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**Projective Methods**

# Standardization of the individual Zulliger test on non-clinical Italian population

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## Abstract

*Background:* The Zulliger test (Z-test) is a projective technique, mainly used in the selection and evaluation of human resources, through a collective administration. It offers the possibility to investigate personality, assessing cognitive, affective, and interpersonal functioning, and the presence of psychopathology. The lack of normative data on the individual administration mode have encouraged this work. This is an extension of a previous work and includes statistical additional information on data obtained from the administration of the test on a non-clinical Italian population.

*Method:* The sample consisted of 360 healthy subjects (180 male and 180 female, mean age 38.25), divided into age (18-30; 31-45; 46-60) and education (high and low) groups. All subjects were individually administered the Z-test. The ANOVA was performed to determine if there were statistically significant differences between the analyzed groups.

*Results:* Results indicate a distribution of key test variables including whole and detail responses, determinants, contents and particular manifestations. Location tables were revised based on frequency of area usage. Specifically, a descriptive analysis was conducted on the responses, considering the total number, whole and detailed responses, formal quality, and movement responses for each group. Additionally, the frequency of use of different areas of the cards was examined through location tables. Regarding determinants, the frequency for each card was reported, along with the occurrence of the main specific manifestations. Statistical analysis did not reveal significant differences between groups in any of the examined variables: total number of responses ($F = 0.26$, $p = 0.99$), whole responses ($F = 0.31$, $p = 0.89$), detailed responses ($F = 0.44$, $p = 0.78$), formal quality (FQ), movement responses (M), and color responses (C, CF, FC). These findings suggest a homogeneous distribution of responses across demographic variables, confirming the stability of the test in non-clinical populations.

*Conclusion:* The Z-test, like the Rorschach test, is a projective test based mainly on numerical and statistical support. The availability of statistical data focused on individual administration will allow a wider use of the test, with the future aim of comparing these data with a clinical sample.

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## 1. Introduction

Psychological assessment is a fundamental process in the structured investigation of the psychic functioning characterizing the individual. In order to guarantee the maximum reliability of the results, the choice of instruments should be focused on proven validity (Bornstein, 2017; Wechsler et al., 2019). In the panorama of available psychodiagnostic instruments, projective tests play a relevant role in the assessment of personality, however their use is sometimes discouraged by the difficulty of guaranteeing solid psychometric properties, due to their complexity and variations in individual responses (Meyer, 2017). Projective techniques involve the presentation of ambiguous and indirect stimuli, such as images or stories, to subjects to prompt the projection of their own experience onto the stimuli (Colakoglu & Littlefield 2011). Many studies (Mihura et al., 2013) support the usefulness and validity of their application in personality investigation.

The Zulliger test (Z-test) is a projective technique, mainly used in the selection and evaluation of human resources through a collective administration (Carruba & Castiello d'Antonio, 2008; Fazendeiro & Novo, 2012; Semeonoff, 1990). It allows to investigate personality, assessing its cognitive, affective and interpersonal functioning, and the presence of psychopathology (Cardoso & Villemor-Amaral, 2017).

Although many authors (Gonçalves & Villemor-Amaral, 2020; Lefkowitz, M. M., 1968) have demonstrated its usefulness in a clinical context and its psychometric properties (Bunchaft et al., 2002; Cardoso et al., 2018; Di Domenico-Grazziotin & Scortegagna, 2013; Grazziotin & Scortegagna, 2022), it is still little used in its individual administration mode. Moreover, the lack of normative data has discouraged the use of the Z-test. Authors mainly provided norms for group testing (Mahmood, 1990; Gélinas & Balbinotti, 2018).

The Zulliger Individual test was developed from the original group version at the suggestion of Prof. Robert Heiss (Zulliger et al., 1969). Test results have been compared with those produced by the Rorschach (Ro) and the Behn-Rorschach (Bero), revealing good outcomes (Franco & Villemor-Amaral, 2012; Lis et al., 1990). All the essential elements of the Ro and the Bero were contained in the three cards of the Z-test. It also shows several advantages compared to the previous ones: its administration is short, i.e., approximately 15 minutes, and it produces results comparable to those of the other two, whose administration lasts approximately 50 minutes (Carpio & Lugón, 2011). Due to its brevity, it can easily be administered to subjects who present fatigability, concentration difficulties and low frustration tolerance (Lis & Zennaro, 1997).

The subject is asked to adapt his memory images to the blot images, or rather to use the blot images to evoke the corresponding memory images. All interpretations are subsequently coded

in accordance with formulas developed by Rorschach. A standard code will make it possible to obtain an objective representation of the personality shown in the response process, comparing it statistically with a reference sample (Caruson et al., 2015). In particular, according to the author (Zulliger et al., 1969), important indicators are: in the first card, the presence of a "whole response", associated with the effort to process the data elicited by aspects of the stimulus, in the second card, the presence of responses including color, related to emotional development, and in the third card, the presence of movement, indicative of intellectual resources, relating to abstract reasoning, higher forms of conceptualization, and the tendency to use thought to solve problems. It is a set of variables through which it is possible to quantify the functional and dynamic aspects of the personality (Villemor-Amaralet al., 2009; Weiner, 1994).

In a previous study (Caporale et al., 2024), it has been showed first preliminary results of test standardization on a non-clinical Italian sample. Specifically, for each card have been reported popular responses, defined by Zulliger and colleagues (1969) as "*the adaptation of thinking to collective thinking*," and responses of good formal quality, indicating the accuracy of the engrams. This is an extension of that work and aims to present additional statistical information, including means of number of responses, the distribution of main locations, determinants and special manifestations and the new reorganization of the location tables.

## 2. Methods

### 2.1 Participants and Procedure

The sample consisted of 360 Italian adults, evenly distributed across gender, age groups, and education levels. It was selected randomly and it is representative of different regions and social contexts. To ensure a balanced and representative dataset, participants were categorized as follows:

**Age groups:**

- **18-30 years:** 120 individuals
- **31-45 years:** 120 individuals
- **46-60 years:** 120 individuals

**Gender distribution:**

- **Males (M):** 180 individuals
- **Females (F):** 180 individuals

Each group was further divided by education level:

- **High Education:** Bachelor's degree or higher
- **Low Education:** Middle school or high school diploma (without a university degree)

Each subgroup contained exactly 30 individuals, ensuring statistical comparability (Table 1).

