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Original Article

CHESSSS

A Free Software Solution to Score and Compute the Rorschach Comprehensive System and Supplementary Scales

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Abstract. CHESSSS is an open source project we propose to the Rorschach community. It can be freely distributed and adjusted to one's particular needs. We have paid much attention to make it as efficient and user-friendly an application as possible. Its use and even its programming do not require a high level of skills in informatics. This project provides solutions for issues concerning computing Rorschach Supplementary Scales, interrater reliability, standardization of Form Quality tables across countries, the search for items in the FQ tables, and the creation of databases. It also addresses the complexity of RCS interpretation. We do hope that CHESSSS will help clinicians, researchers and students to manage their own data as desired in a free and autonomous manner.

Keywords: Rorschach, database, software, research, projective methods

Users of the Rorschach Comprehensive System (RCS; Exner 1993/2003) know how tedious, time-consuming, and error-prone the fabrication of a structural summary is when done by hand. Various software programs providing automatic calculations and sometimes even interpretive statements do exist on the market, but besides being costly, they appear to be of limited use as clinicians and researchers have to face methodological barriers such as establishing interrater reliability or technical difficulties such as managing databases. In addition, the step-by-step stages of the interpretation of the RCS is time consuming, the standard RCS format of the Structural

Summary is not user-friendly and quite hard to read because it displays only raw scores when there are so many combinations, cut-off points, and exceptions that even Rorschach experts cannot know them by heart. Moreover, a certain amount of information needed for the interpretation cannot be found directly in the typical Structural Summary. Though these difficulties are solely technical, they act to impede scientific and clinical activities in substantial ways.

Available Rorschach software, which facilitate calculations and other automatic tasks, do not address these issues as they do not allow clinicians, researchers, and students to manage their data the way they want. Thus, the Rorschach test comes not to be used to its full capacity, and users are not free to manage their own data autonomously. Yet freedom and autonomy are critical because, in the end, clinicians and researchers are responsible for the use they make of their data.

Increasingly, modern consumer- and profit-oriented societies are tending to reduce the duration of expert tasks, and psychologists are increasingly being pushed to favor "instant" means of assessment, "optimized" procedures, and computerized automatic interpretation of their tests. Users of the RCS can become discouraged by the time-consuming and intellectual effort required by this highly "clinical" method.

As a researcher working with the RCS, the first author was confronted with these issues and endeavored to find solutions by developing an Excel© application named CHESSSS (Code for Hermann: Enhanced Structural Summary and Supplementary Scales). It was decided to share this application with the entire Rorschach community, in accordance with the philosophy of free sharing, based on the two principles: "We can do it ourselves" and "Respect an open source philosophy." CHESSSS thus represents an effort to give all psychologists access to computerized calculations and interpretation assistance and, most importantly, to give them the opportunity to partake in the management of their data in a creative and more effective manner.

Basic Features of CHESSSS

CHESSSS provides a series of functions that go beyond a simple calculation of the Structural Summary. It includes the possibility to compute several non-RCS supplementary scales such as Rorschach Oral Dependency (Masling, Rabie, & Blondheim, 1967), Mutuality of Autonomy

(Urist, 1977), Aggressive Contents (Gacano & Meloy, 1994), Ego Impairment Index (Perry & Viglione, 1991). It also includes calculation of interrater reliability (Meyer, 1999); multilingual Form Quality tables; strategies of interpretation; indication of the main trends in the Structural Summary; generating databases; linking data with protocols, both in their sequence of scores format and the verbatim format; computing personal codes and scores; the possibility of developing the application further. However, the basic features of CHESSSS are (1) the computation of response coding, (2) improvements to Form Quality tables, (3) enhancements to the Structural Summary.

Computing Response Coding

Response coding can be done directly in the application. The outlay of the sequence of scores sheet follows the traditional RCS format. Z scores and GHR/PHR special score are automatically calculated. CHESSSS automatically checks for typing errors in determinants, contents, Z scores, and Special scores, and signals them in the subsequent 4 columns (Figure 1).

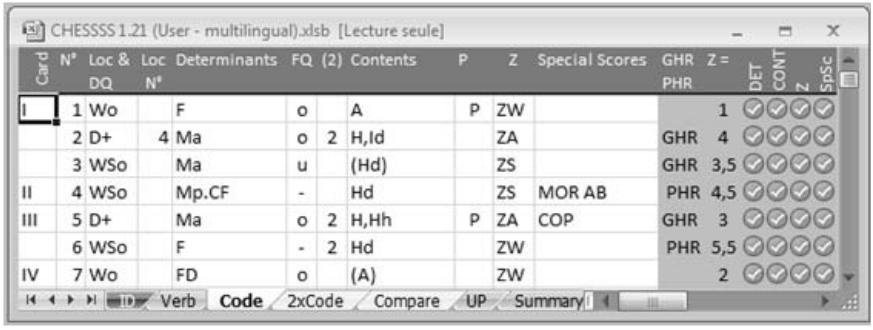

Figure 1. CHESSSS sequence of codes.

Multilingual Form Quality Tables

Form Quality (FQ) has lately become a matter of concern in the international community because the average of "good form" in normative samples varies considerably across countries (Meyer, 2007). Because FQ indicates the quality of adjustment to reality, this finding, if taken at face

value, would mean that normal people in some countries have a poor or "unhealthy" grip on reality, a rather preposterous statement. The problem might stem from a misunderstanding of what "good form" actually represents, i.e., the shape of an object vs. the word used to identify the object (Andronikof, 2000); or from cultural differences in the perception of the real world, a sort of disquieting hypothesis that needs to be addressed. On the other hand, the problem might simply stem from coding errors.

RCS users around the world have the advantage of coding FQ according to the same FQ table, established by John Exner and based on 9500 protocols for a total number of 205,701 responses (Exner, 2001). Exner's table contains about 5,000 items organized by card, locations, and alphabetical order. So far, no other endeavor has produced an FQ study of the same scope, and therefore no evidence exists of the need to change it. Unfortunately, there is no easy way to establish response frequency tables and compare them across countries. This issue led to the development of a specific approach to Form Quality tables in CHESSSS, with three objectives in mind: (1) create a reference system for FQ items; (2) standardize the reference system for multiple languages; and (3) ease the search for FQ items.

a) The reference system: The reference system is very simple: We took the original English FQ table from the "Workbook for the Comprehensive System" (Exner, 2001), and gave every item an identification number (FQI) to match the alphabetical order of appearance. Therefore, every FQI corresponds to one specific item in a specific location on a specific card.

b) Standardization in multiple languages: Translated FQ tables are generally organized in the same fashion as the original tables, i.e., sorted by card, locations, and alphabetical order. The order of the FQ items being different in every language, numbering the items by alphabetical order in each language appeared useless. We therefore attributed the same number to the translated items as in the original table. Consequently, each specific item of the FQ table has a unique identification number, whatever the language.

