be about 2 in 10, even if population differences of medium effect size truly existed. In reality, this may be optimistic, however, in that medium effect sizes are uncommon in the behavioral sciences (Cohen, 1988) and decreases in effect size result in decreases in power.

A related issue for many of the studies is the high probability of committing Type I error (i.e., falsely rejecting the null hypothesis). Univariate examination of numerous variables is not uncommon, and adjustment is rarely made for the increased likelihood of experimentwise risk. Although methods such as Bonferroni adjustment can control for increased Type I error rates, they also result in decreased power, a grave consequence for most investigations. In the example cited above, a Bonferroni adjustment would have lowered the power to less than .06.

In summary, the importance of subject-to-variable ratios cannot be overemphasized. In spite of the difficulties associated with obtaining large samples and the desire to study numerous variables simultaneously, subject-to-variable ratios must remain high to assure the reliability of results.

A second common weakness found in the literature involved the inclusion of samples with relatively wide age ranges or, worse, the failure to report an age range. Often, the age range spanned more than 10 years (e.g., Shapiro, Leifer, Martone, & Kassem, 1990) or included more than one developmental level, such as children and adolescents (e.g., Belter, Lipovsky, & Finch, 1989). Data accumulated from diverse developmental stages were averaged, limiting the generalizability of the findings to any specific population.

Generalizability is further limited in studies employing narrowly defined constructs and/or those examining narrowly restricted subgroups of adolescents. For example, Peri and Molinari (1983) report empirical data for a group of adolescent females diagnosed with gonadal dysgenesis, the name applied to a heterogeneous group of disorders with an incidence of 0.04% in the general population. Among this group, their sample was further restricted to those initiating hormonal replacement therapy. The findings reported in such studies must be subjected to cross-validation prior to generalization.

Additionally, the literature was heterogeneous regarding the establishment of criterion groups. Diagnostic group membership was determined by multi-disciplinary treatment team consensus (e.g., Abraham, Mann, Lewis, Coontz, & Lehman, 1990), chart review (e.g., Arffa, 1982; Salwen, Reznikoff, & Schwartz, 1989; Silberg & Armstrong, 1992; Weber, Meloy, & Gacono, 1992), the subject's performance on other assessment instruments undergoing investigation (e.g., Trenerry & Pantle, 1990), and standardized assessment procedures (e.g., Gordon, Halmi, & Ippolito, 1984). Reliance on clinical judgment alone in determining diagnostic group membership is suboptimal due to possible criterion group contamination, especially in studies designed to examine the Rorschach's efficacy in differential diagnosis.

Another, although less common problem was that of significant subject attrition and/or unusual subject recruitment procedures (see Table 2). For example, Beck and Worland (1983) reported that 82 of 267 subjects failed to return for follow-up testing, representing a 31% rate of attrition. Landy et al. (1983) used a control group chosen by asking the experimental-group subjects to recommend friends who they believed were most like themselves on general psychological characteristics.

Finally, as is true for the Rorschach literature in general, the use of many different scoring and interpretation systems limits comparability across

studies. Twenty-five studies employed the Comprehensive System (Exner, 1972, 1986), and eight used Klopfer's method (Klopfer, Ainsworth, Klopfer, & Holt, 1962). Some deviated significantly from standardized administration procedures without thoroughly explaining the rationale or adequately describing the procedures employed. Six of the studies failed to report an administration method (Adhikari et al., 1986; Kowitt et al., 1989; Landy et al., 1983; Lehtinen, 1981; Lehtinen-Railo, 1983; and Vianello et al., 1991). Finally, many reported the use of special interpretation systems, such as the Mutuality of Autonomy Scale (Urist, 1977), in conjunction with standardized administration procedures (e.g., Hart & Hilton, 1988), but few supplied any detailed descriptions of the special features and components of the systems employed.