**Table 1.** Group table

| Group | Description | Mean Age | SD |
|---|---|---|---|
| **Total Sample** | All participants | 38.25 | 9.96 |
| **Group 1** | Males 18-30 years, low education | 28.0 | 4.33 |
| **Group 2** | Males 18-30 years, high education | 29.0 | 4.52 |
| **Group 3** | Females 18-30 years, low education | 25.0 | 3.65 |
| **Group 4** | Females 18-30 years, high education | 29.0 | 5.13 |
| **Group 5** | Females 31-45 years, low education | 36.0 | 4.82 |
| **Group 6** | Females 31-45 years, high education | 42.0 | 4.49 |
| **Group 7** | Males 31-45 years, low education | 37.0 | 4.34 |
| **Group 8** | Males 31-45 years, high education | 32.0 | 3.45 |
| **Group 9** | Females 46-60 years, low education | 51.0 | 4.45 |
| **Group 10** | Females 46-60 years, high education | 50.0 | 5.45 |
| **Group 11** | Males 46-60 years, low education | 51.0 | 4.8 |
| **Group 12** | Males 46-60 years, high education | 49.0 | 3.99 |

To ensure methodological rigor, the following inclusion criteria were applied:

- Native Italian speakers.
- Age between 18 and 60 years.
- No diagnosed neurological or psychiatric disorders.
- No use of psychotropic medication in the four weeks prior to participation.
- Documented education level.

Participants were excluded if they had:

- Diagnosed psychiatric disorders (e.g., schizophrenia, bipolar disorder, severe anxiety disorders).
- Cognitive impairments or intellectual disabilities.
- A history of substance abuse.
- Significant head trauma or medical conditions affecting cognitive functions.
- Failure to provide informed consent.

All participants underwent an anamnestic interview to detect any relevant medical or clinical information. All subjects gave written informed consent to participate in the study in accordance with the Declaration of Helsinki. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its subsequent amendments or

comparable ethical standards. The research was approved by the Ethical Committee of the Integrated Psychodynamic Psychotherapy Roman Institute. Prot. n: 01 January 2024.

The Z-test was administered individually. The administration and scoring method are those originally proposed by Zulliger (1969). The instructions are: "*I have here three cards with some pictures printed on them. They have no fixed meaning. Please tell me what you think this may be*".

The administration of the Z-test can be divided into two distinct phases:

- the response phase, i.e. the actual administration of the three tables and the simultaneous verbatim transcription of everything that is recorded by the clinician;

- the clarification phase, in which questions are asked to clarify possible coding doubts in relation to the answers given by the subject in the previous phase.

Coding is the phase, subsequent to the administration process, which enables a standardized definition of the answers provided by the subject. Thus, it consists in the process of transformation from the narrative language of the protocol to a system of codes and numerical values useful for a statistical-formal analysis of the data.

In order to ensure a more objective and correct attribution of the coding, it was carried out by experienced psychodiagnosticians. We initially used the location areas proposed by Carruba and Castiello d'Antonio (2008), which were subsequently updated based on the statistical frequency of use of each single area in our sample.

**2.2 Statistical analyses**

All statistical computations were performed using Python's SciPy, Pandas and Statsmodels libraries. The null hypothesis ($H_0$) assumed that there were no significant differences between groups in the analyzed variables. The alternative hypothesis ($H_1$) proposed that differences in response patterns would emerge based on age and education.

A one-way ANOVA was performed for each dependent variable (total responses, whole responses, detail responses, formal quality, movement responses, and color responses) across demographic groups (age and education level). The significance threshold was set at $p < 0.05$. The interpretation of the results was based on:

1 **Sum of Squares (SS):**

- The sum of squares between groups represents the variability of the group means relative to the overall mean.
- The sum of squares within groups represents the variability within each group.
- The total sum of squares is the sum of the variations between and within groups.

2 **Degrees of Freedom (df):**

- The degrees of freedom between groups correspond to the number of groups minus one.
- The degrees of freedom within groups correspond to the total number of observations minus the number of groups.
- The total degrees of freedom correspond to the total number of observations minus one.

3 **Mean Squares (MS):**

- The mean squares between groups are obtained by dividing the sum of the squares between groups by the degrees of freedom between groups.
- The mean squares within groups are obtained by dividing the sum of squares within groups by the degrees of freedom within groups.

4 **F-Value:**

- The F-value compares the variability between groups to the variability within groups. A high F-value would indicate that there is more variability between groups than within groups, suggesting significant differences between the group means.

5 **Significance Level (*p*-value):**

- The *p*-value indicates the probability of obtaining an F-value at least as large as that observed if the null hypothesis were true (i.e., if there were no real differences between the groups). A *p*-value less than 0.05 would indicate significant differences between groups.

For each group, the variance and standard deviation were calculated to help understand how dispersed the data are relative to the group mean.

**Verification of Data Distribution.** To confirm that ANOVA assumptions were met, normality tests were conducted separately for each group:

- Kolmogorov-Smirnov Test: All groups had *p*-values > 0.95, confirming normality.
- Shapiro-Wilk Test: All groups had *p*-values > 0.68, indicating no significant deviations from normality.
- Skewness: 0.097 (symmetric distribution).
- Kurtosis: -0.274 (no significant outliers).

These findings confirm the suitability of ANOVA for statistical analysis.

Homogeneity of Variance Tests. To confirm equal variance among groups, the following tests were applied:

- Levene's Test: *p*-value = 1.0 (homogeneous variances).
- Bartlett's Test: *p*-value = 1.0 (no variance differences).

Results confirmed that variance homogeneity assumptions were met.

## 3. Results

Below is a descriptive analysis for each group, comparing their means to the overall mean (Table 2).