For example, the identification number of the item "Bee" in the Whole location of Card I is FQI = 25. The French translation for "Bee" is "Abeille." The item "Abeille" in the French FQ table is given the same identification number as "Bee" in the English table, FQI = 25. Transla-

CHESSSS - DataBase.xlsb

FQ Frequency Table

N protocols : 8

FQI	PI	LOC	<V	item	cont	FQ	Frequency
21	1	W		Bat	A	o	3
26	1	W		Beetle (Winged)	A	u	2
52	1	W		Butterfly	A	o	2
105	1	W		Dragonfly	A	u	1
117	1	W		Face, Animal (unspecified)	Ad	o	1
123	1	W		Face, Cat	Ad	o	1
133	1	W		Face, Monster (gremlin, evil, alien)	(Hd)	u	1
142	1	W		Face, Wolf	Ad	o	1
193	1	W		Mask	(Hd)	o	1
242	1	W		Spider	A	-	1
328	1	D2		Animal (Specified as long eared, such as donkey, elephant, some varieties of dogs)	A	o	1
350	1	D2		Gargoyle		u	1
401	1	D4		Beetle	A	o	1
421	1	D4		Humans (2)	H	o	1
447	1	D7		Animal (Winged)	A	o	1
564	1	DdS29		Holes		o	1
652	2	W		Face (Human)	Hd	-	1
660	2	W		Humans	H	o	3

Data Base | FQ Frequency

Figure 2. Form Quality frequency table (N = 8 protocols).

tions of the original English FQ table are available in Arabic, Danish, French, Italian, Portuguese, and Japanese.

FQ frequency tables are easy to produce with CHESSSS, opening the path to comparisons between samples and/or cultures. This function allows researchers to undertake intercultural studies in a very simple and effective manner. Figure 2 shows an example of a FQ frequency table computed from 8 protocols scored for FQ items (null frequency items are not displayed in this example).

c) Ease the search for FQ items: RCS FQ tables are sometimes quite hard to search. If a particular content cannot be found in the FQ tables, we may

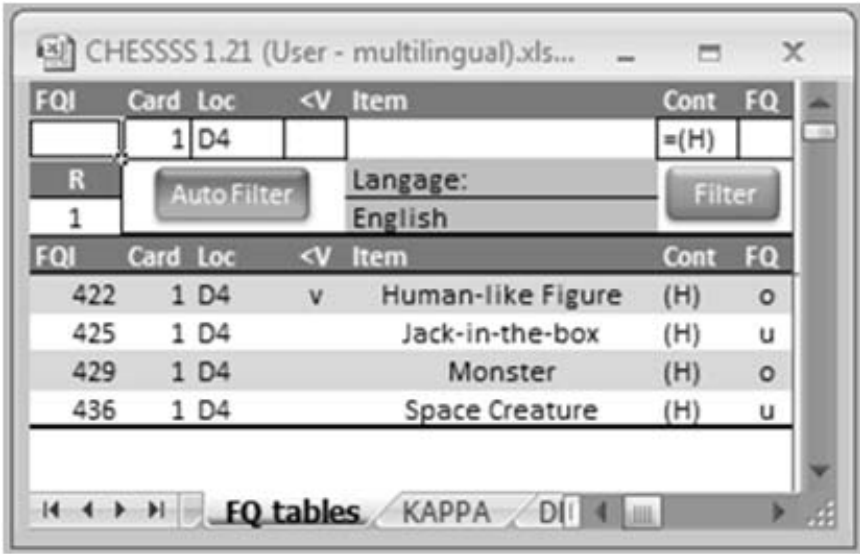

Figure 3. Example of Form Quality Items filter results.

have to look for synonyms, for objects of the same content category, or for different locations that might be related to the response. Typically, when scoring a protocol, four or five responses require several deep investigations of the RCS FQ table. For example, to score a Whole Human response in a Dd99 location of card I (i.e., a location not listed in the FQ tables), it might be necessary to check the From Quality of Whole Human responses in *all* locations of card I in order to find the most appropriate one.

So as to facilitate the search for FQ items, we implemented in CHESSSS filter options that enable the user to focus on a small number of relevant items. The FQ tables can be searched by any combination of FQI, Card, Location, Card Position, Item, Content, and FQ criteria. Figure 3 displays the result of the filter option of CHESSSS Form Quality tables for the following criteria: (H) in the D4 location of card I.

Structural Summary and Interpretation

When developing CHESSSS we were well aware of the complexity of the RCS interpretation process. RCS interpretation is generally considered difficult to teach and difficult to learn. On an operational level, we came to think this situation stems partly from the presentation of the Struc-

tural Summary: It does not display enough information. No wonder that some software propose Computer Generated Interpretation, and that some users might be tempted by this functionality.

Actually, the RCS Structural Summary is not just a series of scores and percentages arranged in topics. Rather, the RCS is a system, and in a system, the meaning of signs depends on their relationships to each other. Whereas RCS scores and indices do have some significance of their own, they need to be referred to the whole configuration of the other scores to get their full meaning and to depict the unique psychological functioning of a singular person. This aspect corresponds very closely to the theorization of systems made by Ferdinand de Saussure when studying language (De Saussure, 1916). The image of the chess board game that Saussure used to explain the importance of relationships between elements of a system can be applied to the RCS as well.

We consider that the Structural Summary provides a visual and dynamic representation of the psychological functioning of a person. This is the same kind of experience that the engineer has when looking at mechanical designs and "seeing" the pieces moving together, or when the architect looks at blueprints and "sees" people living and working in the building, or the musician when looking at multiple instruments scores and "hearing and feeling" the movements of a piece of music. One of the major purposes of CHESSSS is to promote this experience of the Structural Summary.

Essentially, we wanted to increase the amount of information available in a Structural Summary. The typical RCS Structural Summary is organized in two sections: The upper part mainly displays raw counts, and the lower part displays ratios, percentages, and derivations. In CHESSSS the lower part is presented separately and substantially expanded.

