Universidade de Brasília

Instituto de Psicologia

Departamento de Psicologia Clínica

Programa de Pós-Graduação em Psicologia Clínica e Cultura

Rorschach Performance Assessment System (R-PAS) in Older Adults: Cognitive Correlates, Response Profile, and a comparison between Remote vs In-Person Administration

Clarice Alves de Almeida Beckmann

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Doctoral dissertation submitted to the Graduate Program in Clinical Psychology and Culture of the Institute of Psychology at the University of Brasília as a partial requirement for obtaining the doctoral degree.

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List of Abbreviations

AGC Aggressive Content thematic code

AGM Aggressive Movement thematic code

An Anatomy content

Blend Responses with two or more determinants other than pure form (F)

C Color determinant without form, also referred to as Pure C

C’ Any achromatic color determinant using black, gray, or white

CBlend Color–shading blend in which a color determinant (FC, CF, C) is combined with a shading determinant (Y, T, V) or with an achromatic color determinant (C’); both types must be present in a single response for CBlend to qualify

CFC Sum of CF (color–form) and C (pure color) responses

COP Cooperative Movement thematic code

CritCont% Critical contents, equal to the sum of An + Bl + Ex + Fi + Sx + AGM + MOR

CT Card Turn; number of times the respondent rotated the card before giving a response

Dd% Percentage of rare details; calculated as Dd/R

EII-3 Ego Impairment Index – 3rd version

F% Percentage of pure form responses relative to the number of responses in the protocol

FC Form–color responses

FD Form-dimension determinant in dimension-based responses

FQ% Percentage of negative form quality responses (uncommon and distorted form), calculated as FQ-/R

FQo% Percentage of all responses that have ordinary or accurate form, calculated as FQo/R

FQu%	Percentage of all uncommon/rare but accurate form responses, that is, FQu/R

H	Whole human content

IntCont	Intellectualized content; considers responses coded as abstract representation (ABS), art content (Art), and anthropology content (Ay); calculated as (2×ABS) + Art + Ay

M	Human movement determinant

IM	Inanimate movement responses

M-	Human movement determinant (M) with negative form quality (FQ-)

M-WSumC	Human movement minus the weighted sum of color determinants, calculated as (C×1.5) + CF + (FC×0.5)

MAH	Mutuality of Autonomy–Health thematic code

MAP-MAH	Ratio of Mutuality of Autonomy–Pathology (MAP) thematic codes to Mutuality of Autonomy–Health (MAH): MAP/(MAH + MAP)

MC	Sum of M and WSumC

MC-PPD	Difference score between MC and PPD (MC minus PPD)

MOR	Morbid content thematic code

Mp – Ma	Number of passive human movement responses minus the number of active human movement responses

NPH	Non-pure human content; total number of human-type contents and human-detail contents: (H) + (Hd) + Hd

ODL%	Percentage of Oral Dependency Language thematic codes over the total number of responses

p/(a+p)	Proportion of Passive Movement responses: passive movement codes (p) divided by the total of active + passive movement codes (a+p), provided there are at least three movement codes

PER	Personal knowledge justification code; the respondent uses personal experience to explain or justify a response

PHR/GPHR Proportion of Poor Human Representations (PHR): PHR divided by the sum of Good Human Representations (GHR) and PHR (calculated when GPHR ≥ 3)

P Popular response; relatively obvious perceptions seen by a large proportion of test takers; frequently provided responses

PPD Potentially problematic determinants: FM + m + Y + T + V + C’

Pr Pull ("Pedir"); used to encourage the respondent to give an additional response when only one is given to a card

Pu Push ("Puxar"); when four responses are given to a card, the examiner retrieves the card and reminds the respondent of the desired number of responses

r Reflection determinant

R Total number of responses

R8910% Total number of responses to cards VIII, IX, and X, divided by R

SC-Comp Suicide Concern Composite

SevCog Sum of severe cognitive codes (DV2 + INC2 + DR2 + FAB2 + PEC + CON)

SI White Space Integration response

SR White Space Reversal response

SumH Sum of all human contents: H + (H) + Hd + (Hd)

Sy Synthesis response

T Texture determinant, where shading indicates a tactile sensation

TP-Comp Thought and Perception Composite

V Vista determinant, where shading conveys a sense of dimensionality

V-Comp Vigilance Composite

Vg% Percentage of vague content responses; Vg divided by R

W% Percentage of whole-location responses; W divided by R

WD-% Percentage of WD– (sum of W and D with FQ-), calculated as WD-/WD

WSumC Weighted sum of color determinants: (C×1.5) + CF + (FC×0.5)

WSumCog Weighted sum of special cognitive codes

Y Diffuse shading determinant

YTVC’ Shading and achromatic color; total number of shading (Y, T, V) and achromatic color (C’) determinants

Abstract

Population aging in Brazil and worldwide increases the need to understand how psychological instruments function in older adults, although research in this area remains limited. Rorschach Performance Assessment System (R-PAS), widely used to assess cognitive and affective processes, lacks studies specifically focused on older adults, whose performance may differ due to age-related cognitive and perceptual changes. Furthermore, the expansion of remote assessment methods—accelerated by the COVID-19 pandemic—raises questions about their feasibility and equivalence for this population, particularly when using complex instruments. Given these gaps, this doctoral dissertation investigates: (1) how R-PAS variables relate to cognitive functions in older adults; (2) whether older adults exhibit a distinct response pattern compared to other age groups; and (3) whether in-person and remote R-PAS administrations yield equivalent results. These topics are addressed across three manuscripts that constitute the structure of this doctoral dissertation. Article 1, "Cognitive Correlates of R-PAS in Healthy Older Adults," shows that several R-PAS variables display significant correlations with cognitive functions—particularly indicators of complexity, productivity, and perceptual quality—suggesting that R-PAS performance partly reflects neurocognitive functioning typical of aging. Article 2, "Examining R-PAS Response Patterns in Older Adults Across Age Groups," demonstrates that older adults exhibit a characteristic R-PAS profile marked by lower productivity and reduced perceptual complexity but preserved interpretive coherence, focusing the importance of viewing aging as a normative rather than pathological factor. Article 3, "Does Administration Format Matter? Remote vs. In-Person R-PAS in Older Adults," shows no statistically significant differences between remote and in-person administrations on any R-PAS variable, with small effect sizes and high interrater reliability, indicating strong equivalence between formats and high acceptability among participants. This doctoral dissertation offers substantial contributions to the literature on R-PAS, aging, and remote assessment practices, with the originality of demonstrating full equivalence between administration formats in older adults. However, it also presents limitations, such as the relatively small sample size, the selected profile of participants (educated older adults with access to technology), potential self-selection bias, and the absence of fine-grained behavioral measures. Future research should further explore these topics by including more heterogeneous samples, multimodal analyses, and more complex clinical applications.

Keywords: Remote Psychological Assessment; R-PAS; Older Adults.

Resumo

O envelhecimento populacional no Brasil e no mundo aumenta a necessidade de compreender como instrumentos psicológicos funcionam em adultos mais velhos, embora pesquisas nessa área ainda sejam escassas. O Rorschach Performance Assessment System (R-PAS), amplamente utilizado para avaliar processos cognitivos e afetivos, carece de estudos específicos com pessoas idosas, cuja performance pode diferir devido a mudanças cognitivas e perceptuais próprias da idade. Além disso, o avanço das avaliações remotas, acelerado pela pandemia de COVID-19, levanta questões sobre sua viabilidade e equivalência para esse público, especialmente em instrumentos complexos. Diante dessas lacunas, esta tese investiga: (1) como variáveis do R-PAS se relacionam a funções cognitivas em pessoas idosas; (2) se adultos mais velhos apresentam um perfil de respostas distinto de outras faixas etárias; e (3) se as administrações presencial e remota do R-PAS produzem resultados equivalentes. Esses temas são desenvolvidos em três manuscritos que compõem a estrutura da presente tese. O artigo 1, “Correlações cognitivas do R-PAS em pessoas idosas saudáveis”, revela que algumas variáveis do R-PAS apresentam correlações significativas com funções cognitivas — especialmente indicadores de complexidade, produtividade e qualidade perceptiva — sugerindo que o desempenho no R-PAS reflete, em parte, o funcionamento neurocognitivo típico do envelhecimento. O Artigo 2, “Analisando os padrões de resposta do R-PAS em pessoas idosas de diferentes faixas etárias”, demonstra que elas exibem um perfil característico no R-PAS, marcado por menor produtividade e menor complexidade perceptual, mas sem prejuízo da coerência interpretativa, reforçando a importância de considerar o envelhecimento como um fator normativo e não necessariamente patológico. O Artigo 3, “O formato de administração importa? R-PAS remoto versus presencial em pessoas idosas”, mostra que não foram encontradas diferenças estatisticamente significativas entre administrações remotas e presenciais em nenhuma das variáveis do R-PAS, com tamanhos de efeito pequenos e fidedignidade interavaliadores elevada, indicando equivalência robusta entre os formatos e boa aceitabilidade entre os participantes. Essa tese contribui amplamente para a literatura do R-PAS, do envelhecimento e das práticas de avaliação remota, com originalidade dos achados sobre equivalência total entre formatos em pessoas idosas. Todavia, traz algumas limitações, como o tamanho amostral relativamente pequeno, o perfil selecionado dos participantes (escolarizados e com acesso à tecnologia), o risco de viés de autoseleção e a ausência de medidas comportamentais finas. Futuras pesquisas devem investigar o tema mais a fundo, incluindo amostras mais heterogêneas, análises multimodais e aplicações clínicas mais complexas.
Palavras-chave: Avaliação Psicológica Remota; R-PAS; Pessoas Idosas.

Introduction

The topic of population aging has been attracting increasing attention, as older adults, defined as those over 60, has increased significantly in recent decades (IEPS, 2023; Khan et al., 2024; Roberts, 2024; WHO, 2025). While in 2000 the proportion of older adults in the Brazilian population was 5,8%, by 2010 it had already reached 7,2% and by 2022 it had risen to 15,8% (Instituto Brasileiro de Geografia e Estatística [IBGE], 2023). The same phenomenon can also be observed internationally, with the proportion of older adults in the global population projected to increase from 10% in 2022 to 16% in 2050 (United Nations, Department of Economic and Social Affairs, Population Division [UN/DESA], 2022). In addition to the increased life expectancy, there is greater concern for the quality of life of older adults and for their inclusion in work, recreational, and social activities (Amaro et al., 2017).

This doctoral dissertation focuses the psychological assessment service. With the aging of the Brazilian population, there is still limited understanding of how instruments assessing cognitive abilities and personality characteristics perform in this age group. Research on assessing the cognition and personality of this population is still scarce, particularly regarding healthy longlived adults (Aguilar & Graso, 2015; Grazziotin & Scortegagna, 2021; Lima & Scortegagna, 2019; Sousa & Chariglione, 2020). The lack of information about the psychological assessment process in older adults limits our understanding of the capabilities and limitations of the techniques used and the validity of the conclusions drawn from them. In this sense, the present doctoral dissertation seeks to understand the specificities of psychological assessment with this population, focusing particularly on Rorschach Performance Assessment System (R-PAS) test through three manuscripts that will be detailed later.

R-PAS is a method for administering, scoring, and interpreting the Rorschach test, which incorporates 60 variables with the strongest evidence of validity available in literature

(Mihura et al., 2013). Based on an individual's responses to a series of inkblots, the Rorschach test can provide valuable information about individuals' personality characteristics. It can also be used to assess underlying thought processes and clues to cognitive functioning and mental processes such as attention, intelligence, perception and visuospatial skills, abstract reasoning, problem-solving, analysis and synthesis, memory and decision-making, and verbal expression (Charek et al., 2020; Mento, 2020; Meyer, 2016; Meyer et al., 2011; Mihura et al., 2013; Xavier, 2009). Understanding an individual's performance on the Rorschach, however, requires careful analysis of developmental factors, as children, adolescents, adults, and older adults may exhibit significant quantitative and qualitative differences in their responses. Since R-PAS was first published in 2011, the number of studies investigating its use in older adults is small, especially in the Latin American context (Amaro et al., 2017; Nallar Abraham et al., 2021; Piotrowski, 2017).

It is well-known that responses to the Rorschach are strongly influenced by cognitive, emotional, and perceptual factors, all of which undergo changes across the lifespan. Children, for instance, tend to produce shorter protocols with lower formal complexity and less symbolic productivity (Weiner, 2003), reflecting the ongoing development of cognitive functions and abstract thinking capacity (Piaget, 1971). In this group, variables such as FQ- (poor form quality) and indices of disordered thinking may appear more frequently, not necessarily as pathological signs, but as expressions of cognitive and emotional immaturity (Meyer, 2016). Adolescents, in turn, tend to show an increase in response complexity and elaboration, reflecting the maturation of cognitive and psychological processing skills and the development of introspective and self-reflective capacities (Mihura & Meyer, 2018; Stanfill et al., 2013). Nevertheless, intraindividual variability tends to be high in this phase, with fluctuations between more concrete and more symbolic responses, often reflecting developmental transitions typical of adolescence.

Among adults, performance on the Rorschach test tends to stabilize, with more integrated responses, more consistent use of form-based determinants, such as F and M, and greater ability to articulate emotional and perceptual aspects. At this stage, a balance is expected between indicators of control and emotional expressiveness (Meyer et al., 2011). Cognitive and affective maturity contributes to the production of more organized and clinically informative protocols.

In older adults, a decrease in productivity, number of responses (R), and perceptual complexity is often observed, which may be influenced by declines in cognitive and perceptual functions associated with aging (Mihura et al., 2013). However, interpreting these changes requires caution, as it is important to distinguish between normative aging effects and potential signs of neuropsychological impairment. Older individuals may also show greater cognitive rigidity, expressed in less variability of determinants and more conventional interpretative styles (Exner, 2003). Cross-cultural studies have shown that sociocultural factors do not significantly influence Rorschach test responses across different groups, but age and specially education can (Giromini et al., 2014; Meyer et al., 2015). For this reason, it is essential to consider age-specific normative data to avoid misinterpretations.

Another important aspect to consider when using the Rorschach test is its recent computerized version, which is still undergoing empirical evaluation prior to its release for clinical application. To facilitate research, and assessments, remote tools have become increasingly used and studied, especially since the COVID-19 pandemic, which imposed significant limitations on in-person activities (Brearly et al., 2017; Collins et al., 2022; Wadsworth et al., 2018). In a literature review, Marra et al. (2020) observed that in-person and remote assessments involving cognitive performance tests do not show significant differences in terms of reliability and democratize access to psychological assessment services by reducing costs and expanding availability to individuals with limited access (e.g., older adults and residents of remote areas, as well as those in isolation). In this context, an application was developed for remote administration of R-PAS, with positive preliminary results (Ales et al., 2023). However, other contexts and population samples require further investigation, such as older adults, who often have less familiarity and access to new technologies than younger people (Lawry et al., 2019). It is important to ensure, however, that these new technologies do not constitute a barrier to access to psychological assessment and that technical issues relating to technology and privacy are adequately safeguarded (Muniz et al., 2022; Wagnild et al., 2006).

It is noted that the response process to the Rorschach test is multi-determined, including cognitive, affective, behavioral, developmental, and sociocultural processes. Therefore, this research aims to make three contributions to the debate on the use of the Rorschach test with older adults: 1) by investigating the possible association between R-PAS variables and cognitive abilities in a sample of Brazilian older adults, since theoretical discussions (Arble et al., 2020) are not yet well supported by empirical evidence; 2) by examining whether older adults present a distinct R-PAS response profile compared to children, adolescents, and younger adults, as existing studies (e.g., Amaro et al., 2017; Orme, 1955; Sasayama & Yoshimura, 1991) are outdated and may not reflect the better living conditions of contemporary older cohorts (Munukka et al., 2021); and 3) by evaluating the feasibility of administering R-PAS via a digital app, given that prior research with younger adults found little difference between in-person and remote administration (Ales et al., 2023), but comparable data are lacking for older adults despite their often greater difficulty using technology (Kim et al., 2020; Mariano et al., 2020; Vaportzis et al., 2017). Thus, the present research has the objective of investigating the applicability and particularities of R-PAS within a sample of older Brazilian adults. Specifically, it seeks to investigate (1) cognitive skills associated with the Rorschach response process and how the R-PAS variables relate to cognitive functions in the elderly; (2) what the

Rorschach response process is like in the elderly and whether they present a different response pattern compared to other age groups; and (3) how the administration format impacts the Rorschach response process and whether in-person and remote administrations of the R-PAS produce equivalent results in older adults.

To achieve these aims, this doctoral dissertation is structured into three manuscripts. The first manuscript, entitled “Cognitive Correlates of R-PAS in Healthy Older Adults”, investigates how older adults’ responses on R-PAS relate to their cognitive capacities. The second manuscript, entitled “Examining R-PAS Response Patterns in Older Adults Across Age Groups”, examines whether older adults exhibit a characteristic pattern of responses compared to children, adolescents, and younger adults, thus justifying tailored norms and analyses. The third manuscript, entitled “Does Administration Format Matter? Remote vs. In-Person R-PAS in Older Adults”, evaluates whether remote (app-based) administration produces results equivalent to in-person administration in this population.