**Table 2.** Means of variables

| Group | Number of Individuals | Mean Total Responses (R Total) | Mean by Table I | Mean by Table II | Mean by Table III | Mean of Variables W | Mean of Variables D | Mean of Variables FQ+ | Mean of Variables FQ+/- | Mean of Variables M | Mean of Variables F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Males 18-30 Years, High Education** | 30 | 6.8 | 2.2 | 2.26 | 2.3 | 1.96 | 3.3 | 3.9 | 0.03 | 0.73 | 0.13 |
| **Males 18-30 Years, Low Education** | 30 | 5.97 | 2.2 | 2.26 | 2.3 | 1.96 | 2.97 | 3.37 | 0.5 | 0.8 | 3.1 |
| **Females 18-30 Years, High Education** | 30 | 6.83 | 2.0 | 2.67 | 2.17 | 1.63 | 3.7 | 3.93 | 0.13 | 0.77 | 3.03 |
| **Females 18-30 Years, Low Education** | 30 | 6.43 | 2.0 | 2.53 | 1.9 | 1.73 | 3.27 | 3.43 | 0.9 | 1.0 | 3.2 |
| **Females 31-45 Years, High Education** | 30 | 6.33 | 1.97 | 2.37 | 2.0 | 1.6 | 3.2 | 3.93 | 0.67 | 1.07 | 2.6 |
| **Females 31-45 Years, Low Education** | 30 | 6.4 | 2.17 | 2.17 | 2.13 | 2.1 | 3.03 | 4.43 | 0.43 | 1.03 | 3.43 |
| **Males 31-45 Years, High Education** | 30 | 6.0 | 2.1 | 2.4 | 1.93 | 1.7 | 3.33 | 3.63 | 0.37 | 0.73 | 3.03 |
| **Males 31-45 Years, Low Education** | 30 | 6.0 | 1.67 | 2.23 | 2.1 | 1.7 | 2.83 | 3.83 | 0.43 | 0.83 | 3.33 |
| **Females 46-60 Years, High Education** | 30 | 5.4 | 1.67 | 2.27 | 1.47 | 1.63 | 2.73 | 3.63 | 0.47 | 0.73 | 2.6 |
| **Females 46-60 Years, Low Education** | 30 | 5.7 | 1.83 | 1.93 | 1.93 | 1.47 | 2.77 | 3.6 | 0.67 | 0.73 | 3.23 |
| **Males 46-60 Years, High Education** | 30 | 4.67 | 1.43 | 1.8 | 1.43 | 1.47 | 2.17 | 3.13 | 0.37 | 0.57 | 2.47 |
| **Males 46-60 Years, Low Education** | 30 | 4.73 | 1.53 | 1.93 | 1.6 | 1.3 | 2.3 | 3.17 | 0.33 | 0.57 | 2.43 |

The ANOVA analysis yielded the following results (Table 3). The F-value is low, indicating that the variability between group means is not much larger than the variability within groups. The *p*-value is much higher than 0.05, suggesting that there is not enough evidence to reject the null hypothesis. In other words, there are no statistically significant differences between the group means. The non-significant *p*-values (> 0.05) across all dependent variables suggest that the variability observed between groups is due to random fluctuations rather than systematic differences. This reinforces the idea that response styles in the Z-test are not strongly influenced by demographic factors such as age or education.

**Table 3.** ANOVA results

| Source of Variation | Sum of Squares (SS) | Degrees of Freedom (df) | Mean Squares (MS) | F-Value | Significance Level (*p*-value) |
|---|---|---|---|---|---|
| **Between Groups** | 9.01 | 12 | 0.75 | 0.26 | 0.99 |
| **Within Groups** | 663.53 | 234 | 2.83 | | |
| **Total** | 672.55 | 246 | | | |

A descriptive analysis was conducted on the data from the ANOVA to better understand the characteristics of the various groups.

**Summary of Group Means.** The means of the 12 groups range from a minimum of 4.67 (Group 11) to a maximum of 6.83 (Group 3). This indicates that, on average, the performances or measurements observed in the groups are slightly different.

**Measures of Dispersion**

- **Variance:** In our groups, the variance ranges from 1.85 (Group 12) to 3.88 (Group 2). A higher variance indicates greater data dispersion within the group.
- **Standard Deviation:** The standard deviation is the lack of statistically significant differences between the means of the analyzed groups. The low F-value and the very high *p*-value suggest that any observed differences between the group means are likely due to chance rather than a real effect of the independent variables. Consequently, we can conclude that there are no significant differences between the groups for the variable analyzed in the sample.

The descriptive analysis shows that:

- Groups 3 (F 18-30 A) and 1 (M 18-30 A) have the highest mean total responses, indicating superior performance compared to other groups.
- Groups 11 (M 46-60 A) and 12 (M 46-60 B) have the lowest mean total responses, indicating lower performance compared to other groups.
- Most groups have mean total responses close to the overall mean of 5.96, suggesting a relatively uniform distribution of responses in the sample.

**Analysis of Standard Deviation.** The document provided contains information related to the study of the standard deviation for a sample of data. Below is a detailed description of the information (Table 4) and its interpretation.

While variance provides a measure of total dispersion within the dataset, standard deviation is used to compare variability across groups in a more interpretable way. Given that standard

deviation is simply the square root of variance, both measures were included to provide a comprehensive understanding of response variability.

**Table 4.** Standard Deviation Analysis

| Sample Size | Total Responses | Mean | Mean of Squared Differences | Standard Error | Standard Deviation | Standard Deviation / Square Root of the Sample | Square Root of the Sample | Standard Error |
|---|---|---|---|---|---|---|---|---|
| 360 | 2147 | 5.96 | 146.79 | 12.12 | 12.12 | 0.64 | 18.97 | 0.64 |

Variance was included alongside standard deviation to provide a comprehensive understanding of response dispersion across groups. In summary, the descriptive analysis of the data in the document provides detailed information on the standard deviation and the standard error for the sample of 360 observations. The standard deviation of 12.12 indicates a relatively wide dispersion of the responses around the mean of 5.96. The standard error of 0.64 suggests that the sample mean is a relatively accurate estimate of the population mean. The mean of responses (R) in Card I is 1.84, in Card II is 2.23 and in Card III is 1.9.

Below is a description of the results of the localizations, determinants, contents and particular manifestations of the test in the respective cards.

Localization is the portion of the image considered to formulate the response.

The location 'W' – Whole (Table 5) has a high frequency in Card I and III (40.79%), while it is less frequent in card II (8.74%).

**Table 5.** Location W

| Card | Frequency | Percentage |
|---|---|---|
| I | 270 | 40.79 |
| II | 79 | 8.74 |
| III | 258 | 40.79 |

The location 'D' – Detail (Table 6) has a high frequency in Card II (56.98%), while it is less frequent in card I and II (29.46%).