Additions to the Structural Summary

The Enhanced Structural Summary of CHESSSS includes various calculations needed for interpretation and displays them in separate new scores and/or in the form of keywords expressing tendencies. In order to familiarize users with CHESSSS, we provide a "map" of the Enhanced Structural Summary (Appendix A).

a – New scores: Most of the new scores provided in the Enhanced Structural Summary give the result of the step-by-step analyses according to the Primer (Exner, 2000), e.g., analysis of the FQ minus homogeneity,

adjusting the range of significance of WSum6 and EGO index according to age, checking for the validity and scope of D scores, etc. Two scores offer alternate calculations for the Lambda (F%) and the Affective ratio (PC%, PC stands for Pastel Cards). Four of the new scores are experimental (see Appendix C for a description).

An example is the analysis of Blends, which are scored when a response is based on multiple determinants and indicate the merging of different psychological processes and a certain amount of psychological complexity. Most Blend responses imply determinants related to affective features (colors or shadings). Consequently, Blends analysis represents an important part of the Affect Cluster (5 steps out of 16, Exner 2000). A certain amount of information needed for their interpretation is not readily available in the RCS Structural Summary. To obtain this information, the typical RCS user has to go back to the upper section of the standard Structural Summary and establish the count manually.

The CHESSSS Enhanced Structural Summary performs this task automatically, thus facilitating the interpretation of the Blends. For example, the "Stress Blend" represents the number of blends produced by feelings of stress. This information is needed when evaluating the psychological complexity of a subject and deciding whether the complexity is a usual trait of the person or a situational state. CHESSSS displays the number of Stress Blends, the number of complex Blends (triple Blends "3xBld" and more than triple Blends "> 3xBld"), Color-Shading Blends, and Shading Blends. CHESSSS also computes Adjusted Blends (the number of Blends that are not due to situational stress), Blend% and Adj Blend%. Descriptions of CHESSSS new scores are in Appendix B.

b – Keywords: We present some examples of CHESSSS keywords. Interpretation of the Control Cluster is essentially aimed at evaluating the validity of the Adjusted D score, which assesses the typical control abilities of a person (Exner, 2000). This judgment is based on quite clear criteria, and very little subjectivity is implied here. However, the raw value of the Adjusted D score represents a broad indicator of the control capacities that should be evaluated carefully according to other variables (EA, EB, Lambda, and Adjes). Keywords for the first four steps of the interpretation of the Control Cluster are provided to ease this interpretation.

For example, there follows the interpretation of the control cluster in Figure 4. A null Adjusted D score coupled with a Coping Deficit Index lower than 4 indicate that the usual control abilities are similar to most people (step 1). In this case, CHESSSS displays the keyword "Normal"

(Figure 4). However, since EA is more elevated than expected (EA = 14), the Adjusted es is conspicuously elevated and the control capacities might be reconsidered in the fourth step of the analysis (step 2). Consequently, CHESSSS displays "see step 4." Since SumM and WSumC are superior to zero and the EA is more than 6, the EA and the Adjusted D score are probably valid (step 3). With these findings, CHESSSS displays "valid EA &AdjD." Finally, the Adjusted es is higher than expected, but since the EA seems valid, the Adjusted D score might underestimate the usual control abilities (step 4, Exner, 2000). As a reminder, CHESSSS displays "Underestimated AdjD."

Before they can be interpreted, many scores in the RCS have to be adjusted by multiple criteria such as Age, total number of responses (R), proportion of Form responses (Lambda or F%), and problem-solving style (EB). These adjustments are automatically computed in CHESSSS Enhanced Structural Summary, which also displays the significant range for interpretation. For example, in the relation cluster, the number of Human Contents indicates interest in others. However, the expected number of Human Contents depends on the number of responses R and the Experience Base style EB. When $R = 26$ and EB is extratensive, the expected number of Human Contents is between 3 and 6 (Exner, 2000). The case presented in Figure 4 includes 6 Human Contents responses. In this case, the person is probably as interested in others as most people. CHESSSS displays the key word "medium" (Figure 4).

Another example of a keyword is "E. avoidance" for "emotional avoidance," displayed when the proportion of responses on the last three cards of the test (Afr) is unusually low (Afr < 0.44), indicating that the subject is ill at ease in emotionally loaded situations and tends to clamp down. The Enhanced Structural Summary of CHESSSS provides Keywords for most scores based on the Potential Findings described in the "Primer for the RCS interpretation" (Exner, 2000).

c – The Processing Cluster: This section has been slightly reorganized in five subparts: *Attention:* includes indicators of attention deficits (PSV, vague Developmental Quality as the first responses to a card) and a reminder of the Hypervigilant style; *Scanning:* provides indications the information processing habits (Zd and Dd); *Efforts:* estimates the cognitive load implied in the responses (Zf, W:D, easy ratio, see Appendix B); *Quality:* gives indications of the information processing results (DQ+ and DQv,v/+); and *Objectives:* represents the adequacy between the objectives and the result of the information processing process (W/M).

d – FQ minus Homogeneity: In the Mediation cluster, evaluation of FQ minus Homogeneity is a very important phase of the interpretation. The idea is to try to understand the reasons that led to the production of FQ minus responses, i.e., discrepancies between the mentioned object and the contours used in the inkblot. The reasons are manifold and include emotional, cognitive, or projective elements, self-image concerns, etc. However, there is no systematic way to perform this evaluation which can be considered as a "qualitative" step of interpretation, sometimes quite hard to handle.

CHESSSS scans FQ minus responses in search of any particular distribution thereof. Elements taken into consideration are varied, and each can substantially contribute to the interpretation of the FQ minus. For instance, when FQ is a concern, if minus form responses appear only in the color cards, there is a clear indication of emotional difficulties, whereas minus forms scattered throughout the test will point to a more general and chronic misperception of reality.

