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Projective Methods

The clinical use of the Zulliger Test in the assessment of personality functioning and psychopathology

Riccardo Caporale ^{1*}, Cettina Allone ¹, Antonio Maccarone ¹, Giuseppe Craparo ²

Abstract

The Zulliger Test, or more commonly Z-Test, is a projective psychodiagnostic instrument developed by Hans Zulliger in 1942. Like the Rorschach test, it is based on the interpretation of inkblot tables, which in this specific case are three. Born as a test for collective administration, it was then also adapted in the individual mode and applied both in the organizational and clinical evaluation.

This work proposes a review of the literature on the main studies conducted on the Z-Test, in order to better frame the current state of the art on the applicability of this interesting but neglected instrument, with particular attention to the clinical evaluation. In this context and in particular in individual administration, the studies available in the literature highlight good reliability and validity, however they are small and this discourages the use of the test, nowadays mainly adopted in the selection evaluation.

¹ IRPPI - Istituto Romano di Psicoterapia Psicodinamica Integrata, Rome, Italy

² UKE - Università degli Studi di Enna “Kore”, Italy

E-mail corresponding author: riccardo.caporale@gmail.com

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1. Birth of the test and early comparative studies

The Zulliger Test, in its individual form, is a projective technique consisting of three tables, produced from ink, black or colored, poured onto a sheet and then folded in half. The result is ambiguous, loosely structured figures, from which the subject is invited to develop interpretations.

Hans Zulliger, secretary for many years at the Swiss Psychoanalytic Society, met Hermann Rorschach in this context and immediately became his pupil and friend (Caporale et al., 2022).

The conception of the Z-Test came about after a long period of work with the Rorschach method, so much so that Zulliger can be considered one of the authors who most contributed to its growth and consolidation.

In 1942, the Swiss Armed Forces Psychological Service commissioned a psychodiagnostic instrument for selection of candidates. Zulliger attempted to adapt both the Rorschach tables and their parallel version, the Behn-Rorschach, but with poor results. Use in the individual mode required an inordinate amount of time for each examinee between administration, scoring and interpretation. An attempt was made to adapt the instrument to a group-mode administration: initially testing the new procedure on a group of about 30-60 candidates through screen projection of some Rorschach and Behn-Rorschach tables. However, the complexity of the material and the lack of guidance from the authors soon highlighted its unreliability.

Zulliger decided to design a new test, in the collective-mode administration, that had the reliability of the Rorschach but was at the same time easier. The initial blots were tested on a large sample of subjects and results were compared to those obtained with the Rorschach or the Behn-Rorschach (Zulliger, 1955). From an initial pool of 600 random blots, 4 were selected. The poorly acceptable results led to the processing of additional 400 blots, from which two more were chosen. The initial set consisted of six tables, which began to give positive feedback in terms of effectiveness, so that they could be further reduced to three, maintaining the same degree of validity and structural properties of the Rorschach test.

The 3 tables version is the one still used today, and consists of a first black board, the second polychromatic board and the third black and red board. Each of them seems to elicit specific determinants: formal, chromoesthetic and kinesthetic interpretations (Anzieu, 1960). Standardization of the test took place on a sample of 800 subjects, with an age range of 20 to 25 years, all male and belonging to a specific reference population: candidates for the armed forces (Zulliger, 1969).

Later, Robert Heiss, Rector of the Department of Psychology at the University of Freiburg im Breisgau, suggested to validate the test also in the individual mode. The standardization took into consideration a sample of about 1,000 "healthy" subjects not belonging to a specific reference population. The results were compared with those obtained on both the Rorschach and the parallel form, showing good reliability and retention of the essential dimensions studied by the other two projectives, so that it could be considered equally effective as a diagnostic tool. Zulliger's conclusions, after his comparative studies, were as follows: "*Experience with the individual Z-Test has shown that its results frequently correlate closely with those obtained with the Rorschach and the*

Behn-Rorschach tests. Over time these have even been produced in a more concentrated form. The three tables contain all the essential elements of the Rorschach and the personality test" (Mahmood, 1990). The first version of the Zulliger Individual Test was published in 1954, a second edition was edited in 1962.

Heiss's subsequent studies focused on comparing the individual and collective modes of administration of the Z-Test. The results highlighted an influence exerted by the type of administration: in the individual mode tables were concretely presented, while in the collective mode they were presented through a screen. The perceptual channel of the tables would involve different interpretations.

The Zulliger Individual and Group Test manual, published by Fritz Salomon (1969) in the United States of America and later translated into German by Dusya T. Dubrowsky, provides an overview of both administration methodologies. This work facilitated greater dissemination of the instrument outside the European context, where it was already known.