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Manuscript 1: Cognitive Correlates of R-PAS in Healthy Older Adults

Abstract

This article investigated the associations between R-PAS variables and the cognitive performance of older adults, considering attention, memory, intelligence, and executive functions. Based on the premise that the Rorschach involves complex perceptual, linguistic, and executive processes, the study examined which R-PAS indexes are most sensitive to cognitive functioning in this age group, given the inconsistent literature on aging effects in the test. For this purpose, the study included 64 healthy older adults, who completed a battery of cognitive tests and the R-PAS. Pearson correlations showed weak to moderate correlations between some R-PAS indicators—particularly Complexity, Determinants, and Form Quality—and measures of executive functions and intelligence, whereas attention and memory demonstrated less expressive associations. Overall, the findings suggest that although the R-PAS captures aspects of cognitive functioning, it does not operate as a direct cognitive test, instead reflecting broader interpretive and perceptual processes. These results help clarify the role of cognitive components in older adults' R-PAS performance and provide guidance for more accurate interpretation of the instrument in this population.

Keywords: R-PAS, Aging, Cognitive Functioning.

Introduction

One of the main characteristics of the Rorschach response process is the individual's perceptual organization of the inkblot image. The task of looking at an inkblot and describing what it resembles involves the person's ability to perceive and distinguish the various elements of the image, as well as their ability to organize a complex visuospatial stimulus, integrating these elements into a meaningful image (Acklin & Wu-Holt, 1996; Meyer et al., 2011). According to Exner (2003), the Rorschach test measures perceptual accuracy and the ability to distinguish relevant from irrelevant details. The test also assesses abstract reasoning and problem-solving ability, as the respondent is asked to provide explanations for what they see in the images, which also requires the use of abstract thought and inferential reasoning. The respondent also has to select and inhibit undesired responses, using inhibitory control abilities. Thus, the Rorschach test can be considered a measure of the participant's cognitive complexity, considering all the nuances involved in assessing cognitive functioning, ranging from personality structure to the situation at the time of the assessment and their capacity for flexible thinking (Meyer et al., 2011; Mento et al., 2020).

The Rorschach test response process—the psychological operations that occur in a person during the test—involves several phases, integrating intelligence, memory , semantic and operations that overlap with the central components of executive functions: attentional selection, maintenance and manipulation of information in working memory, inhibition of irrelevant responses, cognitive flexibility to reinterpret visual patterns, and planning/organization in formulating the response (Anauate, 2021; Gold, 1987; Acklin & Wu-Holt, 1996; Meyer et al., 2011; Pires, 2014; Sánchez & Theoduloz, 2016). Exner et al. (1978) divided the short period that precedes the oral production of response of the individual in three stages, composed of six mental operations. The first stage would be the perception of the inkblot, followed by the identification of elements that may constitute possible responses. Next, potential responses are refined, culminating in the selection and articulation of final responses (Exner, 1978, 2003; Gold, 1987). Thus, skills such as perceptual organization, executive functions, and visuospatial processing are closely related to Rorschach responses, which also provide indicators related to memory retrieval, working memory and attention. Verbal interpretation and translation of perceptual impressions are also crucial, with verbal and conceptual competencies playing a significant role.

Smith et al. (2007) studied the relationship between Rorschach responses and perceptual organization skills using the Rey-Osterrieth Complex Figure (ROCF). They found that accurate shape perception, effort in organizing and integrating the complexity of the inkblot, attention to detail, and establishing relationships between the different elements of the stimulus field are positively correlated with ROCF scores and visuospatial information processing.

In the same direction, other studies (Meyer, 2016; Mihura, 2019; Porcelli et al., 2013; Schneider, 2019) found that the variables that most correlate with cognitive functions, and specially with intelligence, are related to complexity. Perhaps one of the most important variables in the Rorschach Performance Assessment System (R-PAS), considered the first factor and responsible for the largest source of variability in the test, Complexity is associated with engagement, flexibility, and cognitive sophistication (Meyer et al., 2011). It can be obtained from three parameters: the first, LSO, focuses on the areas of the blot used in the responses, such as the use of white space, the relationship between the objects perceived in the response, and their formal demands. The second parameter encompasses the quantity and types of content perceived in each response. Finally, the third parameter encompasses the determinants that contributed to each response. The correlation with cognitive functions can be seen especially with those variables related to location, space, and object qualities (Location, Space, and Object - LSO) and determinants. More specifically, variables related to determinants, such as Human Movement (M), Shape Dimensionality (FD), and View (V), as well as variables related to Spatial Integration (SI) and Synthesis (Sy and W-Sy). Although the variables most strongly associated with cognitive engagement are among those with the most empirical support, Complexity itself has little direct research and appears to act as a moderator of other variables, exhibiting a high correlation with educational level and intelligence (Dean et al., 2007; Meyer et al., 2015; Mihura et al., 2013, 2019; Pires, 2014).

Another important aspect of the Rorschach response process is information retrieval ability, or the respondent's memory. After viewing each inkblot and identifying what it resembles, people are asked to recall and describe what they saw. The participant's ability to recall details and organize them into a coherent narrative can be assessed, as well as their ability to maintain attention and concentration throughout the test. As noted by Blais and Hilsenroth (2018), the Rorschach test can be used to assess working memory, long-term memory, and attention span. Specifically, regarding working memory, Herrera (2021) investigated the correlation of this ability with the Rorschach test, using the Corsi Cubes task. Their findings follow the same path, emphasizing the role of organization and integration of stimulus complexity. Although not explicitly stated, it appears that complex cognitive processes encompass memory, since there is no distinct factor attributed exclusively to memory. In fact, discussing specific skills in isolation is even more complex because most neuropsychological tests assess a broad spectrum of abilities beyond their intended focus. While the Rorschach test undoubtedly involves complex perceptual abilities, it also requires verbal interpretation and the translation of these perceptual impressions through expressive language and verbal reasoning. Specifically, expressing the various aspects of shading, color, and motion perception, along with describing meaningful connections between the elements of the inkblot, relies on skills and a robust verbal and conceptual repertoire (Meyer, 2016; Porcelli & Kleiger, 2015). Interestingly, when examining scores on the Rorschach variables typically associated with cognitive functions, there appears to be a stronger and more consistent association with verbal abilities than with perceptual organization abilities (Mento, 2020; Meyer et al., 2011; Kron et al., 2009). In particular, determinant-based and cognitive synthesis scores show higher correlations with verbal abilities compared to perceptual organization abilities, although the coefficients for perceptual accuracy variables are approximately equal in size. These findings suggest that verbal abilities play a significant role in the interpretation and understanding of the Rorschach test (Meyer, 2016).

In older adults, it is known that both brain structure and function tend to change, with neural networks weakening in late life (Craik & Bialystok, 2006). Research on cognitive aging consistently demonstrates that structural and functional brain changes are associated with declines in several domains, most notably episodic memory, working memory, processing speed and attentional control (Lindenberger, 2014; Verhaeghen & Salthouse, 1997; Salthouse, 2019; Wasylyshyn et al., 2011). However, these declines do not occur uniformly across all abilities. Evidence suggests that while some cognitive functions deteriorate with age, others show remarkable stability, and certain skills may even improve as individuals accumulate experience and knowledge throughout life (Argimon et al., 2014; Cabeza et al., 2018). A prominent distinction can be drawn between fluid and crystallized abilities: fluid processes such as abstract reasoning, short-term memory, and processing speed typically begin to decline in midlife (Rueda & Castro, 2013; Shimitz & Dorneles, 2013), whereas knowledge-based skills tend to remain stable for longer. Nevertheless, even domains that rely on crystallized resources—such as verbal fluency, memory retrieval strategies, and attentional control—may eventually show reductions, particularly when tasks demand greater cognitive flexibility and efficiency (Argimon et al., 2014). Similarly, higher-order functions including planning, problem solving, and abstract reasoning become increasingly vulnerable, reflecting the combined effects of neural decline and reduced processing efficiency (Köstering et al., 2014). Thus, the study of cognitive aging reveals a dynamic pattern in which loss and preservation coexist, focusing the importance of considering both the vulnerabilities and the compensatory capacities that characterize development across the lifespan.

Research on how these changes are expressed in the Rorschach test, however, is inconclusive (Meyer et al., 2011; Meyer et al., 2015). Rorschach (1921) considered that some variables would covary with age, considering changes in the type of experience over the life course—even among adults. In a study of 50 older adults, Klopfer (1946) observed that all participants took longer to respond than younger adults, presented more vague (Vg%) and fewer responses (R↓), with less shading (YTVC'↓), color (C↓), popular responses (P ↓), and human movement (M↓). Later studies, however, failed to replicate some of these findings. Gross et al. (1990), for example, investigated 47 healthy older adults, with one subgroup between the ages of 65 and 70 and the other between the ages of 74 and 87. They examined 16 variables that aligned with expectations for cognitive decline, but found no significant association for age between the two groups and concluded that "age and intellectual level may contribute less to the Rorschach responses than previously thought" (p. 335). Similarly, Pertchik et al. (2007) studied a group of non-patient individuals aged 60 to 80 years and found no significant differences from comparable norms for adults in general, except for a high number of Level 1 Deviant Verbalizations (DV1↑) and Personal Knowledge Justification (PER↑) responses. However, in a 10-year longitudinal study of nursing home residents, Shimonaka and Nakazato (1991) observed the same pattern of responses as Klopfer - a decline in the number of responses, an increase in card rejections, and a decrease in shading, in the number of popular responses, and in the variety of content.

When it comes to cognitively healthy older adults, Amaro et al. (2017) and Arble et al. (2024) also found a more simplistic (Complexity ↓, D% ↑) and distorted view of reality (FQ-%↑, P↓), although without confusion of thought (WSumCog ≈). Using the Zulliger Test, Grazziotin and Scortegagna (2021) had findings in the same direction, as well as a greater difficulty related to abstract reasoning (M↓).

Based on these contradictory findings since when the Rorschach test was first published, this study aims to examine the relationship between cognitive performance and R-PAS variables in older adults, identifying which Rorschach Test variables are most strongly associated with cognitive functioning.

Method

Participants

The study involved 64 participants. Potential participants were recruited through referrals, social media, and organizations focused on older adults, such as senior citizen centers and retiree associations. The inclusion criteria were: 1) having access to a PC or laptop with at least 13” screen, webcam and internet access; 2) not having had serious psychiatric problems (e.g., major depression, psychosis, severe trauma) or been hospitalized in the last 6 months; 3) not having been diagnosed with a pervasive developmental disorder as a child; 4) living independently, without assistance or dependence for daily living; 5) not having lost a close friend or family member in the last four months; and 6) not being illiterate. The exclusion criterion was a score of 15 or lower on the Brazilian Telephone Mini-Mental State Examination (BRAZTEL-MMSE; Camozzato et al., 2011). Table 1 shows descriptive statistics of the sample.

Table 1. Descriptive data of the sample

Variable	M / %	SD
Age	68.10	5.62
Years of education	16.00	3.16
Gender		
Male	20.3%	—
Female	79.7%	—
Ethnicity		

White	59.4%	—
Brown	29.7%	—
Black	4.7%	—
Yellow	3.1%	—
Other	3.1%	—
Marital status		
Married/with partner	45.3%	—
Divorced	25.0%	—
Single	10.9%	—
Widowed	15.6%	—
Other	1.6%	—
Monthly income		
Up to R$ 1,412.00	6.3%	—
R$ 1,412.01–2,824.00	7.8%	—
R$ 2,824.01–7,060.00	18.8%	—
R$ 7,060.01–14,120.00	32.8%	—
Above R$ 14,120.01	9.4%	—

Instruments

For the current study, older adults completed the following instruments: Sociodemographic questionnaire (SQ): an online questionnaire to be completed by the participant with sociodemographic information.

BRAZTEL-MMSE (Camozzato et al., 2011): adaptation of the Mini Mental State Examination, a screening instrument for cognitive impairment proposed by Folstein (1975), to be administered by telephone.

Attention Online (AOL; Lance et al., 2018): an online battery of attention tests that assesses focused, alternating, and divided attention, as well as reaction time and task order.

Recognition Memory Test (TEM-R-2; Rueda et al., 2022): a test to assess the recognition capacity of episodic memory.

Rapid Intelligence Test (TRI; Lima & Lima, 2023): a nonverbal intelligence test that assesses the general intelligence factor (g) through matrix tasks.

Five-Digit Test (FDT; Sedó et al., 2015): a neuropsychological test that assesses cognitive processing speed, the ability to focus and redirect attention, and the ability to cope with interference.

Rorschach Performance Assessment System (R-PAS; Meyer et al., 2011): a test based on a person's typical performance when asked to answer the question "What does this look like?" to ten inkblot cards.

Procedures

The study was publicized in community groups for seniors, as well as on social media. Those interested in voluntarily participating completed a sociodemographic questionnaire (SQ; Appendix A), as well as the Informed Consent Form (ICF; Appendix B). Those who met the inclusion criteria were randomly assigned to one of the research status groups: in-person or remote. Data collection was conducted in two meetings lasting one hour each. In the first session, the MMSE-2, AOL, TEM-R-2, FDT, and TRI were administered, in-person or remotely. If the participant did not meet the proposed cutoff score on the MMSE-2 (<15 points), their data were excluded from the study. If the participant met the proposed cutoff score on the MMSE-2 (≥15), they were invited to participate in the second session, in which the R-PAS was administered. All participants met the proposed cutoff; none was excluded from the study.

Data Analysis

All instruments were corrected according to their manuals, either on the publishers' online platforms or manually. All the R-PAS protocols were coded or supervised by the main researcher of this article, internationally certified in the administration and coding of R-PAS protocols, although some of them (20%) were administered by a trainee with more than 180 hours of training under the supervision of the main researcher.

To ensure reliability of R-PAS score coding, a total of 20 protocols (31%), randomly selected, had their responses independently recoded by a second researcher, also internationally certified in the administration and coding of R-PAS protocols, and a intraclass correlation (ICC) test with a 95% confidence interval was performed to verify inter-rater agreement. Pearson correlations between R-PAS summary scores (pages 1 and 2) and the cognitive tests scores were conducted using the open-access software Jamovi 2.3.28.

Results

Table 2 shows descriptive statistics for this study and the ICC values for each variable. Results are presented in the order used in the interpretive output. The mean ICC was .93 (*SD* = .07), considered excellent per Cicchetti's (1994) classification. In general, the results for the sample were excellent, with 40% of the ICC coefficients exceedingly high at .95 or above.