**Table 6.** Location D

| Card | Frequency | Percentage |
|---|---|---|
| I | 195 | 29.46 |
| II | 478 | 56.98 |
| III | 396 | 29.46 |

The comparison with the location sheets proposed by Carruba and Castiello D'Antonio (2008), which were the result of a group administration work, allowed a numerical reorganization of the areas, based on the frequency of use. Below are the tables with the new codes for each card.

**Table 7.** Location table for Card I

| **CARD I** | | | | |
|---|---|---|---|---|
| **New area** | **Area by Carruba and Castiello d'Antonio** | **Location** | **Frequency** | **Percentage** |
| WHOLE | WHOLE | W | 369 | 55.74 |
| 1 | 1 | D | 140 | 21.14 |
| 2 | 2 | DdimD o DDdim | 36 | 5.43 |
| 3 | 4 | D | 14 | 2.11 |
| 4 | 17 | Dd | 6 | 0.90 |
| 5 | 33 | Dd | 6 | 0.90 |
| 6 | 9 | Dd | 5 | 0.75 |
| 7 | 5 | Dd | 4 | 0.60 |
| 8 | 2+2 | Dd | 4 | 0.60 |
| 9 | 12- 12+12 | Ddim | 3 | 0.45 |
| 10 | 13 | DdimD o DDdim | 3 | 0.45 |
| 11 | 15 | Ddim | 3 | 0.45 |
| 12 | 7 | Dd | 2 | 0.30 |
| 13 | 10 | Dd | 2 | 0.30 |
| 14 | 14 | Dd | 2 | 0.30 |
| 15 | 27 | Dd | 2 | 0.30 |
| 16 | 6+6 | Dd | 2 | 0.30 |
| 17 | 11 | Dd | 1 | 0.15 |
| 18 | 21 | Ddim | 1 | 0.15 |
| 19 | 32 | Dd | 1 | 0.15 |
| 20 | 34 | Dd | 1 | 0.15 |
| 21 | 35 | Dd | 1 | 0.15 |
| 22 | 36 | Dd | 1 | 0.15 |
| 23 | 3+3 | Dd | 1 | 0.15 |

**Table 8.** Location table for Card II

| **CARD II** | | | | |
|---|---|---|---|---|
| **New area** | **Area by Carruba and Castiello d'Antonio** | **Location** | **Frequency** | **Percentage** |
| 1+1 | 1+1 | D | 224 | 27.96 |
| 2+2 | 2+2 | D | 125 | 15.60 |
| WHOLE | WHOLE | W | 90 | 11.23 |
| 3 | 6 | D(Dim4) (DDim o DimD) | 70 | 8.73 |

| | | | | |
|---|---|---|---|---|
| 4 | 4 | Dim | 56 | 6.99 |
| 5 | 5 | D | 50 | 6.24 |
| 6 | 7 | D | 50 | 6.24 |
| | | (Dim4) (DDim o | | |
| 7 | 3 | DimD | 37 | 4.61 |
| 8 | 8 | Dim | 22 | 2.74 |
| 9 | 13 | Dd | 13 | 1.62 |
| | | (Dim4) (DDim o | | |
| 10 | 3+3 | DimD) | 12 | 1.49 |
| 11 | 1 | Dd | 7 | 0.87 |
| 12 | 12- 12+12 | Dd | 7 | 0.87 |
| 13 | 42 | Dd | 7 | 0.87 |
| 14 | 34 | Dim | 5 | 0.62 |
| 15 | 2 | Dd | 4 | 0.49 |
| 16 | 10 | Dim | 4 | 0.49 |
| 17 | 14 | Dd | 3 | 0.37 |
| 18 | 15 | Dim | 3 | 0.37 |
| 19 | 27 | Dd | 3 | 0.37 |
| 20 | 30 | Ddim o DimD | 3 | 0.37 |
| 21 | 9 | Dd | 2 | 0.24 |
| 22 | 20 | Dd | 2 | 0.24 |
| 23 | 22 | Ddim | 2 | 0.24 |
| 24 | 19 | Dim | 1 | 0.12 |
| 25 | 26 | Dd | 1 | 0.12 |
| 26 | 29 | Ddim | 1 | 0.12 |

**Table 9.** Location table for Card III

| **CARD III** | | | | |
|---|---|---|---|---|
| **New area** | **Area by Carruba and Castiello d'Antonio** | **Location** | **Frequency** | **Percentage** |
| WHOLE | WHOLE | W | 261 | 38.16 |
| 1 | 1 | D | 138 | 20.18 |
| 2+2 | 2+2 | D | 81 | 11.84 |
| 3+3 | 3+3 | D | 27 | 3.95 |
| 4 | 9 | D | 23 | 3.36 |
| 5 | 12- 12+12 | Dd | 12 | 1.75 |
| 6 | 2 | Dd | 9 | 1.32 |
| 7 | 40 | Dd | 7 | 1.02 |
| 8 | 10 | W | 6 | 0.88 |
| 9 | 34 | Dd | 4 | 0.58 |
| 10 | 38 | Dd | 4 | 0.58 |
| 11 | 6+6 | Dd | 3 | 0.44 |

| | | | | |
|---|---|---|---|---|
| 12 | 3 | Dd | 2 | 0.29 |
| 13 | 5 | Dd | 2 | 0.29 |
| 14 | 6 | Dd | 2 | 0.29 |
| 15 | 13 | Dd | 2 | 0.29 |
| 16 | 31 | Dd | 2 | 0.29 |
| 17 | 36 | Dd | 2 | 0.29 |
| 18 | 39 | Dd | 2 | 0.29 |
| 19 | 14 | Dd | 1 | 0.15 |
| 20 | 25 | Dd | 1 | 0.15 |
| 21 | 33 | Dd | 1 | 0.15 |
| 22 | 37 | Dd | 1 | 0.15 |
| 23 | 1+1 | Dd | 1 | 0.15 |

Determinants are the image characteristics that contributed to the formation of the response.

The determinant 'F' - Form (Table 10) has a significantly higher frequency than the average in Card I (+23.28%), while in Card II and Card III the frequencies are lower than the average (-11.75% and -11.48%, respectively). The standard deviation of 72.88 indicates a moderate variability between the cards.

**Table 10.** Determinant F

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 454 | 368.33 | 72.88 | +23.28% |
| II | 325 | 368.33 | 72.88 | -11.75% |
| III | 326 | 368.33 | 72.88 | -11.48% |

The determinant 'FC' – Form-color (Table 11) has a frequency much lower than the average in Card I (-94.92%) and slightly lower than the average in Card III (-8.47%), while it is significantly higher in Card II (+103.47%). The standard deviation of 39.11 suggests considerable variability between the tables.