Summary of Findings

In spite of the methodological difficulties noted above, there are positive results in the literature which suggest that the Rorschach provides unique and valid information for the assessment of adolescents. First, empirical evidence supports the validity of measures of reality testing, cognitive complexity, and the presence of psychotic and/or disordered thinking (e.g., Abraham et al., 1990; Armstrong, Silberg, & Parente, 1986; Fritsch & Holmstrom, 1990; Gallucci, 1989; Gordon et al., 1984; Last et al., 1989; O'Neill, 1989; Peri & Molinari, 1983; Pierloot, Houben, & Acke, 1988; Salwen et al., 1989). The Rorschach also appears to provide useful measures of psychological distress (e.g., Arffa, 1982; Decina et al., 1983; Duricko, Norcross, & Buskirk, 1989; Finch et al., 1990; Jindal & Panda, 1982; Kowitt et al., 1989; Leifer et al., 1991; Peri & Molinari, 1983; Ropponen et al., 1990; Trenerry & Pantle, 1990; Zgourides et al., 1989). Similarly, several studies reported that the instrument provides information regarding disturbance in object-relatedness (e.g., Hart & Hilton, 1988; Kelly, 1986; Weber et al., 1992).

Further, there is evidence of a correlation in specific adolescent populations between specific variables of the Depression Index from the Comprehensive System (Exner, 1972, 1986) and other measures of depression (e.g., Caputo-Sacco & Lewis, 1991; Gordon et al., 1984; Lipovsky, Finch, & Belter, 1989; Shapiro et al., 1990; Silberg & Armstrong, 1992). For example, Caputo-Sacco and Lewis (1991) found a significant negative relationship between Egocentricity Index scores and elevations on Scale 2 of the MMPI. However, other research indicates that the DEPI and the Egocentricity Index are not correlated with other measures of depression (i.e., Ball, Archer, Gordon, & French, 1991; Duricko et al., 1989). Archer and Krishnamurthy (1993) point out that lack of significant correlations between Rorschach variables and other personality measures does not necessarily decrease the utility or validity of the information obtained from either. Instead, they state, "it is possible that combining data from these two instruments (the Rorschach and the MMPI, in this case) would result in dramatic increases in incremental validity" (p. 136). They also advise that when confronted with conflicting findings within a single test battery, clinicians must evaluate the relative reliability and validity of the data sources and draw conclusions only after integrating the results with interview findings and psychosocial history data.

Conclusions

Given the variability of methodological rigor employed across studies and the contradictory nature of many of the results, any findings in the literature on use of the Rorschach with adolescents should be considered preliminary. Further research and replication of previous findings are necessary to assure correct interpretation of adolescent Rorschach protocols. Based on the review undertaken here, several guidelines for future research are recommended.

It is important that future studies employ samples containing enough subjects to achieve power of .80 or greater. This is consistent with the recommendation of Acklin et al. (1992), who suggest this as the desirable minimum standard for future Rorschach research in general. In order to compute a study's power, the researcher must estimate an expected effect size. Greene (1987) stated that for the MMPI differences of at least one half of a standard deviation are required before the resulting inferences can be expected to have clinical relevance. This yardstick is equivalent to a medium effect size for the Rorschach. Therefore, smaller effect sizes may be best interpreted as insignificant in most clinical circumstances.

However, because small effects can have important clinical consequences, researchers must make informed judgments as to whether differences found for certain variables warrant empirical investigation. Alternatively, large effect sizes, while requiring smaller samples to detect differences, are relatively rare in behavioral science research (Cohen, 1988) and probably should not be expected. Optimally, results of power analyses should be reported, especially when they are lower than .80.

Additionally, the probability of Type I errors should be minimized by employing multivariate methods rather than numerous univariate analyses. However, because multivariate methods are less powerful by design than univariate analyses, an alternative possibility is to decrease the number of dependent variables studied in a single project. This can be accomplished either by narrowing the focus of the constructs examined or by combining several dependent measures into composite variables, depending on the nature of the study.

Adoption of standardized clinical procedures for Rorschach administration would greatly enhance the comparability of findings across studies. However, if this is contraindicated in a particular study, a clear explanation of the procedures employed and a discussion of generalizability are necessary. This will result in a body of knowledge that is more easily replicated by other investigators and more readily applicable to clinical use.

On a related note, it is important to point out that numerous scoring and interpretive systems were designed as research measures and are not used clinically. Unfortunately, many of these systems are not adequately described in the literature, impairing replication and limiting the generalizability of research findings to clinical settings. We recommend that research measures be thoroughly described with regard to procedures, psychometric properties, reliability, and validity. Further, we recommend that measures employed clinically be used whenever feasible in an attempt to provide comparison data that practitioners can most readily implement.