Table 2. Descriptive Statistics and Interrater Reliabilities for R-PAS Summary Scores on Page 1 and Page 2

Variables	Rater 1				Rater 2				ICC		CI 95%	
	M	SD	Min	Max	M	SD	Min	Max	Est.	Class.	Low	Upp
Page 1												
Administration behaviors and observations												
Pr	0.70	0.92	0	3	0.70	0.92	0	3	1.00	E	-	-
Pu	0.05	0.22	0	1	0.05	0.22	0	1	1.00	E	-	-
CT	2.20	2.75	0	8	2.20	2.75	0	8	1.00	E	-	-
Engagement and cognitive processing												
Complexity	58.90	9.60	43	78	59.00	9.66	42	76	0.97	E	0.94	0.99
R	22.30	2.57	17	29	22.30	2.57	17	29	1.00	E	-	-
F%	48.40	21.80	5	86	48.00	22.00	5	86	0.99	E	0.97	1.00
Blend	2.15	2.37	0	9	2.10	2.36	0	9	0.98	E	0.95	0.99
Sy	5.80	3.35	1	12	5.45	3.17	1	12	0.98	E	0.95	0.99
MC	4.97	2.71	2	13	5.10	2.92	2	13	0.97	E	0.93	0.99
MC-PPD	-3.48	4.35	-14.00	3	-3.20	4.36	-12.50	3.50	0.97	E	0.93	0.99
M	3.05	1.64	1	6	3.05	1.70	1	6	0.96	E	0.91	0.99
M-WSumC	1.90	2.23	-1.50	6.00	1.70	2.40	-2.50	6.00	0.96	E	0.91	0.99
CFC-FC	0.75	1.83	-2	6	0.70	2.20	-3	6	0.81	E	0.44	0.95
Perception and thinking problems												
EII-3	-0.11	1.20	-1.90	2.30	-0.05	1.15	-1.80	2.30	0.96	E	0.91	0.98
TP-Comp	0.73	1.30	-0.90	3.80	0.72	1.19	-0.90	3.80	0.93	E	0.83	0.97
WSumCog	5.45	6.13	0	18	5.05	5.71	0	16	0.84	E	0.66	0.94
SevCog	0.15	0.37	0	1	0.15	0.37	0	1	1.00	E	-	-
FQ-%	12.40	10.80	0	43	12.90	9.81	0	43	0.89	E	0.74	0.95
WD-%	10.80	9.85	0	38	10.60	9.45	0	38	0.93	E	0.82	0.97
FQo%	57.50	10.80	39	77	57.50	12.60	39	80	0.83	E	0.47	0.95
Popular	6.40	1.57	4	10	6.10	1.48	3	10	0.92	E	0.80	0.97
Stress and distress												
YTVC'	3.00	3.09	0	9	2.95	3.12	0	9	0.99	E	0.97	1.00
M	3.05	1.64	1	6	3.05	1.70	1	6	0.96	E	0.91	0.99
Y	1.05	1.61	0	7	1.05	1.73	0	7	0.96	E	0.91	0.97
MOR	1.05	1.57	0	5	1.05	1.67	0	6	0.96	E	0.91	0.99
SC-Comp	3.69	1.03	2.40	5.70	3.67	0.95	2.40	5.70	0.87	E	0.71	0.95
Self and other representation												

ODL%	11.20	8.20	0	32	11.00	8.66	0	32	0.95	E	0.87	0.98
SR	0.40	0.68	0	2	0.35	0.59	0	2	0.94	E	0.85	0.98
MAP-MAH	0.50	1.32	-1	3	0.30	1.59	-2	3	0.91	E	0.78	0.96
PHR-GHR	-1.70	2.52	-6	1	-1.40	2.21	-6	1	0.88	E	0.74	0.95
M-	0.55	0.83	0	3	0.65	0.99	0	3	0.88	E	0.73	0.95
AGC	2.30	1.49	0	5	2.40	1.58	0	5	0.93	E	0.78	0.98
H	2.40	1.31	1	5	2.45	1.33	1	5	0.99	E	0.97	0.99
COP	1.15	1.09	0	4	1.15	1.14	0	4	0.96	E	0.90	0.98
MAH	0.70	0.98	0	4	0.90	1.07	0	4	0.91	E	0.76	0.96
Page 2												
Engagement and cognitive processing												
W%	35.5	15.60	14	59	35.70	15.80	14	59	0.99	E	0.98	1.00
Dd%	2.05	2.01	0	7	2.30	2.08	0	7	0.95	E	0.87	0.98
SI	0.35	0.75	0	3	0.55	0.83	0	3	0.84	E	0.62	0.94
IntCont	1.45	1.50	0	6	1.30	1.56	0	6	0.95	E	0.87	0.98
Vg%	4.75	5.25	0	14	3.80	5.74	0	18	0.83	E	0.62	0.93
V	0.05	0.22	0	1	0.05	0.22	0	1	1.00	E	-	-
FD	0.15	0.37	0	1	0.25	0.55	0	2	0.82	E	0.62	0.94
R8910%	30.90	2.96	25	36	30.90	2.96	25	36	1.00	E	-	-
WSumC	1.93	2.07	0	8	2.05	2.16	0	8	0.96	E	0.91	0.99
C	0.40	0.94	0	4	0.60	1.05	0	4	0.83	E	0.63	0.93
Mp-Ma	-0.30	1.84	-3	2	0.10	1.74	-2	3	0.85	E	0.66	0.94
Perception and thinking problems												
FQu%	26.50	3.72	20	33	28.50	10.20	10	50	0.61	G	0.04	0.88
Stress and distress												
PPD	8.45	5.19	1	19	8.30	5.11	1	18	0.99	E	0.97	1.00
CBlend	0.35	0.93	0	4	0.35	0.93	0	4	0.82	E	0.63	0.93
C’	1.35	1.69	0	5	1.30	1.56	0	5	0.95	E	0.89	0.98
CritCont%	26.90	13.60	0	54	26.20	13.70	0	54	0.99	E	0.96	0.99
Self and other representation												
SumH	4.75	2.43	1	12	4.50	2.31	1	12	0.94	E	0.86	0.98
NPH-H	1.50	1.05	0	3	1.20	0.90	-2	2	0.83	E	0.70	0.96
V-Comp	2.11	0.91	0.60	4.20	2.09	0.87	0.80	4.20	0.91	E	0.79	0.96
r	0.00	0.00	0	0	0.00	0.00	0	0	1.00	E	-	-
p-a	0.10	3.82	-6	5	0.80	2.89	-4	5	0.85	E	0.66	0.94
AGM	0.80	0.77	0	2	0.70	0.73	0	2	0.91	E	0.79	0.96
T	0.55	1.10	0	4	0.55	1.15	0	4	0.97	E	0.94	0.99
PER	0.25	0.44	0	1	0.15	0.49	0	2	0.99	E	0.98	1.00
An	3.05	2.06	0	6	3.00	2.03	0	6	0.99	E	0.99	1.00

Note: ICC = intraclass correlation coefficient; Est. = estimate; Class = classifications; E = Excellent; G = Good; F = Fair; P = Poor; CI95% = 95% confidence interval; Low = lower bound; Upp = upper bound; All ICC were statistically significant ($p < 0.001$).

Table 3 presents the correlations between R-PAS summary scores (pages 1 and 2) and attention, memory, intelligence, and executive functions scores, with the statistically significant correlations indicated.

Table 3. Correlations Between R-PAS Variables and Cognitive Tests Results

R-PAS	Attention												Memory			Intelligence	Executive functioning					
	Concentrated				Divided				Alternating													
	C	Co	O	AP	C	Co	O	AP	C	Co	O	AP	C	E	MP	IP	Read	Coun	Choo	Shif	Inh	Flex
Pr	-.17	.31[a]	-.02	-.14	-.08	.33[a]	-.00	-.10	-.27[a]	.04	.05	-.25	-.12	.02	-.13	-.23	.03	-.09	.07	.20	.04	.21
Pu	-.00	.01	-.02	.01	-.07	-.06	-.02	-.02	.02	.03	-.05	.03	.01	-.07	.03	-.21	-.06	-.19	-.06	-.14	-.02	-.13
CT	.25[a]	.02	-.07	.22	.12	-.11	-.21	.22	.25	.13	-.19	.26[a]	.00	-.16	.05	-.24	.06	-.05	.00	.12	-.04	.11
Complexity	.02	-.10	-.03	.03	.03	-.09	.10	-.04	.06	-.05	.13	.02	.15	.06	.13	.02	-.00	.02	-.06	-.12	-.06	-.14
R	.04	-.18	-.03	.05	-.05	-.08	.03	-.04	.06	.05	.00	.04	.13	-.04	.15	-.03	.03	-.10	-.10	-.19	-.12	-.23
F%	.12	-.00	-.06	.11	.01	.04	-.29[a]	.17	.11	.06	-.15	.12	.03	-.14	.07	.01	-.04	-.27[a]	-.09	-.09	-.06	-.08
Blend	.00	.06	-.03	.01	.06	-.09	.01	.03	.04	-.01	.04	.03	.07	.22	.01	.09	-.08	.14	.07	.02	.14	.05
Sy	.00	.09	-.03	.01	.10	-.08	-.02	.06	.16	-.08	.12	.11	.02	-.08	.05	.11	-.14	.02	.03	-.06	.13	-.02
MC	.17	-.12	-.02	.15	.17	-.19	-.07	.15	.14	-.04	.03	.11	.09	-.07	.11	.14	.02	.01	.08	.00	.06	-.01
MC-PPD	.00	.09	-.02	.00	.01	.09	-.08	.04	-.08	-.25	.05	-.07	.04	-.20	.09	.13	-.22	-.05	-.11	-.01	.05	.06
M	.03	-.01	.10	-.01	.05	-.03	.27[a]	-.13	.09	-.04	.20	.03	.16	-.14	.20	.04	-.12	.01	-.11	-.15	-.02	-.13
M-WSumC	.20	-.11	-.13	.20	.18	-.19	-.18	.22	.09	-.04	.03	.08	.05	-.04	.07	.18	-.04	.04	.04	.00	.07	.02
EII-3	-.16	.13	-.04	-.12	-.15	-.01	-.00	-.08	-.08	-.03	-.10	-.04	.15	.11	.12	-.14	.06	.12	.15	.14	.10	.14
TP-Comp	-.22	.20	-.01	-.18	-.21	.13	-.06	-.10	-.19	-.01	-.04	-.15	.05	.09	.02	-.23	.04	.03	.11	.25	.08	.27[a]
WSumCog	-.04	.18	-.06	-.02	-.07	-.00	.02	-.06	-.03	-.05	-.07	-.01	.03	-.10	.06	.08	-.11	.22	.10	.04	.18	.08
SevCog	-.17	.22	.03	-.15	-.09	.05	.03	-.08	-.22	-.04	.10	-.16	.12	-.13	.16	-0.2	-.14	.21	.08	.05	.19	.11
FQ-%	-.22	.12	.02	-.15	-.20	.09	-.07	-.08	-.15	.11	-.02	-.12	.13	.09	.10	-.26[a]	.10	-.04	.13	.24	.05	.24

R-PAS	Attention												Memory			Intelligence	Executive functioning					
	Concentrated				Divided				Alternating													
	C	Co	O	AP	C	Co	O	AP	C	Co	O	AP	C	E	MP	IP	Read	Coun	Choo	Shif	Inh	Flex
FQo%	.18	-.25	-.02	.16	.18	-.25	.01	.12	.19	-.07	.12	.14	.00	-.08	.02	-.26^{a}	-.15	-.04	-.12	-.32^{a}	-.00	-.30^{a}
Popular	.25	-.19	-.05	.22	.31^{a}	-.25	.13	.13	.33^{a}	.03	.05	.27^{a}	.01	-.13	.05	.27^{a}	-.15	-.04	-.05	-.23	.07	-.20
YTVC’	-.02	-.12	.10	-.04	-.02	-.12	.10	-.04	-.02	.16	.07	-.04	.10	.23	.03	-.01	.14	.23	.13	.02	.03	-.03
IM	.03	-.01	.21	-.11	.03	-.01	.21	-.11	.04	-.05	-.04	.05	.01	.21	-.05	-.04	.14	.22	.13	.10	.02	.06
Y	-.17	-.10	.06	-.10	-.17	-.10	.06	-.10	-.11	.05	.07	-.11	.13	.41^{b}	.02	-.15	.13	.02	.14	.08	.04	.04
MOR	.04	-.08	-.03	.05	.04	-.08	-.03	.04	.09	.03	-.02	.08	.16	.41^{b}	.05	.15	-.06	-.03	.02	-.04	.06	-.02
SC-Comp	.10	-.03	-.10	.13	.10	.00	-.16	.10	.08	.06	-.13	.10	.08	.17	.03	.08	.08	-.13	-.10	.09	-.16	.07
ODL%	.07	.23	-.08	.06	.01	-.07	.01	-.00	.21	-.06	.00	.18	-.20	-.03	-.20	.11	-.03	-.14	-.02	-.04	.01	-.03
SR	.07	-.01	-.03	.07	.15	.01	-.06	.11	.00	.04	.13	-.03	.03	-.13	.06	.00	-.18	-.18	-.11	-.22	.02	-.19
MAP-MAH	-.03	-.17	-.22	.06	-.00	-.13	.11	-.05	.10	.05	-.03	.09	.17	.29^{a}	.09	.17	-.03	-.03	-.01	-.01	.01	-.00
PHR-GHR	-.12	-.03	-.13	-.05	-.06	-.12	.04	-.04	.02	-.15	-.22	.08	.27^{a}	.15	.23	-.22	.15	.03	.11	.00	-.00	-.05
M-	-.10	-.10	-.02	-.06	-.00	-.03	.11	-.06	-.09	-.11	.03	-.08	.15	-.02	.16	-.14	-.05	.02	.06	-.02	.10	-.01
AGC	-.07	-.09	-.05	-.03	-.12	-.09	.08	-.10	.06	.06	-.12	.08	.05	.27^{a}	-.02	-.04	-.03	.03	.20	.10	.22	.12
H	-.06	-.01	.08	-.08	-.05	-.04	.13	-.10	-.07	-.13	.15	-.09	.02	-.20	.08	-.06	-.04	-.04	-.12	-.11	-.09	-.10
COP	.19	-.06	-.14	.20	.06	-.09	.09	-.01	.19	-.09	.06	.15	.06	-.12	.09	.15	.04	.02	-.15	-.10	-.17	-.13
MAH	.20	-.16	-.08	.19	.02	-.03	.07	-.03	.21	-.15	.17	.14	.14	.17	.09	.15	-.00	.01	-.02	-.13	-.01	-.15
W%	.22	.02	.16	.12	.25	-.07	-.06	.19	.15	-.11	.01	.13	-.05	.07	-.07	.19	-.17	.02	.00	.06	.13	.13
Dd%	-.29^{a}	.22	.09	-.26^{a}	-.16	.17	-.12	-.03	-.17	.09	-.10	-.13	.15	.16	.10	-.34^{b}	.24	.08	.26^{a}	.27^{a}	.08	.22

R-PAS	Attention												Memory			Intelligence	Executive functioning					
	Concentrated				Divided				Alternating													
	C	Co	O	AP	C	Co	O	AP	C	Co	O	AP	C	E	MP	IP	Read	Coun	Choo	Shif	Inh	Flex
SI	-.04	-.06	.01	.03	-.01	-.02	-.08	.09	-.07	.03	.08	.01	-.09	.05	-.10	-.07	.05	.09	.03	.08	-.01	.07
IntCont	.11	.04	.04	.08	.05	.06	.06	-.02	.11	-.11	.18	.05	.10	.34[a]	.05	.03	-.15	-.04	.05	.15	.17	.22
Vg%	.03	.22	.33[a]	-.10	.18	.21	.04	.04	.00	.18	.26	-.07	.14	.03	.06	.13	-.22	.13	.26[a]	-.02	.43[c]	.05
V	.13	-.08	-.09	.13	.12	-.03	.11	.02	.06	-.06	-.19	.10	.07	.01	.02	.11	.13	.14	.02	.05	-.08	.00
FD	-.04	.17	.10	-.08	-.00	.10	-.05	.00	-.03	-.06	.08	-.04	.02	.26[a]	.05	.01	.01	.04	-.02	-.16	-.02	-.19
R8910%	-.04	-.15	-.20	.05	-.16	.02	.09	-.15	-.07	.09	-.09	-.04	.12	-.16	-.06	.07	.22	.15	-.09	-.09	-.25	-.18
WSumC	.20	-.11	-.13	.20	.18	-.19	-.18	.22	.09	-.04	.03	.08	-.10	-.03	.11	.06	-.04	.04	.04	.00	.07	.02
C	.15	-.04	-.14	.16	.08	-.13	-.11	.12	-.07	-.08	.19	-.11	.10	-.04	.07	.18	.02	.14	-.05	.03	-.07	.03
Mp-Ma	.09	-.06	.03	.06	-.01	-.09	.21	-.12	.16	-.02	.13	.10	.05	-.20	-.04	.04	-.15	-.17	-.19	-.18	-.07	-.15
FQu%	-.09	.14	-.01	-.08	-.22	.27[a]	.08	-.20	-.14	.05	-.22	-.07	.03	-.00	.03	-.24	.21	-.06	-.10	.08	-.26[a]	.01
PPD	-.16	-.12	-.02	-.11	-.13	-.09	.31[a]	-.24	-.09	.05	.10	-.11	.06	.34[b]	-.04	-.07	.11	.24	.13	.08	.04	.05
CBlend	.15	-.03	-.01	.12	.10	-.13	-.01	.07	.09	.08	.19	.03	.07	.20	.02	.07	-.05	-.03	.15	.09	.18	.12
C’	.01	-.05	-.11	.04	.04	-.06	.03	.01	.01	.21	.13	-.03	-.09	-.03	-.08	-.05	.10	.23	.09	-.02	.02	-.06
CritCont%	.20	.05	-.05	.16	.20	-.08	-.08	.16	.23	-.09	-.11	.23	.18	.36[a]	.08	.16	-.04	-.01	.07	-.03	.10	-.02
SumH	-.08	-.13	-.03	-.04	.03	-.13	.02	.02	.06	-.13	.00	.05	.21	-.14	.25	-.12	-.02	-.04	.03	-.13	.05	-.14
NPH-H	-.05	-.17	-.10	-.00	.08	.14	-.07	.10	.12	-.06	-.10	.13	.25	-.03	.26[a]	-.11	.01	-.03	.16	-.09	.15	-.10
V-Comp	-.07	-.15	.04	-.06	.16	-.13	-.03	.12	.15	-.21	.04	.13	.08	.05	.07	-.07	-.12	-.12	.07	-.14	.16	-.11
r	.04	-.18	-.03	.05	-.05	-.08	.03	-.04	.06	.05	.00	.04	.13	-.04	.15	-.03	.03	-.10	-.10	-.19	-.12	-.23

R-PAS	Attention												Memory			Intelligence	Executive functioning					
	Concentrated				Divided				Alternating													
	C	Co	O	AP	C	Co	O	AP	C	Co	O	AP	C	E	MP	IP	Read	Coun	Choo	Shif	Inh	Flex
p-a	-.09	-.03	-.06	-.04	-.07	-.13	.18	-.12	.08	-.08	-.07	.09	.06	.01	.06	-.04	-.06	-.12	-.10	-.03	-.06	-.02
AGM	.07	.15	.02	.04	.07	.07	.08	-.02	.11	-.10	-.06	.12	.12	.45[c]	.00	.03	-.11	.05	.09	.00	.18	.04
T	.24	-.03	-.15	.24	.09	-.05	.02	.04	.08	.10	.01	.06	.08	-.18	.13	.27[a]	-.07	.16	-.02	-.07	.03	-.06
PER	.05	-.08	.08	.02	-.14	.30[a]	.12	-.20	-.15	-.03	.40[b]	-.23	-.13	-.18	-.08	-.12	.24	.24	-.03	-.02	-.21	-.11
An	.22	-.08	-.04	.19	.15	-.15	-.05	.14	.25	-.10	-.14	.25	.13	.11	.10	.09	.15	-.03	.02	-.00	-.10	-.06

Note. [a] = $p < .05$; [b] = $p < .01$; [c] = $p < .001$; C = correct response (how often you respond to a target); Co = commission errors (incorrect responses to non-targets); O = omission errors (missed targets); E = errors; AP = attention performance score; MP = memory performance; IP = intelligence performance; Read = reading; Coun = counting; Choo = choosing; Shif = shifting; Inh = inhibition; Flex = flexibility.