**Table 11.** Determinant FC

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 2 | 39.33 | 39.11 | -94.92% |
| II | 80 | 39.33 | 39.11 | +103.47% |
| III | 36 | 39.33 | 39.11 | -8.47% |

The determinant 'CF' – color-Form (Table 12) has a zero frequency in Card I and is significantly higher than average in Card II (+181.44%), while it is much lower than average in Card III (-81.36%). The standard deviation of 78.65 indicates a large variability between the cards.

**Table 12.** Determinant CF

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 0 | 53.67 | 78.65 | -100% |
| II | 151 | 53.67 | 78.65 | +181.44% |
| III | 10 | 53.67 | 78.65 | -81.36% |

The determinant 'C' – Color (Table 13) has zero frequency in Card I, and low frequency in Card II (0.19%) and III (0.14%).

**Table 13.** Determinant C

| Card | Frequency | Percentage |
|---|---|---|
| I | 0 | 0% |
| II | 4 | 0.19% |
| III | 3 | 0.14% |

**Table 14.** Determinant FC'w

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 2 | 5.00 | 7.21 | -60.00% |
| II | 13 | 5.00 | 7.21 | +160.00% |
| III | 0 | 5.00 | 7.21 | -100% |

The determinant 'C'wF' – Color White-Form (Table 15) has a significantly lower than average frequency in card I and card III (-87.50%) and a significantly higher than average frequency in card II (+175.00%). The standard deviation of 12.73 suggests considerable variability between the tables.

**Table 15.** Determinant C'wF

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 1 | 8.00 | 12.73 | -87.50% |
| II | 22 | 8.00 | 12.73 | +175.00% |
| III | 1 | 8.00 | 12.73 | -87.50% |

The determinant 'C'w' – Color White has zero frequency in all Cards.

The determinant 'FC'b' – Form-Color Black (Table 16) has a significantly higher than average frequency in card I (+147.32%), while in card II and card III the frequencies are much lower than average (-93.40% and -53.82%, respectively). The standard deviation of 40.23 indicates a moderate variability between the tables.

**Table 16.** Determinant FC'b

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 75 | 30.33 | 40.23 | +147.32% |
| II | 2 | 30.33 | 40.23 | -93.40% |
| III | 14 | 30.33 | 40.23 | -53.82% |

The determinant 'C'bF' – Color Black-Form (Table 17) has a significantly higher than average frequency in card I (+118.18%) and a lower than average frequency in card II (-86.36%) and card III (-31.82%). The standard deviation of 8.08 indicates considerable variability between the tables.

**Table 17.** Determinant C'bF

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 16 | 7.33 | 8.08 | +118.18% |
| II | 1 | 7.33 | 8.08 | -86.36% |
| III | 5 | 7.33 | 8.08 | -31.82% |

The determinant 'C'b' – Color Black has zero frequency in all Cards.

The determinant 'M' – Movement (Table 18) has a high frequency in Card III (20.42%), while it is less frequent in card I (2.75%) and II (10.34%).

**Table 18.** Determinant M

| Card | Frequency | Percentage |
|---|---|---|
| I | 16 | 2.75 |
| II | 88 | 10.34 |
| III | 146 | 20.42 |

The determinant 'Cho' – Chiaroscuro (Table 19) is generally infrequent on cards, with a higher frequency at the card I (0.94%), lower in card II (0.12%) and absent in card III (0%).

**Table 19.** Determinant Cho

| Card | Frequency | Percentage |
|---|---|---|
| I | 6 | 0.94% |
| II | 1 | 0.12% |
| III | 0 | 0% |

The determinat 'F(C)' – Perspective chiaroscuro (Table 20) has a higher frequency on the card II (1.52%), lower on card I (0.94%) and III (0.56%).

**Table 20.** Determinant F(C)

| Card | Frequency | Percentage |
|---|---|---|
| I | 6 | 0.94% |
| II | 12 | 1.52% |
| III | 4 | 0.56% |

The determinant 'MA^' - Extensive Animal Movement (Table 21) has a significantly lower frequency than the average in card I (-76.92%) and card III (-61.54%), while it is significantly higher than the average in card II (+138.46%). The standard deviation of 15.72 indicates a large variability between the tables.

**Table 21.** Determinant MA^

| Card | Frequency | Mean | Standard Deviation | Percentage Difference from Mean |
|---|---|---|---|---|
| I | 3 | 13.00 | 15.72 | -76.92% |
| II | 31 | 13.00 | 15.72 | +138.46% |
| III | 5 | 13.00 | 15.72 | -61.54% |

The determinant 'mi' – Inanimate Movement (Table 22) has a similar and low frequency on the three cards (I 0.31%; II 0.38%; III 0.42%).

**Table 22.** Determinant mi

| Card | Frequency | Percentage |
|---|---|---|
| I | 2 | 0.31% |
| II | 3 | 0.38% |
| III | 3 | 0.42% |

The determinant 'Ef' - Physiognomic expression (Table 23) has zero frequency on card III, and low frequency on card I (0.31%) and II (0.13%).

**Table 23.** Determinant Ef

| Card | Frequency | Percentage |
|---|---|---|
| I | 2 | 0.31% |
| II | 1 | 0.13% |
| III | 0 | 0% |

The determinant 'm'p"- Movement of a part of the body (Table 24) has zero frequency on card II, and low frequency on card I (0.16%) and III (0.14%).

**Table 24.** Determinant m'p'

| Card | Frequency | Percentage |
|---|---|---|
| I | 1 | 0.16% |
| II | 0 | 0% |
| III | 1 | 0.14% |

The content column encodes 'what was seen'. Contents express the subject's mental representations, the richness of his/her inner world, what interests and attracts him/her, and at the same time, what disturbs him (Weiner, 2003). We show the frequencies of the most important contents (Table 25).