Remarkable clustering of FQ minus can be by specific cards [first three cards (3.1stC–), Black Cards (*BC*–), Color Card (*CC*–), Red Cards (*RC*–) and Pastel Cards (*PC*–)]; locations [*S*– and *Dd*–]; determinants [*M*–, *FMm*–, *Color*–, *Shd*–, *F*–]; contents [*AnXySxBl*–, *Hcont*–]. CHESSSS Enhanced Structural Summary displays FQ minus homogeneity results, highlighting in orange a high frequency of occurrence of minus form responses (more than half of the total FQ minus), and in red the maximum counts.

e – Clinical Application: There follows an example of a "quick glance" at the Enhanced Structural Summary (the example is taken from the Primer, Exner, 2000, Figure 4). *Reminder:* a quick glance at the Enhanced Structural Summary points to important areas for the interpretation, but it is clearly insufficient and *cannot replace in any case the two phases of the full interpretation process* (Phase 1: Step-by-step interpretation, Phase 2: Complete description). The Enhanced Structural Summary is meant to provide a general overview of the protocol. This overview should ease and speed up the standard RCS interpretation process.

> It is quite easy to "see" that this woman is experiencing an important amount of emotional difficulties (S-CON, DEPI, eb) and finds herself in a very complicated emotional situation (3xBld, > 3xBld, ColShdBld, Bld:EB:L, BldAj:EB:L). This situation is quite hard to deal with, and she is prone to emotional impulsiveness (FC:CF + C). She is trying to get away from these difficulties by two mechanisms: Intellec-

Figure 4. Reading the Enhanced Structural Summary (lower part). An example.

tualization and Emotional Avoidance, the latter being more important. Emotional Avoidance is in conflict with her EB style (extratensive).

Generally she has enough resources to cope with everyday situations (Adj D, EA, Controls Step4), but presently she is weakened and might have some control difficulties (D). Most importantly, she is experiencing a self-image conflict that seems to be the core of her difficulties (EGO, Fr&SumV).

It is important to notice that intellectualization is not a defense being applied, but rather a style of coping. She is probably trying to use this strategy to deal with the very painful and complicated emotions generated by the self-image conflict. This mechanism might generate an important amount of unintentional thoughts, marked by pessimism (m, FM, MOR). This peripheral activity is disturbing her thinking in very substantial ways (WSum6) and her reality testing (most FQ minus given to the black cards and/or formal responses). Taken together, all these elements show that this woman is in a very critical psychological state and possibly suicidal (S-Con).

Advanced Features of CHESSSS

Supplementary Scales

Some psychologists might wish to score and compute Supplementary Scales along with the RCS such as Rorschach Oral Dependency (ROD), Mutuality Of Autonomy (MOA), Aggressive Contents, or The Ego Impairment Index (EII):

- *Rorschach Oral Dependency* (ROD) is meant to measure interpersonal dependency. ROD is entirely content based and no structural data are used in this scoring system. Several studies have demonstrated its convergent and discriminant validity (Bornstein, 1996).
- *Mutuality of Autonomy* (MOA) was designed to measure object relational developmental maturity or the degree of individuation/separation. It is a 7-point scale that represents specific developmental levels along a dimension from empathic, reciprocal relatedness to destructive envelopment and symbiotic fusion. Evidence seems to demonstrate that MOA is an equally potent measure of Object Relations and psychopathology (Bombel, Mihura, & Meyer, 2009).
- *Aggressive Contents* is a specific scoring system for aggressive responses which was developed for the study of aggressive and psychopathic personalities. It contains four codes: Aggressive Content (AgC), Aggressive Potential (AgPot), Aggressive Past (AgPast), and Sado-Masochist (SM). AgC differs from the AG code of the RCS and relies more on the content than the action. AgC is defined as "any object that would be seen by most people as predatory, dangerous, malevolent, injurious, or harmful" (Gacono & Meloy, 1994, p. 263).
- *The Ego Impairment Index* (EII) is a composite measure of psychological impairment and thought disturbance developed from the empirical and theoretical literature on the Rorschach (Viglione, Perry, & Meyer, 2003). This index is not scored, but rather computed directly from RCS results.

Supplementary Scales were implemented in CHESSSS according to the principle "inside but aside." They should be scored independently, and the results are not mixed with RCS data (i.e., the Structural Summary), but rather displayed in a separate report ("Sup Scales"). This principle allows the use of Supplementary Scales without disturbing typical RCS users.

Interrater Agreement

The scoring system of the Rorschach test is complex and at times tricky, so a good way to make sure a protocol has been correctly scored is to ask some other psychologist to score it and compare the scorings. Furthermore, checking the interrater reliability is a must-do step in research with the Rorschach, required by all serious journals. CHESSSS offers the possibility to enter two different sequences of scores for the same protocol (the second being called "double score") and to compare the sequence of scores, both for individual protocols and for groups.

Comparison of two scorings for the same protocol is rendered easy with the comparison function, which displays discrepancies between the coder and the second coder. If they are in total disagreement, XXX is displayed and the corresponding cell is colored in red. If there is partial agreement, for example, Mp.FC and Mp.CF, "Mp" will be displayed, but XXX is added and the cell is colored in orange (Figure 5).

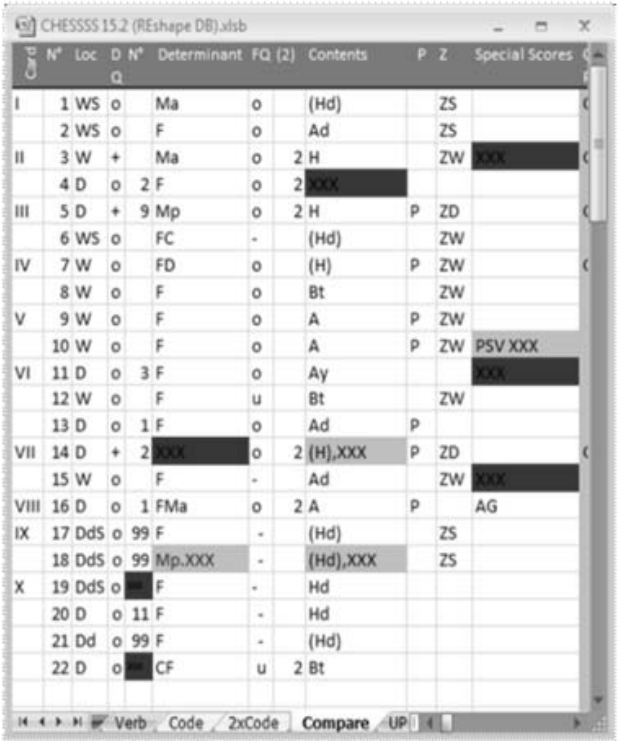

Figure 5. Result of the comparison between coding and double coding.

Once a group of protocols has been fully coded and double coded, CHESSSS automatically generates data for the computation of interrater reliability using κ coefficients (this procedure adjusts the observed agreement for chance agreement, Meyer, 1999). The user has simply to click on a button and read the results.