Regarding attention, it can be observed that Pr, Vg%, FQu%, Dd%, PPD and PER tend to be associated with worse attentional scores. In the opposite direction F%, FQo%, CT, Popular and M are associated with a better attentional performance. Regarding memory processes, Y, AGC, MAP-MAH, Dd%, FD, PPD, CritCont%, AGM and MOR tend to be associated with memory failures, while PHR-GHR tend to be associated with memory performance. Regarding intelligence, Dd%, FQ-% and FQo% tend to be negatively associated with intelligence, while Popular and T are positively associated. Regarding executive functions, TP-Comp tend to be positively associated with cognitive flexibility, but FQo% tend to be negatively associated. FQu% tend to be negatively associated with inhibitory control, but Vg% is positively associated. Dd% is positively associated with the time spent performing tasks related to executive functions.

Discussion

Most correlations between R-PAS variables and cognitive variables show little strength ($r < .3$), however some can be considered moderate ($.3 < r < .5$), according to the limits proposed by Cohen (1992). The weak correlations observed between older adults' performance on timed maximum-performance cognitive tests and R-PAS can be better understood when considering age-related declines in processing speed. A large body of evidence identifies processing speed as one of the most sensitive and consistently affected cognitive domains in aging, influencing tasks that require rapid encoding, integration, and response production (Salthouse, 2000). Maximum-performance tests with time limits are therefore highly susceptible to the effects of cognitive slowing, and reduced performance on these measures often reflects increased processing time rather than diminished cognitive capacity (Finkel et al., 2007).

In contrast, the R-PAS does not impose time limits for response generation. The method does not constrain examinees to respond within fixed periods, allowing older adults to compensate for slowed processing with additional deliberation (Meyer et al., 2011). Moreover, the construct domain assessed by the R-PAS differs from that of timed cognitive tests: instead of relying on rapid information processing, the R-PAS emphasizes perceptual accuracy, meaning-making, representational complexity, and socioemotional reasoning (Mihura et al., 2013). These processes may remain relatively preserved despite reductions in processing speed, contributing to the lower associations observed in this study.

When considering correlations with moderate strength, several hypotheses can be listed. The positive correlation between the number of Pr in the R-PAS and failures on attention tests may reflect difficulties in engaging, sustaining, and regulating attentional resources (Salthouse, 2010; Meyer et al., 2011; Mihura et al., 2013; Unsworth & Robison, 2017).

A plausible explanation for the negative correlation between the percentage of FQo% and inhibitory control performance is that individuals with higher FQo% may rely more heavily on automatic, conventional responses, indicating a dependence on simple perceptual heuristics rather than deliberate processing and reduced engagement of inhibitory mechanisms (Diamond, 2013).

The association between Popular and attention performance may reflect shared mechanisms of selective and efficient perceptual processing, since producing popular responses requires identifying the most salient and widely recognized features of the inkblots, a process supported by effective selective attention and the ability to filter irrelevant information. (Chun et al., 2011; Corbetta & Shulman, 2002).

The association between variables affectively loaded, often negatively, such as IM, MOR, PPD, AGM and CritCont% and memory errors may reflect internal distraction and reduce the cognitive resources available for accurate encoding and retrieval, as well as trigger heightened emotional monitoring, diverting executive resources that support memory processes (Mather & Sutherland, 2011; Unsworth et al., 2012).

A negative association between Dd% and intelligence may indicate reduced capacity to filter irrelevant information and a more fragmented processing style, indicating difficulty in integrating global stimulus features—abilities closely linked to general intelligence and efficient information processing (Hagemann et al., 2023; Fry & Hale, 2000; Schneider et al., 2013; Wang et al., 2022).

The association between IntCont and memory errors may indicate that a more abstract, overly intellectualized interpretive style may rely heavily on higher-order conceptual elaboration at the expense of more accurate encoding of perceptual information. When individuals prioritize analytical or ideational processing over concrete stimulus features, diverting their cognitive resources from effective memory consolidation, increasing the likelihood of distortions or omissions (Repovš & Baddeley, 2006; Postle, 2016). It can also reflect a tendency of construct and reconstruct based on schemas rather than precise sensory input (Schacter et al., 2011).

A positive association between Vg% and both attentional errors and inhibitory control difficulties may reflect the cognitive demands involved in producing vague or indeterminate percepts, often arising when individuals struggle to extract clear, well-defined features from the blot, indicating lapses in sustained attention and reduced efficiency in perceptual discrimination (Forster, 2013; Unsworth & Robison, 2017). Additionally, higher Vg% may signal weakened inhibition of competing or imprecise interpretations, leading the individual to report less conventional or poorly delimited percepts (Friedman & Miyake, 2017).

A positive correlation between PER and attentional errors may indicate that individuals who rely more on idiosyncratic or autobiographical information tend to exhibit lower efficiency in basic attentional control, since the respondent resorts to personalized semantic associations instead of perceptual cues inherent in the inkblot, suggesting weaker stimulus processing and greater intrusion of internally generated material (Forster, 2013; Fry & Hale, 2000).

In contrast to research that found moderate associations between R-PAS markers of sophisticated cognitive processing and other cognitive measures (Charek et al., 2020; Meyer, 2016; Mihura et al., 2013), weak and non-significant correlations were found between these variables in the present study. Possible hypotheses for this include (1) the cognitive tests used elicit different processes than those used in other studies (e.g., most studies use tests that measure both fluid and crystallized intelligence, while the present study uses only fluid intelligence tests); (2) the present study used computerized cognitive tests instead of traditional paper-and-pencil tests, allowing other factors such as the respondent's familiarity with technology to impact their results; and (3) such associations cannot be generalized to older adults population.

Final Considerations

This study sought to examine the associations between older adults' responses on R-PAS and their cognitive competencies—specifically attention, memory, executive functions, and intelligence. While the findings provide preliminary insight into how performance-based personality indicators relate to cognitive functioning in aging, some limitations constrain the interpretation and generalization of the results.

First, the sample was relatively small, highly educated, and composed of individuals with higher socioeconomic status, limiting external validity. Such characteristics reduce the likelihood that these findings reflect the broader and more heterogeneous older adult population. Expanding future samples to include participants with more diverse educational and socioeconomic backgrounds will be essential for improving generalizability.

A second limitation concerns the use of psychological tests administered online. Although the tests have been standardized and validated for this type of application and remote administration is increasingly accepted, levels of computer familiarity vary among older adults and may have negatively impacted performance. These differences may have introduced variance unrelated to psychological functioning, potentially attenuating or distorting observed associations.

Additionally, some of the cognitive instruments used rely on broad age-band norms, which may limit measurement precision in older samples. Age brackets spanning multiple decades may blur nuanced developmental differences, potentially influencing the strength and direction of correlations with R-PAS variables.

In this context, the pattern of associations observed in the study gains importance. Although many correlations were weak, some reached moderate magnitude, suggesting that certain aspects of R-PAS performance—in particular those involving perceptual accuracy, attentional allocation, or integrative processing—share meaningful variance with cognitive competencies. At the same time, the predominance of weak associations, especially between R-PAS variables and timed maximum-performance tests, reinforces the notion that these assessment modalities tap into partly distinct constructs. Whereas cognitive tests often depend heavily on processing speed and time constraints—domains that typically decline with age—the R-PAS may capture motivational, emotional, and organizational features of performance that are less sensitive to speed-based cognitive aging.

Altogether, these limitations and findings underscore the importance of methodological refinements in future research. Larger and more diverse samples, consistent administration formats, and cognitive instruments with narrower and age-specific norms will be necessary to clarify the nature of R-PAS–cognition associations in older adults. Such efforts will strengthen the interpretive validity of performance-based assessment in aging populations and contribute to a more nuanced understanding of personality functioning across the lifespan.

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Manuscript 2: Examining R-PAS Response Patterns in Older Adults Across Age Groups

Abstract

Aging involves biological, cognitive, emotional, and sociocultural transformations that shape psychological functioning and influence performance on assessment instruments. This study examined age-related differences in Rorschach Performance Assessment System (R-PAS) scores across four groups—children, adolescents, adults, and older adults—using a Brazilian non-clinical sample (N = 262). Participants completed standardized R-PAS administrations, and group differences were analyzed using Welch's ANOVAs with Games–Howell post hoc tests and effect-size estimation. The results revealed marked developmental trends and pronounced age-related declines in later life. Older adults produced lower CT scores, reduced Complexity, fewer blending and integrative features (Sy, M, SI), and lower MC-PPD values, reflecting decreased cognitive flexibility, perceptual integration, and coping resources. They also showed elevated distress indicators, including higher SC-Comp and increased anatomical content (An). Perceptual accuracy patterns differed from expectations: adults and older adults displayed fewer vague percepts (lower Vg%) than adolescents, suggesting a more cautious and conventional response style. Taken together, the findings indicate that older adults present a distinct R-PAS profile characterized by reduced elaboration, conservative engagement, lower perceptual integration, and higher implicit stress. This profile likely reflects a combination of normative neurocognitive aging, motivational changes such as emotional selectivity, and socioemotional shifts associated with later life. The study underscores the importance of age-sensitive interpretation in performance-based assessment and focuses the need for culturally informed normative research in older populations.

Keywords: Aging, R-PAS, Older Adults.

Introduction

Aging is a complex and multifactorial process that involves biological, cognitive, emotional and sociocultural transformations. From a psychological standpoint, old age is often characterized by changes and decline in cognitive processes such as attention, memory, task-switching and processing speed, although some functions, such as vocabulary, accumulated knowledge, and certain interpersonal skills, tend to remain stable or even improve through experience (Martin et al., 2015; Park & Reuter-Lorenz, 2009; Verhaeghen & Salthouse, 1997; Wasylyshyn et al., 2011). Sensory disturbances are also common, such as visual acuity decline due to presbyopia, cataracts and age-related macular degeneration, causing fatigue and compromising daily tasks and recognition and progressive hearing loss, making communication more difficult and increasing the risk of social isolation (Gates & Mills, 2005; Owsley, 2011). In addition to cognitive and physical changes, socioemotional transformations can occur as adaptive strategies to cope with losses and transitions, prioritizing emotionally significant goals and high-quality interpersonal relationships, as proposed by socioemotional selectivity theory (Charles & Carstensen, 2010; Sims et al., 2015).

From a cultural perspective, aging is also shaped by social values, family roles and collective representations of old age. In societies that privilege youth and productivity, older adults may experience a reduction in social recognition and a diminished sense of belonging (Gullette, 2004). Conversely, in cultural contexts that associate advanced age with wisdom and community contribution, greater social integration and preserved self-esteem are often observed (Ng et al., 2015). Therefore, understanding the psychological specificities of aging is fundamental for developing more contextualized and ethically sensitive assessment practices that consider the diversity and uniqueness of this life stage.

Such multidimensional changes inevitably impact psychological assessment outcomes, requiring instruments and interpretations sensitive to the cognitive and affective particularities of this age group. In the case of performance-based techniques, such as Rorschach Performance Assessment System (R-PAS), understanding these aspects is essential for accurately interpreting emotional expressiveness, processing style, and coping strategies in older adults (Weiner et al., 2019).

Rorschach performance varies significantly across the life span, reflecting cognitive, emotional, and interpersonal changes at different developmental stages. In children, responses tend to be shorter, more concrete, and less complex, consistent with cognitive immaturity and limited abstraction (Meyer et al., 2011). Adolescents, in contrast, typically produce longer and more flexible protocols, yet their responses often oscillate between mature and immature reasoning, reflecting the transitional nature of this period of development (Weiner, 2003). Adults usually present greater stability, with responses that demonstrate cognitive complexity, perceptual organization, and emotional integration, making this group the central reference point for R-PAS norms (Meyer et al., 2011). Older adults, however, often show shorter protocols, more concrete and conventional responses, and reduced originality, which may be influenced by age-related cognitive changes such as slowing, reduced working memory, and decreased cognitive flexibility, as well as psychosocial aspects (Mento et al., 2020).

Research suggests that older adults' performance on projective techniques may reflect both age-related neurocognitive changes and differences in life experiences and cultural patterns (Grazziotin & Scortegagna, 2021; Weiner et al., 2019). Thus, interpretation must consider sociocultural context and the specificities of aging.

In the Rorschach literature, it is found that older adults generally produce simpler and less integrated protocols, showing lower Complexity, fewer responses, and reductions in integrative features such as M, SI, and Synthesis. Their perceptual accuracy tends to decline, with higher Vg%, lower FQo%, higher FQ-%, and fewer Popular (P) responses, alongside reductions in determinants associated with richer processing—such as color, shading, and dimensionality cues. Thought organization, however, typically remains intact (stable WSumCog) (Amaro et al., 2017; Klopfer, 1946; Meyer et al., 2011; Shimonaka & Nakazato, 1991). Nonetheless, most studies in this area are relatively old and often contradictory, with inconsistent findings across determinants and perceptual variables. Even so, the overall pattern suggests reduced elaboration, more cautious engagement, and diminished abstract reasoning in cognitively healthy older adults.

Empirical evidence specifically on R-PAS variables in older adults is even more scarce, particularly in Latin American samples. Given this scenario, it becomes relevant to investigate how the particularities of aging are manifested in contemporary projective instruments such as R-PAS, which proposes an empirically based system of coding and interpretation. Studies focusing on older adults contribute to refining interpretive norms and understanding potential age-related differences in performance indicators, leading to more precise and culturally appropriate interpretations. Such research addresses a significant gap in literature, expanding knowledge about the psychological functioning of older adults and strengthening the validity of R-PAS use in both clinical and scientific contexts. Thus, the present study aims to compare the performance of older adults on R-PAS with that of children, adolescents, and younger adults. By identifying age-specific patterns and differences, this research seeks to expand the normative basis of the R-PAS and provide empirically grounded guidelines for clinical interpretation in aging populations, identifying a possible pattern specific to healthy aging.

Method

Participants

The sample consisted of 262 non-clinical Brazilian individuals divided into four age groups: 62 children (7 to 10 years old), 74 adolescents (11 to 14), 62 adults (18 to 59) and 64 older adults (60 to 85). Data were drawn from four independent archival databases, each containing R-PAS protocols collected in prior research projects from other researchers, not related to the objective of this study. Inclusion criteria required complete R-PAS administrations and available demographic information (age and gender). Cases with missing data, invalid administrations or incomplete protocols were excluded. Table 1 shows descriptive statistics of the four samples.

Table 1. Age-Stratified Descriptive Statistics and Total Sample Summary

Variables	Children (*n* = 62)		Adolescents (*n* = 74)		Adults (*n* = 62)		60+ (*n* = 64)		Total sample (*n* = 262)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Age	8.52	1.13	12.6	0.97	31.7	12.5	68.1	5.62	29.8	24.5
Years of education	3.34	1.01	6.08	1.06	15.0	3.39	16.0	3.26	10.1	5.95
Variables	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
Male	31	50.0	36	48.6	23	37.1	13	20.3	103	39.3
Female	31	50.0	38	51.4	39	62.9	51	79.7	159	60.7

Instruments

It was used Rorschach Performance Assessment System (R-PAS), developed to address limitations of Exner's Comprehensive System and to ground interpretation on current empirical research and international norms (Meyer et al., 2011; Meyer & Eblin, 2012). Designed from an evidence-based, cross-cultural perspective, R-PAS employs a standardized administration protocol (two to three responses per card) and a consistent coding system that includes both raw and complexity-adjusted scores to reflect performance-based behavioral indicators recorded during test administration (Meyer et al., 2011). Psychometric evaluation has shown good to excellent interrater reliability (Schneider et al., 2022; Viglione et al., 2012). Its normative database is internationally derived, offering greater cultural applicability, and its interpretive framework integrates both quantitative and behavioral data, thereby preserving the richness of the Rorschach as a "personality in action" measure while ensuring standardized administration and modern conceptual and statistical rigor, making it suitable for cross-age comparisons (Meyer & Eblin, 2012).