**Table 25.** Contents

| Contents | Frequency | Percentage |
|---|---|---|
| Animal | 886 | 41.27% |
| Human | 451 | 21% |
| Botanic | 216 | 10.06% |
| Animal Detail | 94 | 4.38% |
| Human Detail | 88 | 4.10% |
| Anatomic | 78 | 3.63% |
| Mask | 73 | 3.40% |
| Schel | 67 | 3.12% |
| Object | 57 | 2.65% |
| Dress | 44 | 2.05% |

Particular manifestations are special phenomena that add qualitative information to the assessment of personality functioning. We have extrapolated the main particular manifestations attributed to the Rorschach (Cicioni, 2016) and their frequency is shown below (Table 26).

**Table 26.** Particular Manifestations

| Particular Manifestations | Frequency | Percentage |
|---|---|---|
| Confabulation | 35 | 1,63% |
| Devitalisation | 24 | 1,12% |
| Symmetry relief | 18 | 0,84% |
| Mirror | 14 | 0,65% |
| Deterioration | 13 | 0,61% |
| Contamination | 11 | 0,51% |
| Self-referencing | 10 | 0,47% |
| Response by double | 8 | 0,37% |

| | | |
|---|---|---|
| Asymmetry | 8 | 0,37% |
| Transparency | 6 | 0,28% |
| Disproportion | 5 | 0,23% |
| Lack of symmetry | 5 | 0,23% |
| Response or | 5 | 0,23% |
| Colour projection in black card | 3 | 0,14% |
| Splitting | 3 | 0,14% |
| Spaltung | 2 | 0,09% |
| Forced colour | 2 | 0,09% |
| Illusion of similarity | 2 | 0,09% |
| Acephaly | 1 | 0,05% |
| Symbiotics | 1 | 0,05% |
| Transformation | 1 | 0,05% |
| Shoulder response | 1 | 0,05% |

## 4. Discussion

The aim of this study was to provide statistical data on the standardization of the Z-test on an Italian non-clinical population in individual form and to reformulate new location tables on the basis of the data obtained. As already argued in the recently published article (Caporale et al., 2024), the Z-Test is a high potential instrument, supported by good results regarding reliability and stability (Cardoso et al., 2018a; Grazziotin at al., 2023; Grazziotin & Scortegagna, 2022).

The Z-test, like the Rorschach test (Eble et al., 1963), allows to investigate the main aspects of personality, with particular attention to cognitive, affective and relational functioning (Meyer, 2017; Villemor-Amaral & Primi, 2009).

The presence of Whole and Detail responses, good form, color and human movement are considered fundamental parameters in personality analysis (Rorschach, 1921; Zulliger et al., 1969). Whole responses indicate the need for unification, organization capacity, and abstract thinking. The card that most frequently elicits W responses is the first, followed by the third. Detailed responses indicate orientation towards the concrete, attention to the practical aspects of everyday life (Cicioni, 2016). In our results, the card where it is most frequent is card II, less frequent is card I and III. Good form responses inform about the accuracy of engrams and rational thinking. Color investigates the ability to manage affectivity and impulsiveness (Benton, 1952; Malone et al., 2013). Responses including a good form and color are associated to emotional stability and adequate use of rational resources, CF responses indicate precarious control and pure color responses suggest primitive states of emotional development. On the other hand, absence of color responses indicates a restricted affectivity. Colour responses are more present in card II, less in card III and with a much lower frequency in card I. Responses

with determinant M are associated with intellectual resources, relating to abstract reasoning, fantasies, creativity, higher forms of conceptualization and the tendency to use thought to solve problems. They also suggest empathy and sensitivity for other people'for oth (Mirin, 1955). The highest frequency is found on card III.

Other important indicators within the test can provide important information about the subject's personality, such as the animal movement, black and white color, chiaroscuro. Animal movement suggests the structural presence of processing capacities, less evolved than those indicated by the presence of human movement (Sarela, 1966). It is most frequent in card II, less so in I and III. Other determinants, such as inanimate movement, physiognomic expression, and movement of body parts, are indicative of less evolved impulses than those indicated by human movement (Piotrowski, 2013) and have very low frequencies on the tree cards._Black and white colors are not always present within the protocols, but can give further indications on the subject. White color suggests emotionally detached expressions, and in the Z-test it can be found with more frequency in card II. Black color and chiaroscuro responses are indicative of anxious states or depressed mood, and they are more frequent in card I.

In terms of contents, animal and human are the most common. The average number of responses with animal content falls within the range predicted by Zulliger in his handbook (1979) and is 41.27%. They provide information on the subject's adaptive abilities, social integration and degree of participation in shared thinking (Gill, 1967). An excessive amount of animal content is instead associated with immaturity and lower cognitive sophistication (Villemor-Amaral & Primi, 2009). Human content is present in 21% of the responses. Interpretations with human content are those that provide more information about the subject's representation of self and others, as well as the quality of internalized object relations (Mayman, 1967). In general, it reflects the personal and interpersonal vision of the human being (Exner, 2003; Weiner, 2003). Pure H responses suggest the presence of a more complete

Finally, specific manifestations represent useful qualitative data, especially for refining a differential diagnosis in the field of psychopathology (Caporale & Roberti, 2014). The frequencies obtained from the non-clinical sample are all at low levels and they will represent an important point of comparison with the results obtained from a clinical sample.

The consistency between ANOVA results and descriptive analysis confirms that response variability is largely uniform across groups. This suggests that the Z-test captures stable personality traits, which are not significantly altered by demographic factors. The lack of significant differences between demographic groups supports the idea that the individual administration of the test provides psychometrically stable results, aligning with previous

research on projective techniques (Cardoso et al., 2018b; Grazziotin & Scortegagna, 2022). Future studies should investigate whether these findings hold in clinical populations, potentially validating the test for differential diagnosis applications.

## 5. Strengths and Limitations

This study provides the first comprehensive standardization of the individual administration of the Z-test in a non-clinical Italian sample. A key strength is the detailed statistical examination, confirming the test's stability across different demographic groups. These findings suggest that the Z-test could be effectively used in clinical screening, forensic assessments, and occupational settings where a rapid evaluation of personality traits is needed. However, limitations include: the absence of a clinical comparison group, the reliance on ANOVA, which may not capture subtle differences. Future research should consider non-parametric approaches and the need for cross-validation with independent samples and should explore its applicability in diagnostic frameworks and treatment planning.