In addition to issues related to statistical power and procedural clarity, attention needs to be given to the use of more rigorous standards for determining diagnostic group membership in clinical investigations (cf. Archer & Gordon, 1988). Specifically, we recommend that structured diagnostic systems be employed whenever possible. Interrater reliability estimates should also be provided for all studies employing clinically-derived diagnoses; without them, intergroup comparisons are more difficult and the value of the Rorschach as a diagnostic instrument may be undermined.

Finally, more research is needed to determine the specific Rorschach response patterns produced by adolescent populations and their corresponding behavioral correlates. As with other assessment instruments used with a variety of age ranges, interpretation may be faulty when descriptors are used across developmental stages without empirical validation to confirm their applicability. Behavioral correlates must be identified specifically as appropriate to adolescent subjects to ensure accurate interpretation of both individual protocols and group differences.

In summary, the literature provides evidence that the Rorschach has merit in the assessment of adolescent personality and psychopathology. However, replication of prior research is needed to assure the reliability and generalizability of these findings. In addition, further empirical investigation, conducted with rigorous attention to methodological issues, is necessary to fully understand the efficacy of the Rorschach in assessing adolescents.

References

Abraham, P. P., Mann, T., Lewis, M. G., Coontz, B., & Lehman, M. (1990). The Cognitive Synthesis Test and the Rorschach indicators of internal and external reality in schizophrenic, borderline, and organic/psychotic adolescents. *British Journal of Projective Psychology, 34,* 34-44.

Acklin, M. W., McDowell, C. J., & Orndoff, S. (1992). Statistical power and the Rorschach: 1975-1991. *Journal of Personality Assessment, 59,* 366-379.

Adhikari, G. S., Adhikari, S., & Tripathi, S. K. (1986). The cognitive properties of human behaviors. *Asian Journal of Psychology and Education, 17,* 26-29.

Archer, R. P. (1992). *MMPI-A: Assessing adolescent psychopathology.* Hillsdale, NJ: Lawrence Erlbaum.

Archer, R. P., & Gordon, R. A. (1988). MMPI and Rorschach indices of schizophrenic and depressive diagnosis among adolescent inpatients. *Journal of Personality Assessment, 52,* 276-287.

Archer, R. P., & Krishnamurthy, R. (1993). Combining the Rorschach and the MMPI in the assessment of adolescents. *Journal of Personality Assessment, 60,* 132-140.

Archer, R. P., Maruish, M., Imhof, E. A., & Piotrowski, C. (1991). Psychological test usage with adolescent clients: 1990 survey findings. *Professional Psychology: Research and Practice, 22,* 247-252.

Arffa, S. (1982). Predicting adolescent suicidal behavior and the order of Rorschach measurement. *Journal of Personality Assessment, 46,* 563-568.

Armstrong, J., Silberg, J. L., & Parente, F. J. (1986). Patterns of thought disorder on psychological testing: Implications for adolescent psychopathology. *Journal of Nervous and Mental Disease, 174,* 448-456.

Ball, J. D., Archer, R. P., Gordon, R. A., & French, J. (1991). Rorschach depression indices with children and adolescents: Concurrent validity findings. *Journal of Personality Assessment, 57,* 465-476.

Beck, J. T., & Worland, J. (1983). Rorschach developmental level and its relationship to subsequent psychiatric treatment. *Journal of Personality Assessment, 47,* 238-242.

Belter, R. W., Lipovsky, J. A., & Finch, A. J., Jr. (1989). Rorschach Egocentricity Index and self-concept in children and adolescents. *Journal of Personality Assessment, 53,* 783-789.

Caputo-Sacco, L., & Lewis, R. J. (1991). MMPI correlates of Exner's Egocentricity Index in an adolescent psychiatric population. *Journal of Personality Assessment, 56,* 29-34.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Hillsdale, NJ: Lawrence Erlbaum.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Decina, P., Kestenbaum, C. J., Farber, S., Kron, L., Gargan, M., Sackeim, H. A., & Fieve, R. R. (1983). Clinical and psychological assessment of children of bipolar probands. *American Journal of Psychiatry, 140,* 548-553.

del Miglio, C. (1984). Body boundaries and field dependence of adolescent girls. *Perceptual and Motor Skills, 58,* 883-886.