Procedures

For this research, data were collected from an older adults sample, while data for the other age groups (children, adolescents, and adults) were obtained by aggregating recent datasets provided by Brazilian researchers involved in the psychometric study of the R-PAS. In all groups, R-PAS protocols were applied in a standardized way according to their respective manual. In older adults group, however, the participants were randomly assigned to in-person or remote administration, so a little more than half (53%) were applied remotely. Remote applications were conducted using the R-PAS App, which was recently proposed and is still being validated. Preliminary results indicate equivalence between the two administration methods (Ales et al., 2023). All cases had been originally collected with informed consent, and ethical approval was obtained in the original studies.

Data Analysis

Data were pooled from the four archival sources and harmonized into a single dataset. All protocols were coded or supervised by a researcher internationally certified in the administration and coding of R-PAS protocols. To ensure reliability of R-PAS score coding, inter-rater reliability coefficients were calculated. For older adults' group, the mean Intraclass Correlation Coefficient (ICC) was .93 (*SD* = .07), while the ICC for the adult sample ranged from .80 to .98. The mean ICC for the adolescents sample was .89 (*SD* =.09) and it ranged from .85 to 1.00 for the children group. These values are considered excellent per Cicchetti's (1994) classification.

Descriptive statistics were first calculated for each age group to provide an overview of R-PAS performance. The data analysis was conducted to rigorously examine age-group differences (Child, Adolescent, Adult, 60+) across R-PAS variables. For each variable, a

Welch's Analysis of Variance (ANOVA) was performed, as this method provides robustness against violations of the homogeneity of variance assumption by adjusting degrees of freedom according to the observed variances and sample sizes (Welch, 1951), ensuring more accurate estimation of group differences even when variances are unequal. To quantify the practical significance of the observed effects, effect sizes (η^2) were calculated using the formula $\eta^2 = F \times df_1 / (F \times df_1 + df_2)$, representing the proportion of variance in the dependent variable accounted for by the group factor (Espirito-Santo & Daniel, 2018). Conventional benchmarks were used to interpret effect magnitude, with $\eta^2 \approx 0.01$ indicating small, ≈ 0.06 medium, and ≥ 0.14 large effects. Following significant ANOVAs, Games–Howell post hoc tests were conducted to identify specific group pairs differing significantly, as this test accommodates both unequal variances and unequal sample sizes, conditions present in the dataset. Reporting both F-statistics with significance levels and effect sizes allows for an integrated evaluation of statistical and practical relevance, aligning with current best practices in psychological research that emphasize effect size interpretation alongside p-values (Espirito-Santo & Daniel, 2018; Welch, 1951). All statistical analyses were conducted using the open-access software Jamovi 2.3.28.

Results

Overall, older adults showed a different pattern of responses compared to other age groups. Table 2 shows descriptive and inferential statistics of the four samples, with reference to the R-PAS scores on pages 1 and 2 of the protocol level, with Page 1 variables having a

more substantial empirical and response process foundation than Page 2 variables (Meyer et al., 2011). The most relevant variables comparisons to older adults profile can be seen in figure 1. Regarding administration behaviors and observations, CT exhibits an inverted "U"-shaped pattern, increasing with age from children to adolescents, remaining practically stable from adolescents to adults, but decreasing in the case of older adults. Regarding engagement and cognitive processing, MC-PPD shows increasing values from childhood to adolescence, but then decreasing values from adolescence to adulthood, and even more so from adulthood to older adults. SI values show little variation between childhood, adolescence, and adulthood, but drop drastically in older adults. Vg% values rise from children to adolescents, but declined sharply in adults and even more in older adults, indicating fewer vague percepts in late life. Regarding stress and distress, SC-Comp values presents a relatively stable and low pattern, then increases substantially from adults to older adults. PPD values exhibit an increasing trend throughout the life cycle. Regarding self and others representation, V-Comp exhibits an inverted "U"-shaped pattern, increasing with age from children to adolescents, remaining practically stable from adolescents to adults, but decreasing in the case of older adults. An scores increased steadily across age groups, reaching their highest levels in older adult group. Taken together, the figure focuses a profile characterized by reduced complexity and perceptual integration, accompanied by elevated distress indices in older adult group.

Table 2. Descriptive Statistics and Analysis of Variance (ANOVA) of Rorschach Scores Across Age Groups

Variables	Children (C) (*n* = 62)		Adolescents (T) (*n* = 74)		Adults (A) (*n* = 62)		60+ (E) (*n* = 60)		ANOVA	Effect size	Post-hoc					
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F (df1,df2)*	η^2	CT	CA	CE	TA	TE	AE
Page 1																
Administration behaviors and observations																
Pr	0.71	1.29	0.64	0.82	0.39	0.61	1.03	1.22	5.25 (3,136)**	.103						X
Pu	0.29	0.95	0.37	0.82	0.34	0.68	0.41	1.27	0.13 (3,139)	.003						
CT	5.26	4.81	7.04	5.65	6.84	6.29	2.95	4.09	10.30 (3,141)***	.180			X		X	X
Engagement and cognitive processing																
Complexity	49.70	15.90	58.00	14.90	72.80	15.20	63.10	16.30	23.60 (3,142)***	.333	X	X	X	X		X
R	24.00	3.80	24.73	3.96	24.27	3.51	23.88	4.50	0.60 (3,142)	.013						
F%	71.71	15.04	60.08	15.58	47.71	17.68	49.97	17.70	28.56 (3,141)***	.378	X	X	X	X	X	
Blend	1.23	1.50	1.35	1.79	4.02	1.69	2.03	2.26	37.45 (3,141)***	.443		X		X		X
Sy	2.79	2.56	4.47	3.11	6.65	2.85	3.95	2.60	20.93 (3,143)***	.306	X	X	X	X		X
MC	3.00	2.18	4.70	2.81	6.88	2.91	4.90	3.07	35.48 (3,136)***	.439	X	X	X	X	X	X
MC-PPD	-1.27	3.26	-0.62	3.43	-1.52	4.92	-3.30	4.30	6.85 (3,133)***	.133			X		X	X
M	1.21	1.51	2.99	2.29	4.24	2.60	2.60	1.58	26.17 (3,140) ***	.359	X	X	X	X		X
M-WSumC	-0.58	2.29	1.27	2.74	1.60	2.97	0.30	2.50	16.08 (3,136)***	.262	X	X	X		X	X
Perception and thinking problems																
EII-3	0.96	1.09	0.19	1.03	-0.15	0.76	-0.22	1.19	14.74(3, 136)***	.246	X	X				
TP-Comp	2.79	1.32	1.20	1.08	0.43	0.58	0.53	1.34	61.33(3, 129)***	.587	X	X		X	X	X
WSumCog	9.13	7.98	8.23	12.34	6.08	4.26	2.60	3.93	2.70(3, 136)*	.056		X				
SevCog	0.39	0.80	0.42	1.32	0.29	0.46	0.10	0.30	0.37(3, 136)	.008						
FQ-%	33.57	12.52	17.41	9.21	9.04	5.34	13.22	10.78	71.13(3, 136)***	.611	X	X	X	X		X
FQo%	35.48	9.97	47.30	12.35	58.97	8.92	56.19	14.11	69.12(3 , 142)***	.594	X	X	X	X	X	
Popular	2.97	1.56	4.00	1.76	5.05	1.32	5.41	1.98	28.79(3, 142)***	.378	X	X	X	X	X	
Stress and distress																
YTVC’	1.84	1.66	1.92	1.93	3.32	2.77	3.90	3.07	7.10(2, 123)**	.103		X		X		
IM	0.66	0.97	1.01	1.07	1.74	1.53	1.67	1.90	7.38(3, 139)***	.137		X		X		X
Y	0.71	1.00	0.80	0.95	1.15	1.68	1.67	1.90	4.94(3, 135)**	.099			X		X	
MOR	0.73	1.16	1.07	1.26	1.00	1.19	0.95	1.36	1.00(3, 142)	.021						
SC-Comp	4.60	1.17	4.08	0.93	4.24	1.07	5.59	0.92	10.10 (3, 138)***	.132			X	X	X	X
Self and other representation																
ODL%	9.84	8.98	5.92	6.39	7.44	7.71	7.10	5.46	3.19 (3, 139)*	.065	X					
SR	0.29	0.61	0.37	0.65	0.76	0.94	0.40	0.49	4.23 (3, 138)**	.084		X		X		
MAP-MAH	0.11	0.79	0.09	1.39	0.18	0.90	-0.40	1.21	2.24 (3, 142)	.045						

Variables	Children (C) (*n* = 62)		Adolescents (T) (*n* = 74)		Adults (A) (*n* = 62)		60+ (E) (*n* = 60)		ANOVA	Effect size	Post-hoc					
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F (df1,df2)*	η²	CT	CA	CE	TA	TE	AE
PHR-GHR	0.74	3.27	-0.55	2.66	-0.88	3.03	-1.60	2.31	6.23 (3, 140)***	.117		X	X			
M-	0.40	0.84	0.55	0.83	0.19	0.40	0.80	1.18	4.62 (3, 135)**	.093				X		
AGC	2.95	2.25	2.62	1.94	2.86	1.48	2.60	1.58	2.32 (3, 141)	.047						
H	1.63	2.02	2.73	2.06	3.29	1.49	2.60	1.29	9.07 (3, 142)***	.161	X	X	X			
COP	0.23	0.53	0.97	1.21	1.11	1.04	1.20	1.18	23.09 (3, 133)***	.342	X	X	X			
MAH	0.19	0.44	0.35	0.69	0.26	0.51	1.00	1.19	4.03 (3, 139)**	.080			X			X
Page 2																
Engagement and cognitive processing																
W%	29.13	22.01	28.36	17.28	45.74	8.31	38.00	17.35	28.10 (3, 133)***	.388		X		X		X
Dd%	25.29	13.51	16.28	9.11	12.76	8.95	11.70	9.49	16.99 (3, 140)***	.267	X	X	X		X	
SI	2.35	2.08	1.96	1.48	2.11	1.78	0.60	0.92	20.77 (3, 135)***	.315			X		X	X
IntCont	0.48	1.17	0.68	1.40	1.40	1.82	1.10	1.77	4.52 (3, 136)**	.091		X				
Vg%	1.95	3.80	2.16	3.02	1.63	2.80	1.30	3.93	3.71 (3, 138)*	.075			X		X	X
V	0.08	0.33	0.23	0.54	0.81	1.19	0.30	0.75	8.90 (3, 133)***	.168		X		X		X
FD	0.44	0.86	0.66	0.96	0.89	1.19	0.30	0.65	5.38 (3, 136)**	.106					X	X
R8910%	7.45	1.36	7.65	1.54	7.42	1.36	7.30	0.79	0.42 (3, 141)	.009						
WSumC	1.79	1.66	1.72	1.57	2.64	1.37	2.30	2.31	12.60 (3, 136)***	.217		X	X	X	X	X
C	0.31	0.72	0.35	0.67	0.12	0.32	0.90	1.23	6.05 (3, 132)***	.121				X		X
Mp-Ma	-0.23	1.38	0.41	2.22	-0.44	1.55	-1.8	1.68	2.45 (3, 142)	.049						
Perception and thinking problems																
FQu%	29.21	11.03	34.14	9.41	31.56	8.37	30.10	9.24	4.12 (3, 141)**	.081	X				X	
Stress and distress																
PPD	4.27	3.08	5.32	3.13	7.89	4.54	8.20	5.91	17.60 (3, 139)***	.276		X	X	X	X	
CBlend	0.11	0.32	0.11	0.35	0.44	0.86	0.50	1.21	4.05 (3, 133)**	.084		X		X		
C’	0.89	1.27	0.74	1.10	1.11	1.23	1.30	1.35	3.41 (3, 140)*	.068					X	
CritCont%	8.23	8.88	12.85	9.73	17.16	8.69	28.80	12.13	14.66 (3, 141)***	.238	X	X	X	X	X	
Self and other representation																
SumH	4.69	3.51	5.85	2.99	6.27	2.42	4.20	1.48	3.47 (3, 141)*	.069		X				
NPH-H	1.44	3.67	0.39	2.47	-0.08	2.30	-1.00	1.69	2.76 (3, 140)*	.056		X				
V-Comp	2.56	1.53	2.95	1.02	2.95	1.30	2.21	0.80	71.39 (3, 131)***	.620			X		X	X
r	0.08	0.33	0.43	0.70	0.50	0.94	0.10	0.30	8.32 (3, 130)***	.161	X	X				
p-a	-0.68	2.46	0.38	3.56	-0.11	2.30	-3.70	3.22	3.10 (3, 142)*	.061					X	
AGM	0.21	0.52	0.31	0.64	0.77	1.31	0.40	0.49	4.60 (3, 136)**	.092		X				
T	0.16	0.37	0.15	0.43	0.26	0.63	0.10	0.30	2.58 (3, 135)	.054						
PER	0.65	1.37	0.81	1.83	075	1.21	0.10	0.30	0.40 (3, 143)	.008						

Variables	Children (C) (*n* = 62)		Adolescents (T) (*n* = 74)		Adults (A) (*n* = 62)		60+ (E) (*n* = 60)		ANOVA	Effect size	Post-hoc					
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F (df1,df2)*	η^2	CT	CA	CE	TA	TE	AE
An	0.40	0.69	1.18	1.26	1.68	1.23	3.90	1.59	30.43 (3, 135)***	.404	X	X	X		X	

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. X indicates pairs of groups that differed significantly in the post hoc Games–Howell test; C = Child, T = Adolescent, A = Adult, E = 60+; CT = Child vs. Adolescent; CA = Child vs. Adult; CE = Child vs. 60+; TA = Adolescent vs. Adult; TE = Adolescent vs. 60+; AE = Adult vs. 60+.

Figure 1. Age-Group Comparisons on Rorschach Variables Most Relevant to Older Adults Profile