Building Databases

The management of databases is very important both for clinical practice and research purposes. With respect to RCS software, the available databases are poorly constructed and contain protocol level scores only. Actually, these are not databases at all but datasets. Rorschach data are very precious since their collection requires a lot of time and competencies. *Therefore, any loss of RCS data is critical and should be avoided whenever possible.* There are three sources of information in the Rorschach data: the verbatim, the sequence of codes, and the overall protocol scores. A proper database should contain or give access to these three sources.

Good data management requires all information available for each protocol to be stored: the verbatim (either typed or scanned), the Location sheet when necessary (scanned as a PDF file), response codes and protocol level scores. A database is not a dataset. A database generally contains more information than the user needs, though it should contain as much information as potentially needed. In this way, users can search the database to find the information they look for, and extract them for a particular treatment. In other words, one database can be used in order to create several datasets.

When building the Database system for CHESSSS we relied on an important principle emphasized both by Herman Rorschach and John Exner: The significance of any single response to the Rorschach depends on the other responses – and ultimately on the whole protocol. A formalization of this idea from a database point of view is that protocols are characterized mostly by the whole information of the Structural Summary. We decided to associate every response of a particular protocol to every score of the corresponding Structural Summary. Therefore, any single response stored in the database remains linked to the protocol it comes from: The links between responses and protocols are stored in the database. We also decided to break down information concerning the responses into bits of information that describe response character-

istics (see Database structure in Appendix D). CHESSSS allows the user to create Databases automatically.

CHESSSS databases can be used to search for particular responses. For example, protocols that contain Whole responses on Card III, protocols containing COP and AG within the same response, M responses to Card X, DS location without Z score, or any combination thereof. The protocol level characteristics are also available, and research might be undertaken regarding some selected criteria. On the other hand, the database can be searched for protocol level characteristics, for example *"low Lambda," "high Ego without reflection," "extratensive with EA > 4, L < 1and Afr < 0.44."* The user will find all the responses associated with these kinds of protocols.

It is also possible to compute new indices from protocol level scores or from response level characteristics. For example, if people are interested in COP & AG appearing in the same response, they can create a "COP and AG" response characteristic in the database, compute this characteristic for every response in the database and then sum up this characteristic for all the protocols in order to create a new protocol level score (Sum(COP and AG) in this example). Once the relevant information has been found or computed, it can be extracted (copy/paste) to a dataset in order to perform researches with traditional statistical software.

CHESSSS Current Developments

MMPI Module

The third author has developed an MMPI application. We are currently working at integrating this application in CHESSSS. Users will then be able to switch between "MMPI mode" and "Rorschach Mode," and to store MMPI and Rorschach protocols in a unique file. The MMPI application will enable the user to calculate raw and T scores of the main MMPI-2 or MMPI-A scales and indices: validity, clinical (with and without K score), and content scales, with their subscales and supplementary scales (Psychopathology five, Personality Disorder Scales, Cripe Scale, critical items), for a total of about 200 scales and indices. We implemented the scoring with the MMPI-2 structural summary (Nichols & Greene, 1995) that we regularly use in our practice.

Management of RIAPdata

RIAP (Rorschach Interpretation Assistance Program 5©, Psychological Assessment Resources, Inc.) gives us the opportunity to export response codes to Excel files. We have already developed some tools to convert RIAP exports into the CHESSSS format and are trying to implement these tools in CHESSSS in an efficient and reliable way.

Conclusion

In order to deal with the various technical issues related to the clinical and scientific activities with the Rorschach test, we developed an Excel application, called CHESSSS for "Code for Hermann: Enhanced Structural Summary and Supplementary Scales." CHESSSS provides unique functionalities compared to other available software: the possibility to use Supplementary Scales with the RCS, tools for double coding issues (visual comparisons and computation of interrater reliability), and an Enhanced Structural Summary highlighting the main features of the protocol and facilitating the step-by-step interpretation. In an attempt to ease the reading of the Structural Summary without providing some kind of Computer Generated Interpretation (Andronikof, 2005; Exner, 2005), we created "Keywords," which can be seen as labels, titles, or reminders for the relevant Potential Findings of a protocol. We like to think that this new and exhaustive version of the RCS Structural Summary can serve as a visual and dynamic representation of the psychological functioning of a person.

A reference system is also proposed in an attempt to standardize Form Quality tables across countries. This system allows users to search FQ items in a much more efficient way, to score FQ items of the responses, and to compute FQ items frequency tables in a sample. Ultimately, any information that Rorschach protocols contain can be stored in a database that can considerably simplify the undertaking of research, including cross-cultural studies.

As researchers and clinicians we are responsible for the use we make of our data and their management. We think it is preferable that psychologists create and manage their own tools so they can keep control on their data. From this point of view, we cannot think of a better way to proceed than to give the Rorschach community access to such an open source project. Free-

dom, autonomy, and the ability to adjust the application to one's particular needs are clearly the most important added values of CHESSSS.

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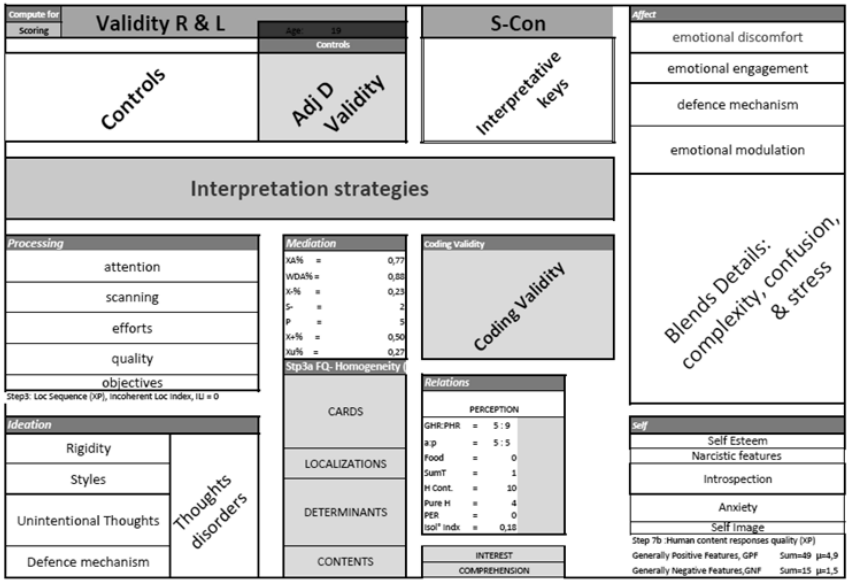
Appendix A