2. Validity and reliability studies

In the scientific literature, there are a lot of studies focused on the validity of the ZT in the organizational setting (Nuñez et al., 2010; Villemor-Amaral, 2005), while few have analyzed its validity and effectiveness in the clinical-psychopathological and personality context (Di Naro & Escalar, 1961; Mahmood, 1982).

Comparative studies between ZT and other psychodiagnostic tests

First studies exploring the usefulness of the ZT in the clinical setting, involved comparative studies of the ZT with other psychodiagnostic tests such as the Rorschach (Eble et al., 1963; Mattlar et al., 1990) and the MMPI (Lefkowitz, 1968).

Hagenbuchner and Thurner (1956) subjected 108 psychiatric patients to ZT collective administration in order to verify its degree of sensitivity and reliability in a broader clinical psychodiagnostic evaluation. The results were considered satisfactory, with a 75% correspondence between test scores and clinical diagnosis.

Schon (1956) conducted a study on a sample of 100 institutionalized epileptic patients, including 50 males ranging in age from 17 to 74 years, and 50 females ranging in age from 18 to 68 years, with the aim of comparing the profile obtained through the Rorschach and the ZT. The two tests were administered in a single session. Results confirmed, again, a good correlation between the two instruments regarding only the qualitative outcome variables of the protocols.

Eble et al. (1963) conducted a study on 54 male students, aged 12 to 18 years, placed hospitalized for the treatment of dysfunctional behavioral conduct. The results showed significant correlations between the Rorschach and the ZT. Specifically, statistical significance concerned global responses, detail responses, human movement responses, animal movement responses, color responses, animal content responses, human content responses and the number of total responses (Gélinas & Balbinotti, 2018).

Mattlar et al. (1990) subjected 123 adults, 32 elderly and 103 adolescents to individual and group administration of the ZT in order to verify its clinical validity, comparing the results obtained with the Rorschach test. The ZT, applied in both individual and group forms, was found to be an adequate screening instrument. Comparing the quantitative data obtained from the administrations of the Rorschach and the ZT, on samples of both psychiatric and healthy patients, a good concordance between the two projectives was found.

Lefkowitz (1968) conducted a study on 125 juvenile prisoners. It demonstrated a good correlation between results on the ZT and clinical profiles derived from the MMPI, supporting the effectiveness of the projective as a psychopathological screening test on juveniles. Indeed, the study shows that most emotional disturbances seem to be reflected in exaggerated or inappropriate overt motor behaviors, as detected by the high scores reported on the personality inventory; likewise, the numerous movement responses elicited by the ZT blots would seem to be correlated with the subject's "turmoil." These findings reinforced the clinical validity of the ZT.

ZT and different developmental level of psychic functioning

A second strand of research has focused on the effectiveness of the ZT in the psychopathological assessment of personality, particularly in its ability to discriminate different developmental levels of psychic functioning (Mahmood, 1982).

Di Naro and Escalar (1961) conducted a survey on 226 psychotic and 50 neurotic subjects, balanced by sex, as inpatients at the Varese Neuropsychiatric Hospital in order to investigate the possible ability of the ZT to detect and discriminate between clinical populations. The results showed: a) a significant ability of the test to detect psychotic patients in the broader sense of the diagnostic category but not as much in the more specifically nosographic sense; b) a less significant ability to discriminate neurotic patients from so-called "normotypic" subjects.

Building on the pioneering work of Naro and Escalar (1961), Mahmood (1982) carried out a study with the aim of testing the ability of the ZT to make valid differential diagnoses regarding

different pathological personality functioning. The ZT was individually administered to a group of patients with neurotic functioning, a group of patients with psychotic functioning, and a group of healthy subjects. Results showed good sensitivity in thought dysfunctions and emotional lability in patients with psychotic functioning, while the ability to discriminate between so-called "healthy" and neurotic subjects was lower.

In the last decade, attention has focused on the predictive validity of the ZT in detecting specific nosographic disorders, such as depression (Villemor-Amaral & Machado, 2011), that represents one of the most common psychological disorders (Myles, 2021). The authors administered the test to 57 participants, 27 diagnosed with depression and 27 healthy subjects: results revealed the existence of indicators capable of discriminating between the two conditions. Another study (Goncalves & Villemor-Amaral, 2020) confirmed the same results, underlying the usefulness of ZT in understanding depression functioning.

ZT in childhood

A third strand of research has investigated the effectiveness of the ZT in assessing healthy personality in childhood (Villemor-Amaral & Vieira, 2016; Cardoso et al., 2018; Lima et al., 2021).

In Italy, Bacci (1950), starting with a collective administration on 151 university students, of which he later retained and analyzed only 70 protocols, proposed the first Italian statistics. He highlighted the effectiveness of the ZT particularly in investigating affective functioning.