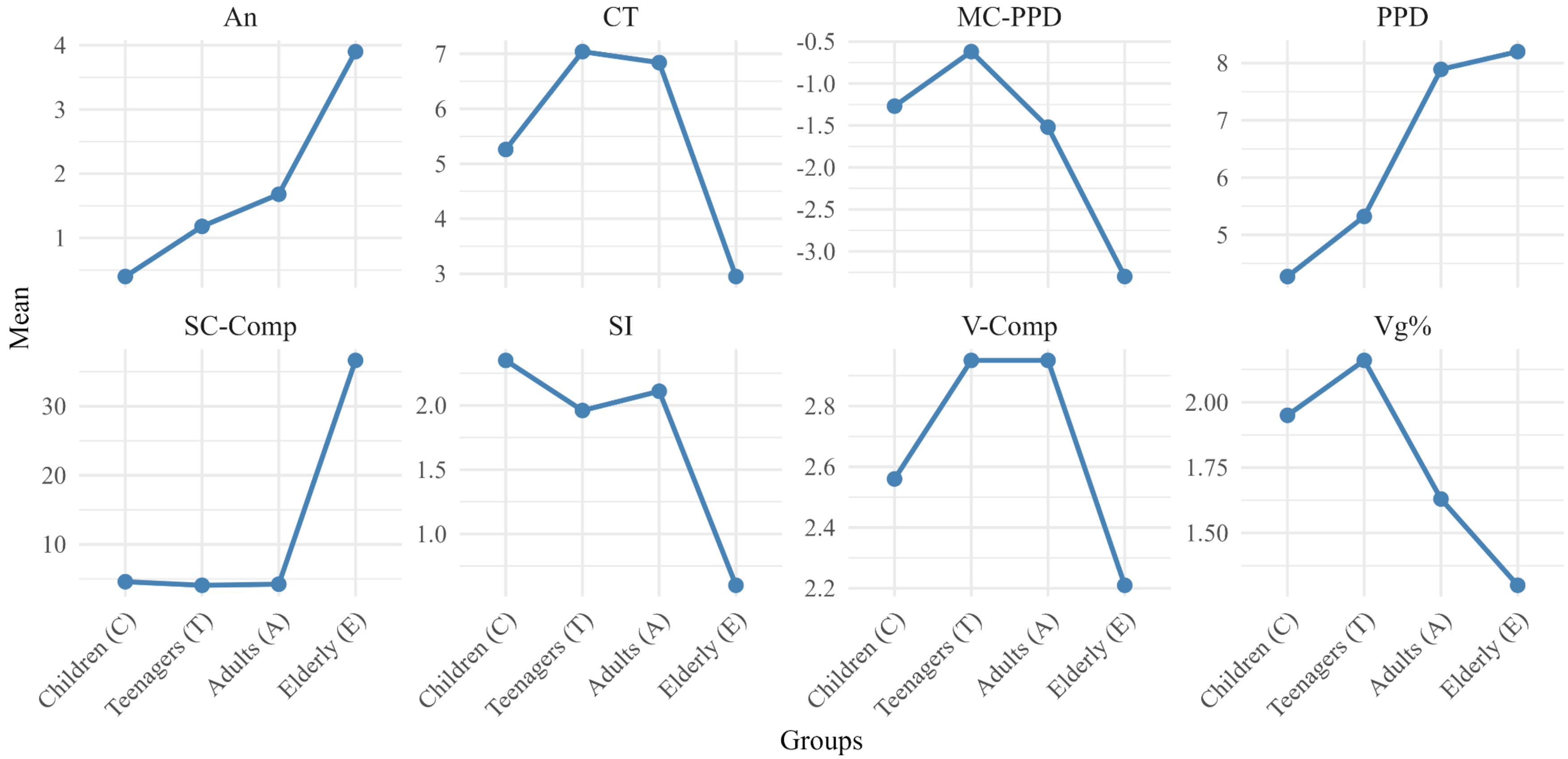
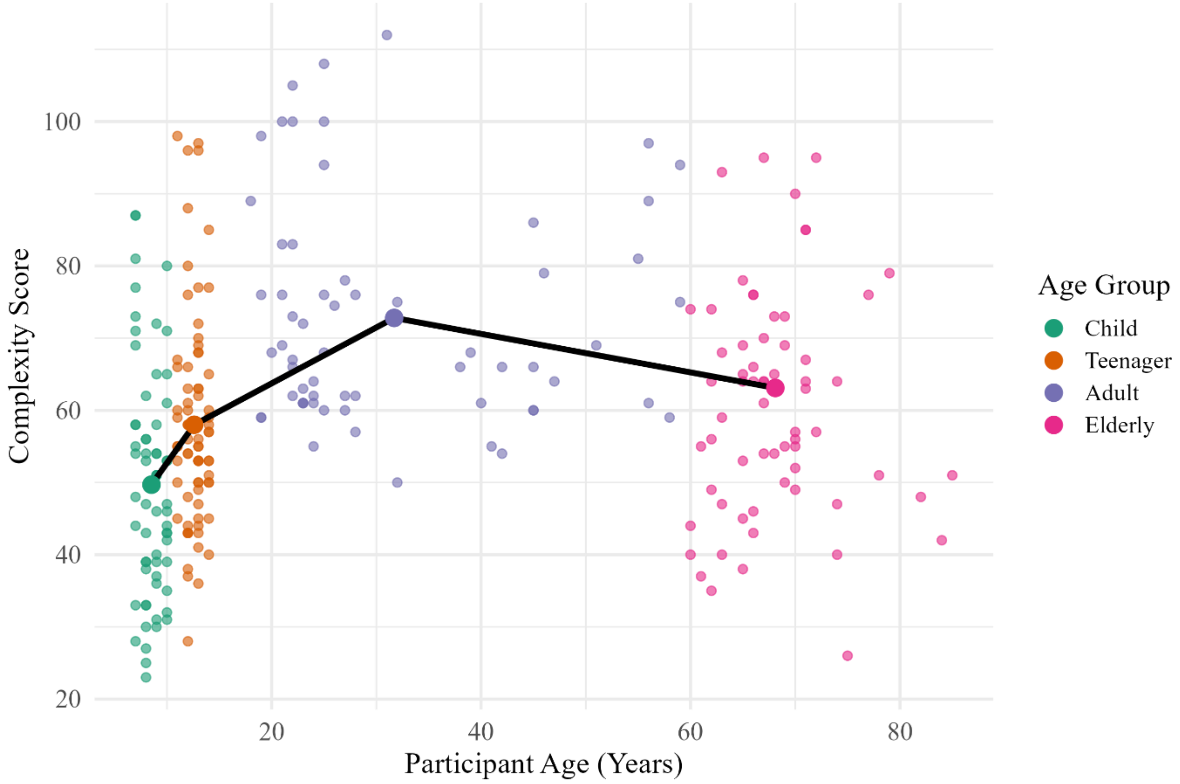


Figure 2 illustrates a clear age-related pattern in Complexity. Values increase progressively from childhood (between 30-70) to adolescence (between 50-80) and reach their highest range in adulthood (between 55-85). In contrast, a marked decline is observed in older adults, whose scores cluster at substantially lower levels (between 40-70) compared to younger adults.

Figure 2. Complexity Across the Lifespan: Individual Scores and Group Means



Discussion

The comparison with children, adolescents, and adults reveals a set of differences, especially in the domains of engagement, complexity, perceptual integration, and indices of implicit stress. Regarding administration behaviors and observations, the reduction in CT may reflect cognitive and motivational changes associated with aging. CT is understood as an indicator of exploratory behavior, situational flexibility, and active responsiveness to stimuli (Mihura et al., 2013). Older adults tend to exhibit lower motor impulsivity, reduced psychomotor speed, and greater caution when faced with new tasks, which may decrease the likelihood of engaging in unsolicited actions, such as turning the card (Salthouse, 2019). Furthermore, socio-emotional theories suggest that older adults prioritize emotional stability and low-risk behaviors, avoiding potentially impulsive or unconventional responses (Carstensen et al., 2020). The combination of slower processing speed, greater deliberate behavioral control, and more conservative coping styles may, therefore, contribute to lower CT levels in this age group.

In the domain of engagement and cognitive processing, the most robust differences appeared in Complexity and MC-PPD, whose patterns reinforce the idea that healthy aging involves both structural changes in cognitive capacity and motivational and emotional changes. Complexity showed a classic developmental pattern: progressive increase up to adulthood and a marked decline in older adults. Considering that Complexity integrates elements of ideation, symbolic elaboration, cognitive flexibility, and perceptual breadth (Meyer et al., 2011), the reduction observed in older adults is consistent with evidence of declines in processing speed, working memory, and cognitive flexibility across later life (Salthouse, 2019; Spreng & Turner, 2019). However, the R-PAS literature warns that low Complexity should not be interpreted exclusively as cognitive decline: it may also reflect emotional factors, depressive withdrawal, fear of making mistakes, defensiveness, insecurity, or a fragile assessment alliance (Ales et al., 2020; Pianowski et al., 2019). Thus, the reduction in Complexity in older adults observed here likely reflects a combination of factors: neurocognitive changes inherent to aging, motivational styles that differ from those of younger individuals, and possibly greater caution or selectivity when engaging with the task.

Among the perceptual integration variables, SI showed one of the clearest effects, with an abrupt decline in older adults. Because SI demands the ability to differentiate, organize, and spatially synthesize blot elements, its reduction reinforces the understanding that aging particularly affects processes of visuospatial integration and higher-cost cognitive operations (Meyer et al., 2011; Pianowski et al., 2019). The stability of SI up to adulthood, followed by a sharp decline only in later life, is consistent with models that describe the relative preservation of basic perceptual abilities but vulnerability of abilities that require more integrated and flexible operations (Mento et al., 2020; Salthouse, 2019).

Vg% showed a significant decrease in adults and older adults, suggesting that these groups tend to produce fewer vague, impressionistic percepts than adolescents. This result is particularly interesting because it contradicts the expectation that aging would increase vague responses due to cognitive deficit. The pattern found here suggests that older adults, rather than offering imprecise responses, tend to give more conventional and restricted answers, possibly due to adopting a more cautious, conservative, or defensive stance toward the task (Meyer et al., 2011; Mihura et al., 2013**;** Spreng & Turner, 2019) —an interpretation that aligns with the decline in CT and the reduction in Complexity, forming a coherent interpretive pattern.

The reduction in MC-PPD among older adults may reflect a growing imbalance between available coping resources based on human movement and chromatic color - signs of vitality, emotional responsiveness, and ideational elaboration (MC) - and the increasing presence of potentially problematic determinants (PPD), suggesting that older adults may show a more economical or reduced style in mobilizing psychological resources, while still registering environmental nuances that can generate tension or discomfort, indicating greater distress and reduced coping capacity (Meyer et al., 2011; Reis et al., 2023). In older adults, this pattern can be explained by evidence that aging is associated with reductions in cognitive flexibility, processing speed, and regulatory efficiency, which may limit the mobilization of more complex ideational resources (Hartshorne & Germine, 2015; Salthouse, 2019). Furthermore, psychosocial factors characteristic of old age—such as greater exposure to losses, functional decline, and increased vulnerability to negative affective states—can amplify indicators of PPD, decreasing the positive balance of the equation (Mihura et al., 2013).

Regarding stress and distress, SC-Comp was the most markedly elevated variable in older adults. It is important to focus that this index does not reflect conscious discomfort, but rather implicit emotional processes related to the symbolic load of the stimulus, sensitivity to shading, and the greater presence of critical contents. The increase in SC-Comp in later life can be understood in light of processes associated with accumulated emotional sensitivity, greater focus on bodily fragility, experiences of loss and functional limitation, and reduced perceived coping resources (Conwell & Van Orden, 2011; De Leo & Giannotti, 2021; Fässberg et al., 2016). Higher scores on the SC-Comp and the risk of suicide and self-destructive behavior are consistent with a higher suicide rate among older adults, both in Brazil and worldwide (Bertolucio et al., 2025; Bonadiman et al., 2022; Cho et al., 2025; Santos et al, 2021).

The decline in V-Comp among older adults can be interpreted in light of age-related changes in attentional capacity, processing speed, and visual scanning efficiency (Berardi et al., 2001; Salthouse, 2019; McAvinue et al., 2012), reflecting less meticulous environmental monitoring. Furthermore, this decrease can be interpreted as reduced caution and sensitivity to signs of danger, as well as less precaution and interpersonal detachment (Carstensen et al., 2020; Meyer et al., 2011; Mihura et al., 2013). However, no group reached levels considered clinically elevated. This is consistent with models that describe aging as associated with a reduction in cognitive strategies of constant environmental monitoring and a greater orientation of attention toward emotionally meaningful information, as proposed by socioemotional selectivity theory (Cartensen, 1995).

Finally, the elevation of An responses in older adults is associated with SC-Comp and shows that aging is associated with increased salience of themes related to bodily integrity, health, and vulnerability (Mihura et al., 2013). As individuals age, normative changes such as physiological decline, heightened awareness of somatic functioning, and increased exposure to illness may make anatomical or body-related stimuli more cognitively accessible during ambiguous tasks like the R-PAS (Charles & Carstensen, 2010). Moreover, research suggests that older adults tend to show greater interoceptive monitoring and health-related attentional biases, which may amplify the likelihood of perceiving internal bodily structures in ambiguous figures (Charles & Piazza, 2009). From a broader perspective, age-related adjustments in motivational priorities and emotional processing—particularly greater focus on physical well-being and mortality-related cues—may also contribute to the increased production of An responses in this population (Carstensen et al., 2020). Thus, elevated An among older adults likely reflects a combination of cognitive, emotional, and experiential factors tied to the aging process.

Taken together, what this study shows, based on the investigated sample, is that older adult group presents lower engagement, lower cognitive complexity, lower perceptual integration, greater implicit stress load, and a more restrictive, conservative, and less elaborated processing style. This profile is compatible both with neurocognitive changes inherent to aging and with motivational and affective transformations that characterize later life, including caution, emotional selectivity, and withdrawal in evaluative situations.

Overall, these findings broaden our understanding of psychological functioning in old age by demonstrating that older adults' performance on performance-based measures such as the R-PAS does not reflect only cognitive changes, but also affective, motivational, and relational processes characteristic of this stage of the life span. The profile identified in this study—marked by lower elaboration, greater caution, reduced perceptual integration, and greater presence of implicit indicators of vulnerability—provides important input for clinical interpretation and for the development of specific norms and guidelines for older adult population.

Final Considerations

This study offers initial evidence of systematic age-related differences in R-PAS performance, yet some limitations temper the conclusions. First, the age groups were drawn from independent studies conducted under potentially heterogeneous conditions, which may have introduced subtle variability despite standardized administration procedures. Second, the groups differed in years of education—particularly between younger and older participants—raising the possibility that some effects attributed to age may instead reflect educational influences on variables such as Complexity, Form Quality, and perceptual integration. Additionally, about half of older adults were assessed remotely, unlike the other groups, and this mixed administration format may have affected engagement-related indicators such as CT. Sample sizes, though adequate for ANOVA, were modest for more advanced analyses, limiting inferences about within-group variability. Finally, some findings relied on Page 2 variables (e.g., Vg%, SI, V-Comp), which have comparatively less empirical support and should be interpreted cautiously.

Clinically, the results emphasize the need for age-sensitive interpretation. The observed reductions in Complexity, SI, and CT suggest that older adults exhibit a distinct normative response style that should not be pathologized or compared directly to younger groups. Their conservative, less integrative performance may reflect normative aging, motivational changes, or defensive caution rather than psychopathology. Low Complexity, in particular, may arise from cognitive slowing, emotional inhibition, insecurity, or a fragile assessment alliance. Elevated SC-Comp in older adults also focuses the value of implicit stress indicators that can complement potentially muted self-report measures.

Scientifically, the study contributes to growing evidence that aging is associated with a specific R-PAS response profile and underscores the importance of developing age-adjusted interpretive guidelines. Future research should employ longitudinal and experimental designs to clarify causal pathways and directly compare administration formats. The inclusion of a Brazilian sample further expands the cross-cultural foundation of the R-PAS and reinforces the need for culturally diverse research in performance-based assessment.

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Manuscript 3: Does Administration Format Matter? Remote vs. In-Person R-PAS in Older Adults

Abstract

This study investigated the equivalence between remote and in-person administration of the Rorschach Performance Assessment System (R-PAS) in cognitively healthy older adults. Sixty-four participants aged 60 to 85 were randomly assigned to each format and assessed using standardized R-PAS procedures, including calibrated digital stimulus presentation for remote testing. Interrater reliability was excellent (mean ICC = .93). Comparisons using Welch's t-tests and Hedges' g revealed no statistically significant differences between formats on any R-PAS variable across Pages 1 and 2, with consistently small effect sizes. Participants in both conditions also reported minimal difficulty and high comfort, supporting the acceptability of the procedures. Overall, the findings indicate that remote R-PAS administration can produce results comparable to traditional in-person testing when appropriate technological and procedural standards are maintained. These results offer important evidence for the feasibility and methodological soundness of remote performance-based assessment in aging populations.

Keywords: Remote Psychological Assessment, R-PAS, Older Adults.

Introduction

To facilitate research, clinical care, and psychological assessments, remote tools have become increasingly used and studied, particularly since the COVID-19 pandemic, which imposed extensive restrictions on in-person activities and accelerated the adoption of telepsychology and teleneuropsychology (Brearly et al., 2017; Collins et al., 2022; Wadsworth et al., 2018; Wright, 2020). This global shift prompted both professionals and researchers to explore the feasibility, validity, and ethical implications of administering psychological tests through online platforms. In a comprehensive literature review, Marra et al. (2020) observed that in-person and remote assessments involving interviews, cognitive screeners, language tests, attention/working memory tasks, and memory tests generally exhibit comparable reliability and validity, suggesting that remote assessment can be a practical and scientifically sound alternative when properly standardized. Wright (2020) also found results in the same direction in a study of equivalence between in-person and remote maximum performance testing, advocating that many standardized instruments can yield comparable results across in-person and remote settings when protocols are adapted and technological conditions are adequately controlled In older adult samples, a growing body of research affirms the promise of remote testing as well (Castanho et al., 2017; Hunter et al., 2021; Latham et al., 2025; Sachs et al., 2024; Sperling et al., 2025; Zeghari et al., 2022).

Additionally, remote methods may democratize access to psychological and neuropsychological services by reducing geographic and financial barriers, particularly benefiting populations with mobility difficulties, individuals living in remote or rural regions, and older adults with limited access to specialized professionals. With regard to self-report measures and cognitive performance tasks, several studies have found high levels of satisfaction among older adults when participating in remote assessments, indicating that this population can adapt well to digital formats when provided with adequate support and clear instructions

(Castanho et al., 2017; Parikh et al., 2013; Wadsworth et al., 2018). However, it remains essential to ensure that the implementation of these new technologies does not inadvertently create barriers to access or compromise data quality. Issues related to internet connectivity, screen size, environmental distractions, and privacy protection must be carefully managed to preserve the validity, confidentiality, and ethical standards of psychological evaluation (Wagnild et al., 2006; Muniz et al., 2022).

Nonetheless, equivalence cannot be assumed for all tools. For instance, a particularly complex issue arises when considering the remote administration of projective methods, that depend on nonverbal cues, physical materials, or examiner-examinee interaction, -such as Rorschach Performance Assessment System (R-PAS). For in-person and remote application formats to be considered equivalent, it is crucial to ensure that variability in performance is not due to environmental and technological differences, such as stimulus size and color (Ales et al., 2023; Giromini et al., 2020; Meyer et al., 2020; Wright et al., 2020).