CHESSSS Map of the Enhanced Structural Summary



Appendix B

Descriptions of CHESSSS New Scores

Score	Cluster	Description
F%	Controls	F% = F / R: The proportion of pure Form responses in the protocol. F% is an alternative to Lambda
PC%	Affect	PC% = PC/R: the proportion of responses given to the Pastel Cards. PC% is an alternative to Afr.
Afr:EB:Age	Affect	*Step 6:* interpretation of Afr ("Emotional avoidance"; "low"; "medium"; "high") according to EB style and age
Late S	Affect	*Step 11:* Number of S location trough card IV to X
Bld%	Affect	*Step 12:* Bld% = Blend/R: the proportion of blends
Blend:EB:L	Affect	*Step 12:* the interpretation of the number of blends ("high"; "medium"; "low") according to EB style and Lambda
StressBld	Affect	*Step 13:* blends due to the presence of inanimate movements and/or diffuse shadings (e.g., Ma.FY; CF.ma)
Adj Blend	Affect	*Step 13:* if Stress Blend1, Adj Blends = Blends – Stress Blend + 1
AdjBld%	Affect	*Step 13:* AdjBld% = Adj Blend/R: the proportion of adjusted blends (the effect of stress being parted).
Adj Blend: EB: L	Affect	*Step 13:*the interpretation of the number of adjusted blends (high; medium; low) when considering EB style and Lambda
3×Bld	Affect	*Step 14:* Number of blends containing 3 determinants
>3×Bld	Affect	*Step 14:* Number of blends containing more than 3 determinants
3×Bld & >3×Bld	Affect	*Step 14:* short conclusion concerning Blends complexity
Col-Shd Bld	Affect	*Step 15:* number of blends containing color determinants and shading determinants (e.g., FC.FC'; CF.YF)
Shd Bld	Affect	*Step 16:* number of shading blends (e.g., FC'.FV; FY.FT)
Wsum6:Age	Ideation	*Step 8:* interpretation of Wsum6 ("no problem," "ideational slippage," "ideational discontinuity," "disturbed thinking") according to age.
DQv 1st	Information Processing	*Step 8:* Number of vague responses given as the first response to a card. Might be indicative of cognitive impulsivity or attention deficit

COMMENT ON MEDIATION Step 3a FQ minus homogeneity: CHESSSS counts the number of FQ minus responses according to different criterions (e.g., "FQ minus & Color Card"; "FQ minus and Space location" etc.). Then the different counts for FQ minus criterions are compared to the total number of FQ minus responses. If a particular count ("FQ minus and Color Cards" for example) is higher than half the number of FQ minus responses (i.e., if this is a majority criterion) the cell is colored in orange. If it is the highest among other FQ- homogeneity criterions, the cell is colored in red.

Score	Cluster	Description
BC–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses to the Black Cards.
CC–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses to the Color Cards.
PC–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses to the Pastel Cards.
RC–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses to the Red Cards.
3.1stC–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses to the three first cards.
Color–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a Color determinant (FC, CF, C)
Dd–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a Dd location
FMm–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a FM or m determinant.
Hcont–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a Human Content (H, (H), (Hd), Hd)
M–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a M determinant.
F–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a pure Form determinant
Shd–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a shading determinant (e.g., FC', YF, FT etc.)
S–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with a Space location.
AnXySxBl–	Mediation	*Step 3a: FQ minus Homogeneity:* number of FQ minus responses with Anatomy, Xray, Sex or Blood content.
Hcont:EB:R	Relations	*Step 6:* interpretation of the number of Human Contents (interest in others, "high";"medium";"low") taking EB style and R into account.
Hpur:R:EB	Relations	*Step 6:* interpretation of the number of Pure Human Contents (understanding of relations, "realist" or "misunderstood") taking EB style and R into account.
EGO:Age	Self	*Step 3:* interpretation of the EGO index (high, medium, low) adjusted for age.
Self R°	Self	*Step 7a:* interpretation of the H:(H) + Hd + (Hd) ratio (self-image based on *"experience"* or *"imagination"*) considering R and EB style

EXPERIMENTAL SCORES: these scores are formalization of concepts or "qualitative" interpretative steps. They should not be used for interpretation and further researches are needed concerning these scores.

EBt	Controls	This score is an attempt to formalize, unify and simplify EB criteria. EBt = (WSumC – SumM)/EA. We are currently undertaking researches on this score.

Score	Cluster	Description
ILI: Incoherent Localization index	Information Processing	*Step 3 – localization sequence coherence:* When checking locations sequences, CHESSSS will look for scattered W location (e.g., W. D. W), isolated W locations (e.g., D. W. Dd), Dd as first location of a card, scattered Dd locations (e.g., W. Dd. D. Dd) and isolated Dd locations (e.g., W. Dd. D). Incoherent W or Dd locations are displayed and summed up in the Incoherent Location Index (ILI)
easy	Information Processing (efforts)	*Step 3:* ratio between the number of "easy W" and the total number of W responses. Easy W are defined as W responses given to the Black cards. This decision is based on ZW values for the different cards.
GPF & GNF	Self	*Step 7b:* Evaluation of the qualities of Human Contents responses. "Generally Positive Features" (e.g., W, FQo, M) and "Generally Negative Features" (e.g., Dd, FQ–, C) are computed automatically, displayed in the "code" spreadsheet and the sum and mean of GPF and GNF are displayed in the Enhanced Structural Summary. This is an experimental score (not to be used for interpretation)

Appendix C

Rationale for Experimental Scores

Incoherent Localization Index: The evaluation of the coherence of the localization sequence is an important part of the RCS interpretation. A response can be seen in the inkblot as a whole (W location), in common details of the inkblot (D location), or in unusual details (Dd location). People are generally expected to proceed either from W responses to D responses for a particular card or from D responses to W responses. They are not expected to change their procedure within a particular card. For example, if someone gives three responses to the first card, the first and the last responses being W responses while the second response is in a D location (W.D.W sequence), this localization sequence is considered as incoherent. However, this evaluation remains quite qualitative and is sometimes hard to handle.