Garzillo (1961) pointed out the effectiveness of the ZT to assess psychological characteristics of 200 students aged 13 to 19, including 39 females, studying in a college: in most cases, results showed a coartate TVI (118 subjects), rigid succession (139 subjects) and the general presence of a "*good intelligence essentially of a practical concrete type, quite coartate and inhibited in the affective life*" (Garzillo, 1961, p. 173).

Parente (1962) administered, in its individual form, the ZT to a sample of 71 subjects between the ages of 14 and 18. He supported the usefulness of the instrument in healthy subjects even in the assessment of the intellectual dimension.

In Finland, Uninki et al. (1990), subjected 50 adolescents, ranging in age from 15 to 17 years, to collective administration of the ZT, with the aim of detecting personality traits of adolescence. Results revealed a clear correspondence between the personality structure of subjects and typical personality traits of adolescent development: need for independence, hostility, self-

centeredness, feelings of helplessness. What also emerges is rigidity, conservatism, and a tendency to simplify, traits that also appear to be characteristic of the adult Finnish population. In Brazil, Villemor-Amaral and Vieira (2016) administered the instrument to 566 children aged 6 to 14 years, equally distributed by gender, to verify the usefulness of the ZT to assess social-relational development in childhood. They used Exner's Comprehensive System. The results revealed a greater predisposition in males than in females for logical and concrete aspects and a lower expression of affectivity. Also in the male sample, lower intellectual development and greater relational distrust emerged in contrast to the female sample, which instead showed an adequate and mature representation of interpersonal relationships.

Cardoso et al. (2018) investigated the validity of ZT through the use of Exner's Comprehensive System. In the study, 173 children, aged 6-11 years equally distributed by gender in three age groups (6-7, 8-9, 10-11 years), were tested. The authors supported a good validity of the instrument in assessing children at different developmental stages and the complexity of characteristics related to psychological functioning in line with the specific growth stage. In particular, with regard to cognitive functioning, 6- and 7-year-olds appeared to be less prone to productivity, reporting responses characterized by concretism in the understanding of reality than 8- and 9-year-olds, an aspect probably conditioned by the younger children's lesser life experiences. Furthermore, as they get older, adequate ability in the perception of unconventional stimuli is detected, denoting the development of greater subjectivity in the interpretation and analysis of facts. With regard to the affective sphere and interpersonal relationships, the results showed that 6 and 7 year olds had less tendency for avoidance and social isolation, compared with older children, probably due to the need of care. 8 and 9 year olds showed more assertive behavior. In 10 and 11 year olds, was found also evidence of a greater need for physical closeness and emotional contact, a protective factor in the transition phase between childhood and adolescence.

Lima et al. (2021) investigated the usefulness of ZT in detecting sexual violence indicators. 37 children, aged 7-13 years, were tested. They were divided in three groups: Sexual Violence Victims, Cancer Patients and Non-Victim Group. Results highlighted significant differences regarding Interpersonal Relationship, Self-Image and Processing.

ZT in old age

A latest and more recent line of research have investigated the usefulness of ZT in psychological assessment in old age (Grazziotin & Scortegagna, 2018; Grazziotin & Scortegagna, 2021).

Grazziotin and Scortegagna (2018) aimed to explore the convergent validity of the ZT, using the Comprehensive System, and the Social Skills Inventory, on a sample of 78 healthy older adults, aged 60 to 96 years. The results supported such convergent validity between the two tests, with respect to interpersonal relationships and cognitive functioning in old age.

The same Grazziotin and Scortegagna (2021) developed further research on a sample of 142 subjects, balanced by gender, aged 18 to 96 years. The results showed the usefulness of the ZT in discriminating cognitive processes of the elderly from those of young adults and adults, influenced by educational attainment and socioeconomic status.

3. Test-retest reliability studies

In the field of ZT reliability studies, the literature mentions only a few non-exhaustive works, because of too small samples examined (Ungaro & Borrelli, 2006; Villemor-Amaral & Primi, 2009; Grazziotin & Alba Scortegagna, 2022).

In Italy, Ungaro and Borrelli (2006) subjected 120 subjects to ZT, following the approach of the Roman Rorschach School, after excluding pathological individuals through a screening with the MMPI. The results showed that the Zulliger Technique has good stability over time. The authors also evaluated the time limit of the instrument itself through a re-test on 33 subjects, 3 years apart. It was found that "*the predictive ability of the Z-test, administered through this method and on this type of subjects, is definitely less than three years*" (Ungaro & Borrelli, 2006, p. 94).

In Brazil, further research (Villemor-Amaral & Primi, 2009) was conducted on a sample of 25 subjects, theology students, who were re-tested 5 months apart. The experiment was effective in demonstrating the temporal stability of ZT. Grazziotin & Scortegagna (2022) confirmed good temporal stability of ZT variables after ten years, testing 4 healthy adults.