Duricko, A. J., Norcross, J. C., & Buskirk, R. D. (1989). Correlates of the Egocentricity Index in child and adolescent outpatients. *Journal of Personality Assessment, 53,* 184-187.

Exner, J. E., Jr. (1972). *The Rorschach: A comprehensive system. Vol. 1* (1st ed.). New York: John Wiley.

Exner, J. E., Jr. (1986). *The Rorschach: A comprehensive system. Vol 1: Basic Foundations* (2nd ed.). New York: John Wiley.

Exner, J. E., Jr., Thomas, E. A., & Mason, B. J. (1985). Children's Rorschachs: Description and prediction. *Journal of Personality Assessment, 49,* 13-20.

Exner, J. E., Jr., & Weiner, I. B. (1982). *The Rorschach: A comprehensive system. Vol. 3: Assessment of children and adolescents.* New York: John Wiley.

Finch, A. J., Jr., Imm, P. S., & Belter, R. W. (1990). Brief Rorschach records with children and adolescents. *Journal of Personality Assessment, 55,* 640-646.

Fritsch, R. C., & Holmstrom, R. W. (1990). Assessing object representations as a continuous variable: A modification of the concept of the object on the Rorschach scale. *Journal of Personality Assessment, 55,* 319-334.

Gallucci, N. T. (1989). Personality assessment with children of superior intelligence: Divergence versus psychopathology. *Journal of Personality Assessment, 53,* 749-760.

Gordon, D. P., Halmi, K. A., & Ippolito, P. M. (1984). A comparison of the psychological evaluation of adolescents with anorexia nervosa and of adolescents with conduct disorder. *Journal of Adolescence, 7,* 245-266.

Greene, R. L. (1987). Ethnicity and MMPI performance: A review. *Journal of Consulting and Clinical Psychology, 55,* 497-512.

Hart, B., & Hilton, I. (1988). Dimensions of personality organization as predictors of teenage pregnancy risk. *Journal of Personality Assessment, 52,* 116-132.

Jindal, C. R., & Panda, S. K. (1982). Anxiety and achievement: A Rorschach study of high and low achievers. *Indian Educational Review, 17,* 118-124.

Kalliopuska, M. (1982). Empathy measured by Rorschach and TAT. *British Journal of Projective Psychology, 27,* 5-11.

Kelly, F. D. (1986). Assessment of the borderline adolescent: Psychological measures of defensive structure and object representation. *Journal of Child and Adolescent Psychotherapy, 3,* 199-206.

Klopfer, B., Ainsworth, M. D., Klopfer, W. G., & Holt, R. R. (1962). *Developments in the Rorschach technique. Vol. 1: Technique and theory.* New York: Harcourt, Brace, & World.

Koide, R. (1982). The effect of body image boundaries on ego strength in adolescence: A developmental study. *Japanese Psychological Research, 24,* 136-144.

Kowitt, M. P., Sachs, J. S., Lowe, M. G., Schuller, R. B., Rubel, M., & Ellis, D. M. (1989). Predicting discharge and follow-up status of hospitalized adolescents. *Hospital and Community Psychiatry, 40,* 724-731.

Landy, S., Schubert, J., Cleland, J. F., Clark, C., & Montgomery, J. S. (1983). Teenage pregnancy: Family syndrome? *Adolescence, 18,* 679-694.

Last, U., Mandel, B., Shapiro, E., & Belmaker, R. H. (1989). In search of psychological markers of bipolar manic-depressive illness (BMDI): Commonalities in psychological functioning between adult euthymic BMDI patients and offspring of BMDI-affected parents. *Israel Journal of Psychiatry and Related Sciences, 26,* 75-84.

Lehtinen, S. (1981). Developmental changes in primary process manifestations in thought: A follow-up study of girls from four to seventeen. *Psychiatria Fennica, 12,* 131-152.

Lehtinen-Railo, S. (1983). Consolidation of primary process thought and its integration: II. A longitudinal study of girls from four to seventeen. *Psychiatria Fennica, 14,* 107-117.