In this context, an application was developed for remote administration of R-PAS, yielding positive preliminary results regarding feasibility and reliability (Ales et al., 2023). In this new format, the examiner continues to guide the respondent through the response and clarification phases, but the ten cards are presented digitally on the respondent's screen, allowing them to rotate them and make mouse movements using the screen-sharing feature in a video call. The respondent is also asked to share their video so the examiner can monitor their gaze and other behaviors. To ensure that the respondent is viewing the stimuli at the appropriate size, a screen calibration process should be performed before the test begin using a credit card or A4 paper. It was found by Ales et al. (2023) that the R-PAS does not present drastic changes between the in-person and remote application, and that the Complexity Variable, one of which talks about the level of engagement and cognitive processing (Meyer et al., 2011), presented equivalent average values when compared to the normative reference values generated by the standard in-person application. Despite these promising preliminary findings, the evidence remains limited and further research about this equivalence should be addressed. The research was conducted during the COVID-19 pandemic, so it was not possible to conduct a design that directly compared the two administration formats, either by test-retest or random assignment to one of the two administration formats, but rather the values found through remote administration were compared to those already available in the normative in-person sample. Furthermore, it was used a convenience sample of 60 Italian undergraduate students, requiring additional research to verify whether such equivalence extends to specific groups, such as older adults, who may differ in cognitive processing speed, visual acuity, and digital literacy compared to younger participants. These factors may influence both the testing experience and performance outcomes, potentially moderating the comparability between online and in-person administrations.

Taken together, these considerations focus the urgent need for empirical studies comparing remote and in-person performance among older adults in complex assessment instruments such as the R-PAS. This article aims to fill these methodological gaps by evaluating whether there is equivalence between the in-person and remote application of the R-PAS in older adults and contributing to the ongoing development of best practices for digital psychological assessment.

Method

Participants

The study involved 64 participants. Potential participants were recruited through referrals, social media, and organizations focused on older adults. The inclusion criteria were: 1) being 60 to 85 years old; 2) having access to a PC or laptop with at least 13” screen, webcam and internet access; 3) not having had serious psychiatric problems (e.g., major depression, psychosis, severe trauma) or been hospitalized in the last 6 months; 4) not having been diagnosed with a pervasive developmental disorder as a child; 5) living independently, without assistance or dependence for daily living; 6) not having lost a close friend or family member in the last four months; and 7) not being illiterate.

Instruments

Sociodemographic questionnaire (SQ): an online questionnaire to be completed by the participant with sociodemographic information.

Rorschach Performance Assessment System (R-PAS; Meyer et al., 2011): a test based on a person's typical performance when asked to answer the question "What does this look like?" to ten inkblot cards, in both remote and in-person format. While in the in-person format it was used physical Rorschach cards and the responses were recorded in digital format, in the remote format it was used the R-PAS App (Ales et al., 2023). In this format, all participants used their own equipment (PC or laptop with a screen of at least 13", webcam and internet access).

Reaction questionnaire (RQ): brief online questionnaire developed by the researcher about the respondent's perception of the test performed, with five multiple-choice questions and one open-ended question allowing for additional comments.

Procedures

The research was publicized in community groups for seniors, as well as on social media. Those interested in voluntarily participating completed a sociodemographic questionnaire (SQ; Appendix A), as well as the Informed Consent Form (ICF; Appendix B). Those who met the inclusion criteria were randomly assigned to one of the research status groups: in-person or remote, using blocks randomization with an online random number generation tool.

In the in-person format, data collection was conducted in a psychological clinic of a public university, in a meeting lasting from one hour to one hour and half, depending how much time did the participant need. In the session, R-PAS was administered and the participant responded a reaction questionnaire (RQ; Appendix C) regarding their experience.

In the remote format, the respondent was in their own house or office and was asked to be in a private, comfortable, and quiet room, without interruptions. Just like in the standard application, the examiner guided the respondent through the response and clarification phases, but the ten cards were presented digitally on the respondent's screen using the R-PAS App and they could rotate the cards and make mouse movements using the screen-sharing feature in a Google Meet video call. The respondent was also asked to share their video so the examiner could monitor their gaze and other behaviors. To ensure that the respondent was viewing the stimuli at the appropriate size, a screen calibration process was performed before the test begin using a credit card or A4 paper. Afterwards, the participant responded the reaction questionnaire regarding their experience as well. The meeting lasted from one hour to one hour and half, depending how much time did the participant need.

Data Analysis

The R-PAS test was were corrected according to its manual. To ensure reliability of R-PAS score coding, a total of 20 protocols (31%), randomly selected, had their responses independently recoded by a second researcher. All the protocols were coded or supervised by the main researcher of this article, internationally certified in the administration and coding of R-PAS protocols, although some of them (20%) were administered by a trainee with more than 180 hours of training under the supervision of the main researcher.

A intraclass correlation (ICC) test with a 95% confidence interval was performed to verify inter-rater agreement. The mean ICC was .93 (*SD* = .07), considered excellent per Cicchetti's classification (1994). Table 2 shows descriptive statistics for this study and the ICC values for each variable. Results are presented in the order used in the interpretive output, with Page 1 variables first, followed by Page 2 variables. In general, the results for the sample were excellent, with 40% of the ICC coefficients exceedingly high at .95 or above.

To answer the objective related to the effect of the type of application (remote versus in-person), an analysis of variance was carried out to compare independent groups (Welch's *t*-test). The 95% confidence interval of these results were calculated using Hedge's *g*. As a way of accessing older adults' perception of the testing process, descriptive statistics were presented. All statistical analyses were conducted using the open-access software Jamovi 2.3.28.

Results

Table 1 presents demographic characteristics of the in-person and remote administration groups. The groups did not differ substantially in age, years of education, or gender distribution, indicating adequate comparability for subsequent analyses.

Table 1. Descriptive data of the sample

	Remote (*n* = 34)		In person (*n* = 30)		Total (*n* = 64)	
	M	SD	M	SD	M	SD
Age	68.20	5.22	68.10	6.14	68.10	5.62
Years of education	16.10	3.53	15.90	2.99	16.00	3.16
Gender						
Male	26.5%		13.3%		20.3%	
Female	73.5%		86.7%		79.7%	
Ethnicity						
White	55.9%		63.3%		59.4%	
Brown	35.3%		23.%		29.7%	
Black	5.9%		6.6%		4.7%	
Yellow	2.9%		3.3%		3.1%	
Other	0.0%		3.3%		3.1%	
Marital Status						
Married/with partner	50.0%		40.0%		45.3%	
Divorced	23.5%		26.7%		25.0%	
Single	11.8%		10.0%		10.9%	
Widowed	14.7%		16.7%		15.6%	

Other	0.0%	3.3%	1.6%
Monthly income			
Up to R$1412,00	5.9%	6.7%	6.3%
From R$1412,01 to R$2824,00	11.8%	3.3%	7.8%
From R$2824,01 to R$7060,00	23.5%	13.3%	18.8%
From R$7060,01 to R$14120,00	32.4%	33.3%	32.8%
Above R$14120,01	26.5%	40.0%	32.8%

A total of 64 older adults participated in the study, with 34 completing the assessment remotely and 30 completing it in-person. The remote group had a mean age of 68.20 years (*SD* = 5.22), which was virtually identical to the in-person group (*M* = 68.10, *SD* = 5.47). Years of education were also similar across administration formats (remote: *M* = 16.10, *SD* = 3.53; in-person: *M* = 15.90, *SD* = 3.08), suggesting comparable cognitive reserve and sociocultural backgrounds.

Gender distribution differed modestly between groups: the remote group consisted of 26.5% men and 73.5% women, whereas the in-person group comprised 13.3% men and 86.7% women. Ethnoracial composition was relatively consistent across formats: among remote participants, 55.9% identified as White, 35.3% as Brown, 5.9% as Black, and 2.9% as Yellow; for the in-person group, 63.3% identified as White, 23% as Brown, 6.6% as Black, 3.3% as Yellow, and 3.3% as Other. Marital status and self-reported health conditions also followed similar patterns across groups, indicating no substantial demographic imbalance between administration formats.

Descriptive statistics, Welch's t-tests, and effect sizes (Hedges' g) for R-PAS Page 1 and Page 2 summary scores across remote and in-person administration formats are presented em Table 2. Overall, the two groups performed similarly on all R-PAS variables. For every score examined, Welch's t-tests indicated no statistically significant differences between administration formats (all $p > .05$).

Table 2. Descriptive Statistics, Welch's t and Hedge's g for Summary Scores on Page 1 and Page 2

Variable	Remote (*n* = 34)		In-person (*n* = 30)		Comparison	CI 95%
	M	SD	M	SD	Welch's *t* test	
Page1						
Administration behaviors and observations						
Pr	1.00	0.99	1.07	1.46	-0.211	-0.434 - 0.548
Pu	0.44	1.24	0.37	1.33	0.232	-0.546 - 0.436
CT	2.32	3.95	3.67	4.19	1.314	-0.162 - 0.827
Engagement and cognitive processing						
Complexity	60.91	14.77	59.77	16.41	0.292	-0.564 - 0.418
R	24.41	4.46	23.27	4.53	1.016	-0.747 - 0.239
F%	47.24	18.49	53.07	16.52	-1.332	-0.163 - 0.826
Blend	2.18	1.96	1.87	2.58	0.535	-0.628 - 0.355
Sy	3.74	2.68	4.44	2.64	-1.551	-0.23 - 0.756
MC	28.71	31.89	29.90	34.34	-0.144	-0.455 - 0.527
MC-PPD	-15.03	24.19	-20.33	36.38	0.677	-0.666 - 0.318
M	3.18	2.21	2.70	1.88	0.932	-0.666 - 0.318
Perception and thinking problems						
M-WSumC	-10.18	19.69	-12.50	22.13	0.441	-0.603 - 0.38
CFC-FC	0.71	1.68	0.50	1.61	0.499	-0.619 - 0.364
EII-3	-0.12	11.25	-2.73	11.27	0.927	-0.724 - 0.261
TP-Comp	7.32	12.12	5.47	11.74	0.622	-0.647 - 0.337
WSumCog	6.91	7.51	5.83	8.97	0.517	-0.623 - 0.36
SevCog	0.35	0.77	0.33	0.84	0.096	-0.516 - 0.466
FQ-%	13.77	10.57	12.60	11.15	0.427	-0.599 - 0.383
WD-%	11.59	10.10	10.00	8.69	0.676	-0.66 - 0.324
FQo%	55.53	10.18	56.93	17.71	-0.382	-0.393 - 0.59
Popular	5.38	1.67	5.43	2.31	-0.099	-0.466 - 0.516
Stress and distress						
YTVC'	4.27	2.91	3.50	3.26	0.986	-0.743 - 0.243
IM	0.88	1.20	0.87	0.50	0.047	-0.502 - 0.48
Y	1.82	2.08	1.50	1.70	0.684	-0.659 - 0.324
MOR	1.21	1.49	0.67	1.15	1.625	-0.898 - 0.093
SC-Comp	4.10	0.74	3.64	1.01	1.71	-1.024 - -0.025
Self and Other Representation						
ODL%	8.18	7.83	8.87	8.97	-0.326	-0.409 - 0.573
SR	0.35	0.69	0.83	1.34	-1.766	-0.038 - 0.956
MAP-MAH	-0.26	1.48	-0.40	1.16	0.408	-0.593 - 0.39
PHR-GHR	-1.44	2.13	-1.60	3.05	0.239	-0.553 - 0.43
M-	0.47	0.86	0.43	1.01	0.158	-0.534 - 0.448
AGC	2.56	1.83	1.77	1.46	1.927	-0.972 - 0.024
H	2.79	1.90	2.37	1.45	1.017	-0.739 - 0.246
COP	1.44	1.54	1.30	1.49	0.372	-0.584 - 0.399
MAH	0.68	1.27	0.73	0.98	-0.201	-0.447 - 0.535
Page 2						
Engagement and cognitive processing						
W%	33.29	17.03	34.83	19.60	-0.333	-0.407 - 0.575
Dd%	10.73	8.38	11.27	10.81	-0.218	-0.435 - 0.547
SI	0.71	1.00	0.83	0.87	-0.544	-0.364 - 0.619
IntCont	1.91	4.54	0.83	1.32	1.323	-0.809 - 0.179
Vg%	3.85	5.33	4.90	6.46	-0.701	-0.313 - 0.671
V	0.29	0.72	0.30	0.79	-0.031	-0.478 - 0.504
FD	0.32	0.59	0.30	0.47	0.178	-0.528 - 0.454
R8910%	31.68	3.29	30.67	3.41	1.202	-0.796 - 0.192
WSumC	13.35	19.58	15.20	22.02	-0.352	-0.402 - 0.58
C	0.68	1.20	0.50	0.86	0.682	-0.663 - 0.321
Mp-Ma	-0.26	1.76	-0.50	2.33	0.451	-0.609 - 0.374
Perception and thinking problems						
FQu%	28.82	9.58	28.97	11.31	-0.054	-0.477 - 0.505

Stress and Distress						
PPD	9.06	4.23	7.63	4.26	1.339	-0.831 - 0.157
CBlend	0.41	0.82	0.20	0.48	1.273	-0.802 - 0.186
C’	1.44	1.33	1.37	1.52	0.207	-0.54 - 0.442
CritCont%	20.53	13.68	18.77	16.17	0.467	-0.61 - 0.373
Self and other representation						
SumH	5.26	2.30	5.23	3.03	0.046	-0.502 - 0.48
NPH-H	-0.32	2.52	0.50	2.15	-1.412	-0.146 - 0.843
V-Comp	20.09	9.73	23.43	10.73	-1.300	-0.167 - 0.821
r	0.35	1.01	0.47	1.04	-0.442	-0.374 - 0.609
p-a	-1.03	3.53	-1.70	3.95	0.712	-0.671 - 0.312
AGM	0.56	1.02	0.53	0.86	0.108	-0.523 - 0.459
T	0.71	1.29	0.33	0.84	1.38	-0.839 - 0.15
PER	0.71	1.73	0.37	0.61	1.068	-0.749 - 0.237
An	2.88	2.58	2.17	2.04	1.239	-0.797 - 0.191

Across Page 1 variables, including administration behaviors (e.g., Pr, Pu), engagement and cognitive processing indices (e.g., MC-PPD, Complexity-related indicators), perceptual accuracy, and stress/distress markers, remote and in-person means were closely aligned. Effect sizes were uniformly small, with 95% confidence intervals crossing zero, indicating an absence of meaningful group differences. A similar pattern emerged for Page 2 variables. Indicators related to perceptual processing, cognitive style, affective content, and representational themes showed comparable performance across administration formats. Again, Welch’s t-tests did not reveal statistically significant contrasts (all $p > .05$), and Hedges’ g values were consistently small, suggesting minimal practical differences between the groups. Taken together, the results indicate that older adults produced highly similar R-PAS protocols whether assessed remotely or in person, with no evidence of systematic score variation attributable to administration format in this sample.

Table 3 summarizes participants’ self-reported perceptions of the assessment experience across administration formats. Overall, both administration groups reported high levels of comfort and understanding of the instructions. Remote participants rated the technological aspects as adequate. No major concerns were reported regarding test format or interaction with the examiner. Both remote (N = 17) and in-person (N = 13) respondents generally reported low levels of difficulty across all items. Most participants indicated no overall difficulty completing the test, with similar proportions in the remote (35% reporting some difficulty) and in-person groups (23%).

Difficulties understanding instructions were infrequent in both formats (remote: 65% reported no difficulty; in-person: 62%). Comparable patterns were observed for handling the test materials, where the majority of respondents in each group reported no difficulty (remote: 59%; in-person: 54%). Across formats, the greatest difference was in difficulty seeing the inkblot, where 94% of remote respondents and 77% of in-person respondents reported little or no difficulty visualizing the stains.

Regarding cognitive demands, difficulties thinking of responses were uncommon, since a large proportion (70% remote and 54% in-person) reported little or no difficulty on this item. Finally, most respondents indicated no difficulty verbalizing their answers (remote: 53%; in-person: 46%). Most participants didn't leave any additional comments, but a few (three remote participants and one in-person participant) reported finding the experience interesting. One remote participant added that the test was a good way to activate memory. One in-person participant reported visual discomfort. Overall, the descriptive data suggest that older adults experienced the assessment process as accessible and manageable in both administration formats, with no clear pattern of increased difficulty associated with remote delivery.