When checking locations sequences, CHESSSS looks for scattered W location (e.g., W.D.W), isolated W locations (e.g., D.W.Dd), Dd as first location of a card, scattered Dd locations (e.g., W.Dd.D.Dd), and isolated Dd locations (e.g., W.Dd.D). Incoherent W or Dd locations are displayed in the Enhanced Structural Summary and summed up in the Incoherent Location Index (ILI). ILI is an experimental score and cannot be interpreted. However, since it is computed, studies concerning location sequence coherence can be undertaken.

Easy ratio: Another aspect of the interpretation of localizations is the evaluation of the effort implied in information processing. In the RCS, this aspect is assessed by the comparison of the sum of the Whole responses and the Detail responses (W:D ratio). An increased proportion of W responses might be indicative of an increased effort in information processing. However, some W responses are quite easy to give such as "a butterfly" on card I or on card V, and this aspect has to be taken into account when interpreting W:D ratio. This evaluation is qualitative and it is sometimes quite hard to decide if a particular W response is "easy" to give or not.

We tried to formalize this idea in CHESSSS. We have defined "easy W" responses as W responses given to the Black Cards (this decision is based on ZW values for each cards). CHESSSS Enhanced Structural Summary displays an "easy" ratio which is the proportion of easy W response

among W responses. As for the Incoherent Localization Index (ILI), the "easy" ratio is an experimental score and should not be used for interpretation.However, since it is computed, studies concerning efforts implied in information processing can be undertaken.

Generally Positive/Negative Features: The proportions of Human Contents (H: Hd + (H) + (Hd)) give indications concerning self-image. If the proportion of real and complete human figures (H responses) is higher than that of other human contents (partial or imaginary: Hd, (Hd), (H)), then self-image is considered to be based on experience rather than on imagination. However, this quantitative criterion has to be cross-validated by an evaluation of the qualities of Human Content responses. In the RCS, we have to look for "generally positive features" (e.g., W, FQo, M) and "generally negative features" (e.g., Dd, FQ–, C) of the Human contents responses.

CHESSSS automatically computes the number of Generally Positive Features (GPF) and the number of Generally Negative Features (GNF) for human content responses. GPF and GNF are displayed in the sequence of codes (Figure 4), and their sum and mean are displayed in the Enhanced Structural Summary. Exner mentions that GPF and GNF criteria should not be used in a systematic way. However, we think that this interpretation step is sometimes quite hard to handle, that formalization might be interesting, and that research should be undertaken on this topic. But GPF and GNF are experimental scores and should not be used for interpretation.

EBt: According to Hermann Rorschach and John Exner, Experience Balance types are a major concept of Rorschach interpretation. Experience Balance types are defined by the comparison of human movement responses (M) and color responses (FC, CF, C). People who give more human movement responses are introversive, while people who give more color responses are extratensive. If there is an equal proportion of movement responses and color responses, the person is considered ambitent. John Exner and Hermann Rorschach both agreed that cutoff points for EB types should be adjusted to the total amount of human movement responses and color responses (Experience Actual, EA). In the RCS two cutoff values are proposed for EB styles depending on EA, and a supplementary criterium is given concerning the rigidity of the style (EBper > 2.5). EBt is an attempt to unify and simplify these criteria. EBt is computed as EBt = (WSumC – SumM) / (WSumC + SumM). We are currently undertaking further research on this score.

Appendix D

CHESSSS Database Structure

Data Base Structure

Identification			Response Level				Characteristics							Protocol Level				Derivations				Indices			
			Codes											Raw sum											
Name	Age	etc.	Card	Loc	Dets	etc.	W	D	Ma	Mp	FC	FC'	etc.	SumW	SumD	SumM	etc.	EA	L	EGC	etc.	PTI	HVI	S-con	etc.
P01	19	_	I	Wo	Ma	_	1	0	1	0	0	0	_	12	8	7	_	11	1	0,4	_	2	no	4	_
P01	19	_		Do	FC'	_	0	1	0	0	0	1	_	12	8	7	_	11	1	0,4	_	2	no	5	_
P01	19	_	II	W+	Ma.FC		1	0	1	0	1	0	_	12	8	7	_	11	1	0,4	_	2	no	6	_
P01	19	_		Do	F	_	0	1	0	0	0	0	_	12	8	7	_	11	1	0,4	_	2	no	7	_
P01	19	_		Wo	Mp	_	1	0	0	1	0	0	_	12	8	7	_	11	1	0,4	_	2	no	8	_

Summary

CHESSSS (Code for Hermann: Enhanced Structural Summary and Supplementary Scales) is an open source project we propose to the Rorschach community. It can be freely distributed and adjusted to one's particular needs. We have paid much attention to making it a very efficient and user-friendly application. Its use and even its programming do not require a high level of skills in informatics. CHESSSS provides an Enhanced Structural Summary that highlights the main features of the protocol and facilitates the step-by-step interpretation. In an attempt to ease the reading of the Structural Summary without providing some kind of computer-generated interpretation, we created "Keywords," which can be seen as labels, titles, or reminders for the relevant potential findings of a protocol. We like to think that this new and exhaustive version of the Rorschach CS Structural Summary will serve as a visual and dynamic representation of the psychological functioning of a person.

CHESSSS also provides advanced functionalities. It enables the computation of Supplementary Scales such as Mutuality of Autonomy, Rorschach Oral Dependency, Aggressive Contents, or the Ego Impairment Index. A separate report is dedicated to supplementary scales. We created a reference system for FQ tables. This system eases the search for specific items in the FQ tables (e.g., whole and fictional humans in the

D4 location of card I) and provides the opportunity to create Form Quality frequency tables in a standardized manner. This function is an attempt to facilitate intercultural studies across countries. Furthermore, we implemented automatic functions for the computation of interrater reliability (kappa coefficients) and the creation of databases.

As researchers and clinicians we are responsible for the use we make of our data and their management. We think it is preferable that psychologists create and manage their own tools so they can keep control of their data. We do hope that CHESSSS will help clinicians, researchers, and students to manage their own data the way they want in a free and autonomous manner.