4. Studies on the mode of administration

Regarding the possible differences between the use of boards or slides projected on a screen, Lis et al. (1994) conducted a study of 64 normal Italian adult subjects who underwent collective and individual administration of the Zulliger Test and the Rorschach. The Authors stated that "*there are correlations between similar indices (particularly on individual administration of the Z-Test), but of variable range, such that the two tests cannot be considered parallel [...]. Collective administration induces higher productivity than individual administration*" (Lis et al., 1994, p. 118). It is hypothesized that this observation may be determined by the competition and emulation situation in group situations, as well as the darkness of the room in which the spots are projected, which could result in a subjective effect on the participants.

Subsequently, a further study conducted by Lis and Rossi (1995) on a sample of normal adult subjects who underwent individual and group administration of the Zulliger Test showed that no significant differences emerged when comparing the results of the two modes of test administration. Moreover, the research pointed out that the ZT corresponds to the Rorschach with respect to stimulus properties. In any case, there are practical problems related to the collective mode of administration of the ZT: this does not allow for inquiry, which would facilitate the initialing of the localizations and determinants of responses.

In conclusion, although in the collective setting it is possible to find a greater number of responses than in the individual setting (Lis et al., 1994; Carruba & d'Antonio, 2008), in group administration the subject can produce a smaller total number of interpretations because he or she can only observe the images in an upright position, without being able to rotate them.

Therefore, this issue is still open and is a stimulating area for further study and research.

5. Standardization studies

In the field of standardization studies of the ZT, the few existing works have focused on the collection of data concerning the ZT in personnel selection, using the collective administration mode (Villemor-Amaral, 2005, Carruba & D'Antonio, 2008).

Carruba and D'Antonio (2008) produced the most systematic contribution to Italian ZT calibration to collective mode administration, using the Scuola Romana Rorschach method. The authors evaluated a sample of 360 subjects, balanced by age, sex and educational level. They investigated the degree of concordance between ZT and Rorschach in both organizational and clinical settings, supporting good predictive and concurrent validity of the test, which cannot be considered merely as an abbreviated version of the Rorschach.

Fazendeiro and Novo (2012) produced a standardization, collective-mode, in a personnel selection context, on 156 Portuguese members of the military army.

Few studies focused on standardization of the instrument in the clinical setting. Since the early 1990s, the working group, called the Zulliger Interest Group (ZIG) (Mattlar et al., 1990), decided to begin collecting normative material using Exner's Comprehensive System (Mattlar et al., 1993). The authors derived 771 protocols, produced by collective administration of the ZT, from a sample of Finnish and Swedish subjects, divided as follows: 103 adolescents, 636 adults and 32 elderly. However, collective administration did not allow for the investigation.

6. Conclusions and new lines of research

This review has highlighted how, over the past decades, sufficient studies have supported and encouraged the use of ZT, especially in personnel selection (Villemor-Amaral, 2005). ZT, in its agile form of group administration, has gradually been introduced in this context with moderate success (Carrubba & d'Antonio, 2008).

In a scientific landscape which increasingly highlights the limits of the categorical classification of disorders, projective tests represent important instruments in psychological functioning comprehension (Dalglish et al., 2020; Merlo et al., 2022). The Zulliger Test, in its individual form, as an aid to clinical/psychopathological and personality assessment, has little use due to the few studies available in the literature that can confirm its validity, placing it in a secondary role to other projective techniques, such as the Rorschach test.

In particular, the absence of adequate standardization studies (Vergati et al., 2019) regarding individual administration, could not make available to the scientific community solid normative values necessary to define the real utility regarding the clinical use of the test in the assessment of healthy and pathological personality, and especially in the differentiation of different levels of psychic functioning. In order to be able to use the Z-Test in the assessment of individual psychic functioning, it is now considered obvious and necessary to carry out a standardization study of the instrument on adults in the Italian population through individual administration.

The definition of a normative sample will be able to make it possible to use the reagent by referring to objective criteria against which individual performance can be compared, according to the rules of correctness and methodological rigor.

It is from these critical issues that our research group has begun work on standardization on a national scale of individual administration, with the aim of developing new norms representative of the Italian population. The first objective is to create conditions that will allow us to define psychometrically relevant assessment procedures and validate interpretation conclusions.

In parallel, our research group is carrying out in the clinical population correlational analyses between main Zulliger indicators and different levels of psychic functioning and studies aimed at assessing the usefulness of the test in a first quick screening of personality.

Such work will also allow for the revision of the current Zeta coding system, updating the original Zulliger method with a system of administration, initialing and interpretation more anchored in recent studies of healthy and pathological personality.

Conflict of Interest Statement

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

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