Leifer, M., Shapiro, J. P., Martone, M. W., & Kassem, L. (1991). Rorschach assessment of psychological functioning in sexually abused girls. *Journal of Personality Assessment, 56,* 14-28.

Lipovsky, J. A., Finch, A. J., & Belter, R. W. (1989). Assessment of depression in adolescents: Objective and projective measures. *Journal of Personality Assessment, 53,* 449-458.

McCraw, R. K., & Pegg-McNab, J. (1989). Rorschach comparisons of male juvenile sex offenders and nonsex offenders. *Journal of Personality Assessment, 53,* 546-553.

O'Neill, A. M. (1989). Perceptual rotations on children's Rorschachs. Special issue: Post-traumatic stress disorder. *Journal of Clinical Psychology, 45*(Suppl. 5), 809-813.

Peri, G., & Molinari, E. (1983). Psychological aspects of gonadal dysgenesis. *Acta Medica Auxologica, 15,* 75-84.

Pierloot, R. A., Houben, M. E., & Acke, G. (1988). Are anorexia nervosa patients alexithymic? *Acta Psychiatrica Belgica, 88,* 222-232.

Ridley, S. E. (1987). The high score approach to scoring two Rorschach measures of cognitive development. *Journal of Clinical Psychology, 43,* 390-394.

Ridley, S. E., & Bayton, J. A. (1983). Validity of two scoring systems for measuring cognitive development with the Rorschach. *Journal of Consulting and Clinical Psychology, 51,* 470-471.

Ritvo, E., Shanok, S. S., & Lewis, D. O. (1983). Firesetting and nonfiresetting delinquents: A comparison of neuropsychiatric, psychoeducational, experiential, and behavioral characteristics. *Child Psychiatry and Human Development, 13,* 259-267.

Ropponen, P., Aalberg, V., Rautonen, J., Kalmari, H., & Siimes, M. A. (1990). Psychosexual development of adolescent males after malignancies in childhood. *Acta Psychiatrica Scandinavica, 82,* 213-218.

Rorschach, H. (1942). *Psychodiagnosis: A diagnosis test based on perception* (P. Lemkau & B. Kronenberg, Trans.). Berne: Huber. (original work published 1921)

Salwen, R. S., Reznikoff, M., & Schwartz, F. (1989). Identity integration and ego pathology in disturbed adolescents. *Journal of Clinical Psychology, 45,* 138-149.

Shapiro, J. P., Leifer, M., Martone, M. W., & Kassem, L. (1990). Multimethod assessment of depression in sexually abused girls. *Journal of Personality Assessment, 55,* 234-248.

Silberg, J. L., & Armstrong, J. G. (1992). The Rorschach test for predicting suicide among depressed adolescent inpatients. *Journal of Personality Assessment, 59,* 290-303.

Singh, S. (1986). Correlates of Rorschach measure of hostility. *Psychological Studies, 31,* 98-102.

Trenerry, M. R., & Pantle, M. L. (1990). MAPI code types in an inpatient crisis-unit sample. *Journal of Personality Assessment, 55,* 683-691.

Urist, J. (1977). The Rorschach test and assessment of object relations. *Journal of Personality Assessment, 41,* 3-9.

Urist, J., & Shill, M. (1982). Validity of the Rorschach Mutuality of Autonomy Scale: A replication using excerpted responses. *Journal of Personality Assessment, 46,* 450-454.

Vianello, R. (1991). Religious beliefs and personality traits in early adolescence. *International Journal of Adolescence and Youth, 2,* 287-296.

Weber, C. A., Meloy, J. R., & Gacono, C. B. (1992). A Rorschach study of attachment and anxiety in inpatient conduct-disordered and dysthymic adolescents. *Journal of Personality Assessment, 58,* 16-26.

Wenar, C., & Curtis, K. M. (1991). The validity of the Rorschach for assessing cognitive and affective changes. *Journal of Personality Assessment, 57,* 291-308.

Zgourides, G. D., Frey, P., Camplair, C., Tilson, M., & Ihli, K. (1989). Anxiety and perceived helplessness as measured by MMPI and Exner-scored Rorschach protocols in a sample of adolescent outpatients. *Perceptual and Motor Skills, 69,* 458.