Applying the Defense Mechanisms Rating Scales Q-sort to assess patients' level of overall defensive functioning in interview data: validity and reliability

Mariagrazia Di Giuseppe,[1] John Porcerelli,[2] Alissa Huth-Bocks,[3] Katie Aafjes-van Doorn[4]

[1]Department of History, Humanities and Society, University of Rome Tor Vergata, Italy; [2]University of Detroit Mercy (MI), USA; [3]Merril Palmer Institute, Wayne State University, Detroit (MI), USA; [4]New York University Shanghai, China

ABSTRACT

The observer-rated Q-sort based on the gold-standard Defense Mechanisms Rating Scales (DMRS-Q) allows the investigation of defense mechanisms based on one session as a whole. The present study analyzed the reliability and validity of the DMRS-Q applied to three types of clinical interactions other than therapy sessions. Transcripts of three different clinical interviews, including a total of 233 adults (50 cancer patients who completed Mayman's Early Memory Interview [EMI], 93 individuals without clinical diagnosis who completed McAdams' Life Story Interview [LSI], and 90 pregnant women who completed the Working Model of the Child Interview [WMCI]), have already been coded on the DMRS. Our research team of expert raters conducted the DMRS-Q coding on these same transcripts and assessed the inter-rater reliability and the concurrent, convergent, and discriminant validity of DMRS-Q in these clinical interactions. Results showed good inter-rater reliability (intraclass correlation coefficient [ICC]=.70) for the Overall Defensive Functioning (ODF), although lower than reported using transcripts of psychotherapy sessions. Large correlations were found between ODF scales assessed with the DMRS-Q and the DMRS among the three samples (r=.43 to .59; p<.001), while small to moderate correlations were found between the DMRS-Q, sociodemographic, and psychological measures. The DMRS-Q ODF scale might be a valid and reliable measure to assess the overall maturity of defensive functioning in brief interviews. Its ease of use, supported by open-source software, enables the application of the gold-standard DMRS theory across a wide range of contexts beyond psychotherapy research.

Key words: defense mechanisms, DMRS-Q, assessment, validation, implicit emotion regulation.

Correspondence: Katie Aafjes-van Doorn, PhD, New York University Shanghai, China.
E-mail: kav9239@nyu.edu

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Introduction

Traditionally conceptualized within psychoanalytic theory (Freud, 1894), the concept of defenses is nowadays considered an essential aspect of psychological assessment for a wide variety of patients and treatments and has been applied more widely (Bowins, 2004; Cramer, 2000, 2015). Psychological defense mechanisms are typically conceptualized as unconscious mental operations that function to protect against excessive anxiety and protect the self against unconscious feelings and unacceptable internal or external conflicts (Cooper *et al.*, 1988; Cramer, 2006; Perry, 1990; Vaillant, 1992). In recent years, defense mechanisms have been reconceptualized as a process of implicit emotional regulation, which has resulted in a renewed research interest also outside the psychoanalytic and psychodynamic approach (Euler *et al.*, 2025; Galli *et al.*, 2019; Martino *et al.*, 2023; Martino *et al.*, 2025; Tanzilli *et al.*, 2024). A comprehensive clinical understanding of defenses in any specific case would require a clinician to consider how the person deals with distressing feelings, thoughts, and motives; that is, to clarify how

specific defenses are related to specific symptoms and other psychological functions.

Defense mechanisms can be assessed using a wide variety of systematic assessments (Aafjes-van Doorn *et al.*, 2021; Békés *et al.*, 2023; Bincoletto *et al.*, 2025; Carlucci *et al.*, 2023). The gold-standard measure of a patient's defensive functioning is the Defense Mechanisms Rating Scale (DMRS), an observer-rated instrument developed by John Christopher Perry (1990) that comprises 30 defenses organized into 7 defense levels, ranging from mature to immature. In descending order of adaptiveness, the DMRS defense levels include: (Level 7) *high adaptive* (affiliation, altruism, anticipation, humor, self-assertion, self-observation, sublimation, and suppression), (Level 6) *obsessional* (isolation of affect, intellectualization, and undoing), (Level 5) *neurotic* (displacement, dissociation, reaction formation, and repression), (Level 4) *minor image-distorting*/*narcissistic* (devaluation of self-image and other's image, idealization of self-image and other's image, and omnipotence), (Level 3) *disavowal* (denial, projection, and rationalization), (Level 2) *major image-distorting*/borderline (projective identification and splitting of self-image and object's image), and (Level 1) *action* (acting out, help-rejecting complaining, and passive aggression). The 7 levels can be grouped into 3 larger defense categories, which include mature (Level 7), neurotic (Level 6 and 5), and immature (from Level 4 to Level 1) defenses. Moreover, the DMRS offers a global scale of defensive maturity, known as Overall Defensive Functioning (ODF), which has been shown to be a reliable and valid (Hilsenroth *et al.*, 2003; Perry & Høglend, 1998) outcome index for use in both clinical research and practice (Conversano *et al.*, 2023; Hersoug *et al.*, 2002).

The DMRS model stands out from all other defense measurements for several reasons: i) the empirical-based theory (Perry & Henry, 2004); ii) the nuances quantitative metrics of the whole hierarchy of defenses, which is fully captured only by the DMRS family measures (Di Giuseppe, 2024); iii) the inclusion of psychological function of defenses, describing the psychological meaning of each defense in use (Di Giuseppe & Perry, 2021); iv) the inclusion of the ODF index that serves as a sensible parameter in process-outcome research (Hersoug *et al.*, 2004); and v) the excellent psychometric properties (see Perry, 2014 for review). However, the DMRS had limited diffusion compared to its potential, due to its time-consuming, sentence-by-sentence assessment of transcripts and the need for extensive training and ongoing reliability calibrations (for a discussion on text analysis in psychotherapy research, see Gelo *et al.*, 2012).