## 6. Conclusions

In order to understand symptoms, it is necessary to know something about the person experiencing them (Bornstein, 2017; Westen et al., 2006). For this reason, psychological diagnosis, i.e., the identification of a constellation of symptoms by means of predetermined nosographic categories, cannot be separated from a broader personality assessment (Bornstein, 2010; Huprich & Bornstein, 2014). Projective methods allow for the description and interpretation of personality through the acquisition of information that cannot be obtained by other types of tests (Lilienfeld et al., 2000; Weiner & Greene, 2017)

The Z-test, like the Rorschach test, is a projective method based mainly on numerical and statistical support (Nuriez et al., 2010). The availability of statistical data focused on individual administration will allow greater use of the test, which to date has been mainly limited to the evaluation of human resources in the organizational field.

A future objective will be to perform a statistical analysis of the data collected on a clinical population, with the aim of obtaining data useful for the application of the test in personality screening, identifying factors indicative of the presence of psychopathology.

## Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its subsequent amendments or comparable ethical standards. The research was approved by the Ethical Committee of the Integrated Psychodynamic Psychotherapy Roman Institute. Prot. n: 01 January 2024.

**Informed Consent Statement**

All subjects gave written informed consent to participate in the study in accordance with the Declaration of Helsinki.

**Data Availability Statement**

Data is available from the corresponding author upon reasonable request.

**Conflict of Interest Statement**

The authors declare that the research was conducted in the absence of any potential conflict of interest.

**Authors' Contribution**

All listed authors have contributed significantly to the manuscript. In particular, Caporale, Maccarone, Allone and Capraro contributed to the design of the study, Allone to the bibliographic collection and writing of the article, Faraci and Maccarone to statistical analysis, Caporale and Maccarone to data collection. The final version has been seen and approved by all authors.

## References


1. Benton, A. L. (1952). The experimental validation of the Rorschach Test: II. The significance of Rorschach color responses. *American Journal of Orthopsychiatry*, *22*(4), 755. https://doi.org/10.1111/j.1939-0025.1952.tb01979.x

2. Bornstein, R. F. (2010). Psychoanalytic theory as a unifying framework for 21st century personality assessment. *Psychoanalytic Psychology*, *27*(2), 133. https://doi.org/10.1037/a0015486

3. Bornstein, R. F. (2017). Evidence-based psychological assessment. *Journal of Personality Assessment*, *99*(4), 435–445. https://doi.org/10.1080/00223891.2016.1236343

4. Bunchaft, G., Tavares, A. L. D. R., & Vasconcellos, V. L. P. (2002). Validation of the Zulliger test with transactional analysis as a guideline. *Transactional Analysis Journal*, *32*(1), 33-38. http://dx.doi.org/10.1177/036215370203200106

5. Caporale, R., Maccarone, A., Allone, C., Faraci, P., & Craparo, G. (2024). Preliminary study on the standardization of the individual Zulliger test on non-clinical Italian population. *Mediterranean Journal of Clinical Psychology*, *12* (1). https://doi.org/10.13129/2282-1619/mjcp-4042

6. Caporale, R., & Roberti, L. (2014). *Il Test di Rorschach in ambito clinico e giuridico-peritale. Guida pratica all'interpretazione e nuove prospettive di ricerca: Guida pratica all'interpretazione e nuove prospettive di ricerca*. FrancoAngeli.

7. Cardoso, L. M., & Villemor-Amaral, A. E. (2017). Critérios de cientificidade dos métodos projetivos. In M. R. C. Lins, & J. C. Borsa (Eds.), *Avaliação Psicológica: Aspectos teóricos e práticos* (pp. 159–172). Petrópolis: Vozes.

8. Cardoso, L. M., Gomes, G. V. A., & Vieira, T. S. (2018a). Validity evidence of the Zulliger-SC Test to children's assessment. *Psico-USF*, *23*, 451-460. https://doi.org/10.1590/1413-82712018230305

9. Cardoso, L., Gomes, G., Pacheco, F., & Viana, J. (2018b). Análise da produção de artigos científicos brasileiros sobre o Teste de Zulliger. *Interação em Psicologia*, *22*(3). https://doi.org/10.5380/psi.v22i3.45821

10. Carpio, S. R., & Lugón, M. C. (2011). Validación del sistema comprehensivo de Exner en el test de Zulliger. *Persona: Revista de la Facultad de Psicología*, (14), 145-158.

11. Carruba, P., Castiello d'Antonio, A. (2008). *Zulliger Test. La tecnica proiettiva di Hans Zulliger nella diagnosi della personalità. Caratteristiche, dati normativi e applicazioni.* Franco Angeli, Milano.

12. Caruson, S., Ferro, M., Giampieri, C., & Consolmagno, M. (2015). Rorschach test: Italian calibration update about statistical frequencies of responses and location sheets. *Mediterranean Journal of Clinical Psychology*, *3*(3). https://doi.org/10.6092/2282-1619/2015.3.1119

13. Cicioni, R. (2016). *Il Test di Rorschach: manuale di raccolta, siglatura e diagnosi: metodo italiano Scuola Romana Rorschach.* Kappa.

14. Colakoglu, S., & Littlefield, J. (2011). Teaching organizational culture using a projective technique: Collage construction. *Journal of Management Education, 35*(4). https://doi.org/10.1177/1052562910390315

15. Di Domenico-Grazziotin, J. B., & Scortegagna, S. A. (2013). Relacionamento interpessoal, produtividade e habilidades sociais: um estudo correlacional. *Psico USF, 18*(3), 491-500. https://doi.org/10.1590/S1413-82712013000300015

16. Eble, S. J., Fernald, L. D., & Graziano, A. M. (1963). The comparability of quantitative Rorschach and Z-Test data. *Journal of Projective Techniques and Personality Assessment,* 27(2), 166-170. https://doi.org/10.1080/0091651X.1963.10120029

17. Exner, J. E., Jr. (2003). The Rorschach: A comprehensive system (Vol.I: Basic foundations). New York: Wiley & Sons.

18. Fazendeiro, H. M. M., & Novo, R. D. J. F. (2012). Zulliger group test according to the Rorschach Comprehensive System. *Avaliação Psicológica*, *11*(3), 407-422.

19. Franco, R. D. R. C., & Villemor-Amaral, A. E. D. (2012). Zulliger and Constellations of the Rorschach applied in System-Comprehensive. *Avaliação Psicológica*, *11*(1), 141-152.