Résumé

CHESSSS (Code for Hermann: Enhanced Structural Summary and Supplementary Scales) est un logiciel libre (open source) que nous mettons à disposition de la communauté Rorschach: il peut être librement distribué, et chaque utilisateur peut ajuster l'application à ses besoins particuliers. Nous avons tâché de rendre cette application aussi efficace et ergonomique que possible. Son utilisation et même sa programmation ne nécessite pas un niveau élevé de compétences en informatique. CHESSSS fournit une version augmentée du Résumé Formel du Rorschach en Système Intégré. Cette présentation met en lumière les aspects principaux d'un protocole. Nous avons également cherché à rendre le Résumé Formel plus lisible sans pour autant fournir d'interprétations générées automatiquement. Ainsi le Résumé Formel Augmenté affiche un certains nombre de «mots clefs» correspondant aux différents cas de figure du manuel d'interprétation. Nous considérons cette nouvelle présentation du Résumé Formel comme une représentation visuelle et dynamique du fonctionnement psychique d'une personne.

CHESSSS présente également des fonctionnalités avancées. Il permet de coter et de calculer certaines échelles supplémentaires: l'Echelle d'Autonomie Réciproque (Mutuality Of Autonomy), l'Echelle de Dépendance Orale (Rorschach Oral Dependency), les Contenus Agressifs (Agressive Contents) et l'Indice de Faiblesse du Moi (Ego Impairment Index). Les résultats de ces échelles sont présentés dans un compte rendu séparé du Résumé Formel. Nous avons également créé un système de références pour les tables de qualités formelles. Ce système permet de rechercher des contenus spécifiques (par exemple les contenus hu-

mains imaginaires entiers (H) dans la découpe D4 de la planche I). De plus, ce système permet de calculer la fréquence des qualités formelles de manière standardisée. Cette fonction vise à faciliter les études interculturelles et les comparaisons entre différents pays. Enfin, nous avons automatisé le calcul de la fidélité interjuge (coefficient kappa), ainsi que la création de base de données.

En tant que chercheurs et cliniciens, nous sommes responsables de l'utilisation et de la gestion de nos données. Nous pensons qu'il est préférable que les psychologues créent et gère leurs propres outils afin de conserver la maitrise de leurs données. Nous espérons que CHESSSS pourra aider les cliniciens, les chercheurs et les étudiants à manipuler leurs données librement et en toute autonomie.

Resumen

CHESSSS (*Code for Hermann, Enhanced Structural Summary and Supplementary Scales*) es un proyecto o Recurso Abierto que proponemos a la comunidad Rorschach: puede distribuirse libremente y ajustarse a las necesidades particulares de cada uno. Se ha prestado mucha atención para hacer de esta herramienta una aplicación eficiente y asequible para el usuario. Su utilización e incluso su programación no requiere un elevado nivel de conocimientos informáticos. CHESSSS ofrece un Sumario Estructural Mejorado, que destaca los rasgos básicos de cada protocolo y favorece su interpretación paso a paso. Tratando de facilitar la lectura del Sumario Estructural sin necesidad de utilizar ningún sistema de interpretación informática, hemos creado las "Palabras Clave," que pueden servir como marcas, etiquetas, títulos o recordatorios para los hallazgos potenciales más relevantes de cada protocolo. Deseamos que esta nueva y exhaustiva versión del Sumario Estructural del Sistema Comprehensivo de Rorschach pueda utilizarse como una representación dinámica y visual del funcionamiento psicológico de una persona.

CHESSSS también aporta otras funciones avanzadas. Permite la codificación de Escalas Suplementarias como: Mutualidad de la Autonomía (*Mutuality Of Autonomy: MOA*), Dependencia Oral en Rorschach (*Rorschach Oral Dependency*), Contenidos Agresivos (*Aggressive Contents*) o +ndice Debilidad Yoica (*Ego Impairment Index*). Se dedica un informe separado a estas escalas suplementarias. También hemos creado un sistema de referencia para tablas de Calidad Formal (*FQ*), que facilita la búsqueda de ítems específicos en las tablas de FQ (p. e.: humanos en-

teros y fantásticos en el D4 de la lámina I) y da la oportunidad de crear tablas de frecuencia de FQ de manera estandarizada. Mediante esta función se intenta facilidar la realización de estudios interculturales entre paises. Además, se han implementado funciones automáticas, tanto para el cálculo de la fiabilidad interpuntuadores (coeficientes kappa), como para la creación de bases de datos.

Como investigadores y como clínicos, somos responsables del uso que hagamos de nuestros datos y de su procesamiento o gestión. Creemos que es preferible que los psicólogos creen y gestionen sus propias herramientas para poder mantener el control sobre sus bases de datos. Esperamos que CHESSSS pueda a ayudar a clínicos, investigadores y estudiantes a procesar sus propios datos de la manera que deseen, con libertad y autonomía.

CHESSS（Hermann の改良された構造一覧表と補助尺度のためのコード）はわれわれがロールシャッハのコミュニティに提供したオープンソースのプロジェクトである：これは無料配布されそれぞれのニーズにより調整をすることができる。われわれはこれがとても効率的であり、ユーザーに親切であるように、作成するのに注意を払った。その使用やプログラミングでさえも高度の技能や知識を必要としていない。CHESSS は改良された構造一覧表を提供し、それはプロトコルの主要な特徴を明確にし、一歩ずつの解釈を手助けする。ある種のコンピューターが作り出す解釈なしで構造一覧表を読むことを簡単にしようという試みにより、われわれは“キーワード”を創った、これはプロトコルに関連する可能性のある発見のラベル、見出し、注意として見ることができる。このロールシャッハ包括システムの新しく、徹底したバージョンの構造一覧表は人の心理学的機能の視覚的で力動的な表象として機能するであろうとわれわれは考えている。

CHESSS はまた、進化した機能性も提供する。それは、相互自立性やロールシャッハ口愛的依存性、攻撃的内容、自我損傷指標などの補助尺度の計算を可能にしている。補助尺度には別々の報告書が提供される。このシステムでは形態水準の表での特定の項目（たとえば、カード I における D4 領域における非現実的人間全体反応）の探索を容易にしており、標準的な方法で形態水準頻度表を作成する機会を提供している。この機能は、国を超えた異文化研究を容易にするための試みである。さらに、我々は評定者間の信頼性（カッパ係数）の計算とデータベースを作成のための自動関数を提供している。

研究者としてそして臨床家として、われわれはデータを作成し、管理しているこの使途について責任を有している。心理学者が自らのツールを作成して管理し、その結果自分たちのデータを制御できることがより好ましいのではないかとわれわれは考えている。CHESSS が臨床家や研究者、学生が、自由で自立的な方法で彼らのデータを管理することを助けることを我々は望んでいる。