Table 3. Self-reported perception by respondents

Items	Remote (N = 17)					In-person (N = 13)				
	1	2	3	4	5	1	2	3	4	5
Overall, did you have difficulty taking the test?	35%	29%	24%	6%	6%	23%	46%	23%	0%	8%
Did you have trouble understanding what you were supposed to do on the test?	65%	18%	6%	6%	6%	62%	15%	23%	0%	0%
Did you have difficulty handling the test?	59%	29%	6%	0%	6%	54%	15%	23%	8%	0%
Did you have trouble seeing the spots?	76%	18%	0%	6%	0%	62%	15%	23%	0%	0%
Did you have trouble thinking of the answers you would say?	29%	41%	12%	12%	6%	0%	54%	31%	8%	8%
Did you have difficulty saying the answers you had thought of?	53%	24%	12%	6%	6%	46%	31%	15%	0%	8%

Discussion

The present study aimed to examine whether remote and in-person administrations of the Rorschach Performance Assessment System (R-PAS) yield comparable results in a community sample of older adults. Consistent with this objective, the findings provided no evidence of systematic differences between the two administration formats, suggesting that remote and in-person R-PAS evaluations can be considered equivalent when procedures are properly standardized. All R-PAS variables showed nonsignificant differences with small effect sizes, indicating that administration format, by itself, does not distort the psychological profile captured by the test. Participants also reported a similarly positive testing experience in both conditions. The two groups were demographically comparable, offering an adequate foundation for interpreting equivalence across formats.

These results align with—and extend—previous work on remote R-PAS administration. Ales et al. (2023) found that Complexity, the "first factor" reflecting engagement and cognitive sophistication (Meyer et al., 2011), did not differ statistically significantly between formats. However, their study identified significant differences in 23 other variables, suggesting only partial equivalence. By contrast, the present study found equivalence across the entire test. Several methodological features help explain this discrepancy. First, Ales et al. collected remote data during the COVID-19 pandemic, when stress, social isolation, and attentional burden were widely documented (Lebrasseur et al., 2021; Robinson et al., 2022). Second, their assessments took place in participants' homes, which likely increased variability in environmental distractions and stimulus presentation (Bilder et al., 2020; Brown & Zakzanis, 2025). Third, their sample consisted of young university students, whereas older adults often differ in visual processing, response speed, and technology familiarity. By using random assignment, conducting both formats concurrently post-pandemic, and employing a standardized remote protocol with controlled testing conditions, the present study provides a more rigorous basis for comparing administration modalities.

The findings also converge with a growing body of research supporting the effectiveness of remote psychological and neuropsychological assessment. Multiple studies have shown that cognitive screeners, memory tasks, language tests, and attention measures yield comparable performance across administration formats when technological and procedural fidelity is ensured (Brearly et al., 2017; Cullum et al., 2014; Marra et al., 2020; Wright, 2020). Demonstrating such equivalence for a complex performance-based measure like R-PAS is particularly meaningful, given the test's reliance on perceptual organization, sustained cognitive engagement, and nuanced examiner–examinee interaction. The present results support the notion that these requirements can be successfully preserved remotely when supported by stable video communication, proper stimulus calibration, and adherence to standardized administration protocols (Bartholomaeus et al., 2025; Bilder et al., 2020).

Participants' subjective perceptions further reinforce the feasibility of remote administration. As shown in Table 3, respondents in both conditions reported little difficulty understanding instructions, handling the task, viewing the inkblots, or generating responses. This pattern aligns with studies showing high levels of satisfaction and adaptability among older adults in digital cognitive assessments when given clear instructions and minimal technological support (Castanho et al., 2017; Parikh et al., 2013; Wadsworth et al., 2018). Interestingly, in-person participants reported slightly more difficulty handling the test. A reasonable hypothesis is that digital presentation may offer certain ergonomic advantages, such as clearer visual stimuli and effortless rotation with a mouse click, which may facilitate the flow of the task. This possibility echoes findings from studies showing that well-designed digital interfaces can reduce physical manipulation demands and improve ease of use among older adults (Schroeder et al., 2023).

At the same time, caution is warranted. The present sample consisted of cognitively healthy older adults with adequate access to technology and functional independence. Research consistently shows that digital proficiency, educational level, and cognitive status significantly influence remote assessment performance (Milders et al., 2022; Seitz et al., 2021). Thus, the generalizability of these results to clinical populations—such as individuals with mild cognitive impairment, dementia, depression, or low digital literacy—remains uncertain. Future studies should investigate remote R-PAS administration among more diverse older adult samples and consider structured technological-readiness assessments. Developing minimal technical-quality checklists to ensure stimulus fidelity, lighting conditions, screen calibration, and internet stability may further enhance reliability and should be considered for inclusion in future technical manuals.

Taken together, the absence of systematic score differences between formats, combined with the positive subjective experience reported by participants, provides encouraging support for the use of remote R-PAS administration in cognitively healthy older adults under well-controlled conditions. While further research is needed, particularly in clinical and socioeconomically diverse populations, the present findings meaningfully advance the literature by offering the first direct evidence of full-score equivalence across administration formats in an older adult sample and by demonstrating that this population can engage effectively with a remote R-PAS platform when appropriate technological and procedural standards are implemented.

Final Considerations

The present study contributes to the growing literature on remote psychological assessment by providing evidence that remote and in-person administrations of the R-PAS yield highly comparable results in cognitively healthy older adults. By using a randomized allocation procedure, simultaneous data collection across formats, and a comprehensive comparison of all R-PAS variables, this research advances prior findings (e.g., Ales et al., 2023) and offers the first demonstrations of full-score equivalence in an older adult sample. Importantly, participants in both formats reported positive subjective experiences and minimal difficulty completing the task, reinforcing the feasibility and acceptability of remote performance-based assessment when procedures are well standardized. These findings focus that, under controlled conditions, remote administration can preserve the integrity of R-PAS scores and may expand access to psychological services for older individuals.

Despite its contributions, some limitations must be acknowledged. First, the sample size was relatively small (N = 64), which may limit the generalizability of the findings and the ability to detect more subtle effects. Second, the sample consisted of older adults who were functionally independent, generally well educated, had access to a computer, and were capable of participating in videoconferencing sessions. This introduces a selection bias, as individuals who agree to participate in remote assessments tend to be more familiar or comfortable with technology, potentially overestimating feasibility and acceptability. Additionally, the study did not examine finer-grained behavioral markers during the testing session—such as response latencies, hesitation patterns, or micro-processes of card handling—that could reveal more nuanced format-related differences. Finally, although no substantial technical problems occurred, the study did not systematically analyze the impact of potential connectivity issues, image quality, or environmental distractions, all of which may pose challenges in real-world remote assessments.

Future research should replicate these findings in larger, more diverse samples, including older adults with lower educational attainment, limited technological access, or clinical conditions such as early dementia or depression. Additional studies would also benefit from integrating behavioral process measures and evaluating the effects of varying technological environments. Nonetheless, the present results offer encouraging support for the continued development of remote R-PAS procedures and underscore the potential of well-structured remote assessment to enhance accessibility without compromising psychometric quality.

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General Final Considerations of the Doctoral Dissertation

This doctoral dissertation sought to advance the understanding of R-PAS in older adults by integrating cognitive, developmental, and methodological perspectives. Grounded in the recognition that R-PAS performance reflects a complex interplay of cognitive, affective, and sociocultural processes, the research addressed three complementary questions: the cognitive correlates of R-PAS variables in older adults, the distinctiveness of older adults response profile relative to other age groups, and the equivalence between remote and in-person administrations in this population. Together, the three manuscripts provide convergent evidence that enriches the empirical basis for the use of the R-PAS in late adulthood and contribute to filling gaps historically noted in the literature.

The first study demonstrated that selected R-PAS variables—particularly those reflecting cognitive engagement, accuracy, and perceptual organization—show associations, albeit modest ones, with cognitive domains such as attention, memory, executive functions, and intelligence in healthy older adults. These findings provide empirical support for theoretical propositions that link Rorschach performance to underlying cognitive processes (Acklin & Wu-Holt, 1996; Arble et al., 2020) and focus the importance of integrating cognitive data when interpreting R-PAS results in aging populations. Moreover, they underscore the need to differentiate age-related cognitive changes from early signs of neuropsychological impairment, a distinction essential for clinical decision-making.

The second study extended developmental research by examining whether older adults exhibit a characteristic R-PAS response pattern compared to children, adolescents, and younger adults. The results suggest a profile marked by reduced productivity (R), lower perceptual complexity, and more conventional interpretive styles—patterns consistent with both aging-related cognitive changes (Amaro et al., 2017; Mihura et al., 2013) and longstanding developmental findings (Exner, 2003). At the same time, the data indicate that contemporary older cohorts may present more favorable functioning than previous generations, reflecting improved health, education, and living conditions (Munukka et al., 2021). These findings support the need for age-sensitive interpretation and emphasize the importance of developing and refining normative references that account for demographic shifts in aging populations.

The third study investigated a timely and increasingly relevant question: whether remote, app-based R-PAS administration produces results equivalent to in-person administration in older adults. The findings revealed no significant differences across all R-PAS variables, supporting the functional equivalence of both formats and aligning with prior studies on remote cognitive assessment (Brearly et al., 2017; Marra et al., 2020). Participants in both groups reported high acceptability and minimal difficulty, challenging assumptions that older adults necessarily struggle with digital formats (Kim et al., 2020; Vaportzis et al., 2017). Notably, this doctoral dissertation advances the scarce existing literature—particularly the work of Ales et al. (2023) —by using random assignment, simultaneous data collection across formats, and an older adult sample. These results provide initial empirical support for the feasibility of remote R-PAS administration in aging populations, provided that procedures are well standardized and technological conditions are adequate.

Despite its contributions, this doctoral dissertation has several limitations. The overall sample size (N = 64) was modest, which may limit generalizability and the detection of subtle effects, particularly in correlational and group-comparison analyses. The sample consisted of older adults who were relatively healthy, educated, functionally independent, and had access to computers, which introduces selection bias and limits applicability to clinical or socioeconomically disadvantaged populations. Participants who agreed to remote assessment may also represent individuals already more comfortable with technology, potentially inflating acceptability estimates. Furthermore, the studies did not systematically examine fine-grained behavioral indicators during R-PAS administration (e.g., response latency, hesitation, environmental distractions), which could reveal format-related nuances. Finally, although no significant technological problems occurred, the research did not formally analyze the potential impact of connectivity issues, image quality, or device-related constraints.

Future research should prioritize larger and more diverse samples, including older adults with lower educational levels, limited digital access, or clinical conditions such as mild cognitive impairment, depression, or early-stage dementia. Additionally, studies incorporating behavioral process measures, standardized technological quality checklists, and real-world teleassessment contexts would deepen understanding of the subtleties in remote administration. Longitudinal designs may also help clarify the extent to which changes in R-PAS performance reflect normative aging trajectories versus early signs of pathological decline.

In conclusion, this doctoral dissertation offers a comprehensive examination of the R-PAS in older adults, integrating cognitive correlates, developmental patterns, and methodological considerations. The findings support the interpretive value of the R-PAS in late adulthood, focus the relevance of age-sensitive norms, and provide preliminary evidence that remote administration can be a viable and psychometrically sound alternative for this population. Collectively, the studies contribute to expanding access to assessment, refining developmental understanding, and advancing methodological innovation in performance-based personality assessment for older adults.

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Appendix A - Sociodemographic Questionnaire

What is your name?

____

Please provide your mobile/phone number (with area code):

____

What is your gender?

○ Female

○ Male

What is your nationality?

____

What is your native language?

____

What is your age (in years)?

____

Enter your CPF

____

What is your education level?

○ Doctorate

○ Master's degree

○ Postgraduate specialization

○ Bachelor's degree

○ High School

○ Elementary School

What is your marital status?

○ Widowed

○ Married or cohabiting

○ Divorced or separated

○ Single

○ Other

Which city do you live in?

____

What is your race/skin color?

○ White

○ Other

○ Brown (Mixed)

○ Yellow (East Asian)

○ Black

What do you currently do?

○ Retired/Pensioner

○ Works

○ Retired/Pensioner and works or studies

○ Studies

○ Homemaker

○ Studies and works

What is your household monthly income?

○ From R$ 7.060,01 to R$ 14.120,00

○ From R$ 2.824,01 to R$ 7.060,00

○ From R$ 14.120,01 to R$ 21.180,00

○ From R$ 1.412,01 to R$ 2.824,00

○ From R$ 21.180,01 to R$ 28.240,00

○ From R$ 28.240,01 to R$ 42.360,00

○ Até R$ 1.412,00 (up to um minimum wage)

Which of these devices do you use daily?

□ Computer (desktop or notebook)

□ Computer (desksktop or notebook), Tablet

□ Tablet

On a scale of 1 to 5, how would you rate your level of familiarity with these technologies? Consider 1 as low (depends on someone else to use it) and 5 as high (does not depend on anyone to use it).

○ 5

○ 4

○ 3

○ 2

○ 1

Do you have any psychiatric diagnosis (e.g., GAD, Major Depressive Disorder, Substance Use Disorder)? Which?

○ No

○ Yes

Are you taking any psychiatric medication? Which one?

○ Yes

○ No

As a child, did you have a neurodevelopmental diagnosis (e.g., Autism, ADHD, Intellectual Disability)?

○ Yes

○ No

Do you live independently without help for activities of daily living (e.g., shop alone, bathe alone)?

○ Yes

○ No

Were you recruited in a psychotherapeutic or psychiatric clinical setting?

○ No

○ Yes

Are you currently grieving? Has a close friend or family member died in the last 4 months?

○ No

○ Yes

Do you have a desktop or laptop with at least a 13-inch monitor and broadband internet?

○ Yes

○ No

Appendix B - Informed Consent Form

By accepting this form, I declare that I am 60 years of age or older and give my free and informed consent to participate in the research study "Multimethod Assessment in Older Adults: Psychometric Investigations of the Rorschach (R-PAS) with Cognitive and Personality Measures in In-Person and Remote Modalities" as a volunteer in the aforementioned project. The first session will consist of self-report questionnaires (administered remotely/online), and the second and third sessions will be conducted either in person or remotely, with the modality assigned randomly (participants cannot choose). This research is under the responsibility of the researchers Prof. Dr. Giselle Pianowski and Prof. Dr. Sérgio Eduardo Oliveira from the Graduate Program in Psychology at the University of São Francisco (USF) and the Graduate Program in Clinical and Cultural Psychology at the University of Brasília (UNB). By agreeing to this Informed Consent Form, I declare that I am aware that:

1 – The objective of this study is to analyze the correlation between the Rorschach Test (R-PAS) and other personality and cognitive tests. Additionally, the study aims to examine whether there is equivalence between in-person and remote testing formats. The research team guarantees that individual results will be returned to participants through a performance report. Beyond these individual benefits, the study is expected to contribute to a broader understanding of cognition in older adults, enabling the development of strategies to improve quality of life in this population.

2 – During the study, psychological tests assessing attention, memory, intelligence, and personality will be administered. The estimated duration for completing the instruments is 60 minutes per session, across four sessions.

3 – I have received all the necessary information to make an informed decision about participating in this study. I understand that my participation is voluntary and that I will not receive any compensation.

4 – Responding to these instruments presents no known physical or mental health risks; however, it may cause fatigue, mild emotional discomfort, or embarrassment. If any test feels emotionally activating or distressing, I may consult with the responsible psychologists for support and referral. However, because this is a virtual study, potential issues—such as connection errors or procedural failures—may occur. Additionally, there is a potential risk of data breach by the platforms used for data collection. For my protection, I may request a copy of my response protocol at the end.

5 – I am free to withdraw from the study at any time without suffering any consequences. However, because data collection is anonymous, the researchers will not be able to identify my protocol, which will remain in the study dataset.

6 – My personal data will be kept confidential, including encryption of the platforms used (Google Forms, R-PAS, and the platforms of the additional tests). The overall results obtained in the study will be used to fulfill the goals described above, including publication in peer-reviewed scientific literature.

7 – I may contact the Research Ethics Committee of the University of São Francisco to submit inquiries or concerns about the study at the phone number: (11) 2454-8302 or at the following address: Av. São Francisco de Assis, 218, Jardim São José – Bragança Paulista – SP, or by email: comiteetica@usf.edu.br.

8 – I may contact the principal investigator, Giselle Pianowski, whenever necessary by email at gisellepianowski@gmail.com or by phone at (11) 99731-8235.

9 – This Informed Consent Form will be stored on the Google Forms online platform, and by clicking "Agree," the participant authorizes the collection of their responses to the instruments presented.

10 – Participants have the right to obtain a copy of this ICF. To do so, they may take a screenshot of this page or request a copy via email at gisellepianowski@gmail.com.
After reading the Informed Consent Form:

- I declare that I am 60 years of age or older and wish to participate in the study.
- I am not 60 years of age or older or do not wish to participate in the study.

Appendix C- Reaction Questionnaire

1. In which format did you complete the test?
    - Physical / in person
    - Digital / remote
2. Overall, did you have difficulty completing the test? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
3. Did you have difficulty understanding what you were supposed to do in the test? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
4. Did you have difficulty handling or manipulating the test materials? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
5. Did you have difficulty seeing the inkblots? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
6. Did you have difficulty thinking of the responses you would say? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
7. Did you have difficulty saying the responses you had thought of? *(choose one option)*
    - 1 - none
    - 2
    - 3
    - 4
    - 5 - a lot
8. Do you have any additional comments?

(open-ended text field)