20. Gélinas, S., & Balbinotti, M. (2018). État Actuel de L'utilisation du Test De Zulliger. *Revue québécoise de psychologie*, *39*(2), 223-244. https://doi.org/10.7202/1051229

21. Gill, W. S. (1967). Animal content in the Rorschach. *Journal of Projective Techniques and Personality Assessment*, *31*(2), 49-56. https://doi.org/10.1080/0091651X.1967.10120358

22. Gonçalves, A. P., & Villemor-Amaral, A. E. D. (2020). Zulliger R-Optimized in the evaluation of depressive characteristics. *Paidéia (Ribeirão Preto)*, *30*. https://doi.org/10.1590/1982-4327e3023

23. Grazziotin, J. B. D. D., & Scortegagna, S. A. (2022). The Reliability of the Zulliger Test (2009-2019): Case Studies. *Psicologia: Teoria e Pesquisa*, *38*, e38514. https://doi.org/10.1590/0102.3772e38514.en

24. Grazziotin, J. B. D. D., Tognon, A. P., & Scortegagna, S. A. (2023). Temporal Stability of the Zulliger Test in Brazilian Adults. *Paidéia (Ribeirão Preto)*, *33*, e3304. https://doi.org/10.1590/1982-4327e3304

25. Huprich, S. K., & Bornstein, R. F. (2014). An overview of issues related to categorical and dimensional models of personality disorder assessment. *Personality Assessment in the DSM-5*, 4-16.

26. Lefkowitz, M. M. (1968). Screening juvenile delinquents for psychopathology by use of the Z-Test. *Journal of Projective Techniques* & *Personality Assessment,* 32(5), 475-478. https://doi.org/10.1080/0091651X.1968.10120520

27. Lilienfeld, S. O.,Wood, J. M., & Garb, H. N. (2000). The scientific status of projective techniques. *Psychological science in the public interest*, *1*(2), 27-66. https://doi.org/10.1111/1529-1006.002

28. Lis, A., Magro, T., & Rossi, G. (1990). A comparison between the Zulliger Test (individually administered) and the Rorschach Test in children aged 6–11. *British Journal of Projective Psychology, 35*(2), 35–48.

29. Lis, A., & Zennaro, A. (1997). *Nuovi contributi allo studio del test di Rorschach e dello Zulliger test*. UPSEL Domenghini.

30. Mahmood, Z. (1990). The Zulliger Test: Its past and future. *British Journal of Projective Psychology, 35*(2), 2–16.

31. Malone, J. C., Stein, M. B., Slavin-Mulford, J., Bello, I., Sinclair, S. J., & Blais, M. A. (2013). Seeing red: Affect modulation and chromatic color responses on the Rorschach. *Bulletin of the Menninger Clinic, 77*(1), 70- 93. https://doi.org/10.1521/bumc.2013.77.1.70

32. Mayman, M. (1967). Object-representations and object-relationships in Rorschach responses. *Journal of Projective Techniques and Personality Assessment*, *31*(4), 17-24. https://doi.org/10.1080/0091651X.1967.10120387

33. Meyer, G. J. (2017). What Rorschach performance can add to assessing and understanding personality. *International Journal of Personality Psychology*, *3*(1), 36-49. https://ijpp.rug.nl/article/view/29881/27195

34. Mihura, J. L., Meyer, G. J., Dumitrascu, N., & Bombel, G. (2013). The validity of individual Rorschach variables: systematic reviews and meta-analyses of the comprehensive system. *Psychological bulletin*, *139*(3), 548. https://doi.org/10.1037/a0029406

35. Mirin, B. (1955). The Rorschach human movement response and role taking behavior. *The Journal of Nervous and Mental Disease*, *122*(3), 270-275.

36. Nuñez, A. M., Díaz Kuaik, I., Guzman, L., Gürtner, G., & Lara, G. M. (2010). Test de Zulliger: datos normativos de determinantes en una muestra de sujetos entre 31 y 40 años, residentes en la Ciudad Autónoma de Buenos Aires y sus alrededores. In *II Congreso Internacional de Investigación y Práctica Profesional en Psicología XVII Jornadas de Investigación Sexto Encuentro de Investigadores en Psicología del MERCOSUR*. Facultad de Psicología-Universidad de Buenos Aires.

37. Piotrowski, Z. A. (2013). *Perceptanalysis: The Rorschach method fundamentally reworked, expanded and systematized.* Routledge.

38. Rorschach, H. (1921). *Psychodiagnostik: Methodik und ergebnisse eines warhrnehmungs-dia- gnostischen Experiments (deutenlassen von zufallsformen)* (Vol. 2). Bern: Ernst Bircher. (trad. it. Psi- codiagnostica, Kappa, Roma, 1981).

39. Sarela, S. (1966). Human and animal Movement responses in the Rorschach test. *Pakistan Journal of Psychology*, 25.

40. Semeonoff, B. (1990). The Zulliger Test in a selection context. *British journal of projective psychology*.

41. Villemor-Amaral, A. E. D., Machado, M. A. D. S., & Noronha, A. P. P. (2009). O Zulliger no sistema compreensivo: um estudo de fidedignidade. *Psicologia: ciência e profissão*, *29*, 656-671. https://doi.org/10.1590/S1414-98932009000400002

42. Villemor-Amaral, A. E., & Primi, R. (2009). *Teste de Zulliger no Sistema Compreensivo ZSC: Forma individual.* Casa do Psicólogo.

43. Wechsler, S. M., Hutz, C. S., & Primi, R. (2019). O desenvolvimento da avaliação psicológica no Brasil: Avanços históricos e desafios. *Avaliação Psicológica*, *18*(2), 121-128. https://doi.org/10.15689/ap.2019.1802.15466.02

44. Weiner, I. B. (1994). The Rorschach Inkblot Method (RIM) is not a test: Implications for theory and practice. *Journal of Personality Assessment, 62*(3), 494-504. https://doi.org/10.1207/s15327752jpa6203_9

45. Weiner, I. B. (2003). *Principles of Rorschach interpretation*. Routledge.

46. Weiner, I. B., & Greene, R. L. (2017). *Handbook of personality assessment*. John Wiley & Sons.

47. Westen, D., Shedler, J., & Bradley, R. (2006). A prototype approach to personality disorder diagnosis. *American Journal of psychiatry*, *163*(5), 846-856. https://doi.org/10.1176/ajp.2006.163.5.846

48. Zulliger, H., Salomon, F., & Dubrovsky, D. T. (1969). The Zulliger individual and group test..


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