To address these limitations, Di Giuseppe and colleagues have developed an alternative observer-rated Q-sort based on the DMRS for the assessment of defensive functioning, the so-called DMRS-Q (Di Giuseppe *et al.*, 2014). This measure allows the investigation of defensive functioning based on one session as a whole, which differs from the parent DMRS, which instead requires coders to detect each defense mechanism occurring in the transcript of a therapy session. The DMRS-Q evaluation is made on the information collected from the clinical observation of the patient's defensive functioning during the session, thus without the requirements for transcripts when used for clinical purposes. During the diagnostic phase, the DMRS-Q can help with case formulation and the detection of prevalent defensive modalities used by the patient. This may also inform clinicians about the patient's resources and vulnerabilities at intake and suggest a personalized treatment plan. During the treatment, the repeated use of the DMRS-Q can monitor changes in defensive functioning occurring during the therapy and inform on the resistances that impede the patient in using different and more adaptive defensive strategies. By analyzing the function associated with the most used defenses, it is possible to detect critical areas of mental functioning on which the therapist can tailor therapeutic interventions. At the end of the treatment or during the follow-up, the DMRS-Q can be used as an outcome measure for assessing the defensive maturity reached with the treatment. By observing defenses that have remained stable over time, the DMRS-Q provides information about the patient's dominant defense style and personality, and whether the patient is out of a range of clinical relevance or not.

The application of the DMRS-Q is based on Q-sort methodology, seen in assessment instruments such as the Shedler-Westen Assessment procedure-II (SWAP-II; Shedler & Westen, 2007; Westen *et al.*, 2014) and the Psychotherapy Q-Set (PQS; Ablon & Jones, 1998; Price & Jones, 1998). The coding process requires the coder to sort each item into a predetermined seven-rank distribution based on the frequency and intensity with which the defensive pattern described by the item is used in relation to the patient being evaluated. The coding procedure is supported by open-source software (available at https://webapp.dmrs-q.com) that allows the rater to enter the scores, save the ratings, and download the final DMRS-Q report from the user profile. The report provides qualitative and quantitative information on the patient's defensive functioning. Based on these ratings and according to the parent DMRS theory, the following scores are calculated in the DMRS-Q: a summary ODF, ranging from 1 to 7 (where 7 is the highest defensive maturity); seven defense level proportional scores; and 30 individual defense mechanisms proportional scores. All quantitative scores are displayed in the report in both numerical and graphical forms. Qualitative description of defense mechanisms mostly used is displayed in the DMRS-Q report as the Defensive Profile Narratives, which comprises the 14 items sorted in ranks 6 and 7.

Unlike the traditional DMRS, the DMRS-Q rating could be done on the knowledge of the patient's defensive functioning collected by the clinician from one or more clinical interviews and therapy sessions. Assessing a patient's defenses typically takes between 15 and 60 minutes and can be reliably rated by untrained raters using the ODF and its defensive categories (Békés *et al.*, 2021).

Application of the DMRS-Q in psychotherapy sessions

To date, most applications of the DMRS-Q have focused on psychotherapy sessions, demonstrating adequate reliability and validity (Di Giuseppe & Perry, 2021). The first study that applied the DMRS-Q (Di Giuseppe *et al.*, 2014) aimed at introducing the new tool and analyzing changes in the defensive functioning of one patient who attended over 2.5 years of psychotherapy. Results showed that the patient's ODF immature defenses decreased by 7.3% from early to late stage of the treatment, while high adaptive defenses increased by 8.2%. The magnitude of the change in the ODF from early to late treatment was 0.46, which is comparable to the findings from the DMRS. A recent case report study has applied the DMRS-Q to two patients in treatment for severe anorexia nervosa (Conversano *et al.*, 2023). Findings revealed that personality and defensive functioning improved after 1 year of intense dynamic psychotherapy, independent of improvement in the body mass index, suggesting the need for an integrated therapeutic approach for feeding and eating disorders.

Assessment of defenses outside of psychotherapy

There are many other clinical interactions that could be used to assess patients' levels of defenses. One study conducted by Di Giuseppe *et al.* applied the DMRS-Q to clinical interviews to assess defense mechanisms in patients recently diagnosed with cancer. Results revealed that cancer patients used more neurotic defenses and fewer obsessional defenses than controls. In particular, they tended to use suppression, repression, dissociation, rationalization, and passive aggression as ways to cope with health-related problems (Di Giuseppe *et al.*, 2020a). Another study, conducted on the general population during the lockdown for the COVID-19 pandemic imposed by the Italian Government, applied the DMRS-Q to the Clinical Diagnostic Interviews (CDI; Westen & Muderrisoglu, 2003) to assess the concurrent validity of a novel DMRS-based questionnaire (Di Giuseppe *et al.*, 2020b). These studies demonstrated the adequacy of applying the DMRS-Q to interviews in both clinical and non-clinical contexts.

Different types of brief interviews might be particularly relevant for the assessment of patients' level of defenses:

i) *Cancer patient interviews.* There is considerable evidence that people make use of defense mechanisms when faced with threats from the inside (*e.g.*, a troublesome thought or wish) or with threats from the outside (*e.g.*, disturbing information). It is not surprising, then, that people rely on defense mechanisms when faced with cancer; they experience both an inner, bodily threat and a doctor who provides a disturbing diagnosis and/or prognosis. As described by Singer (1983), the painful affect associated with cancer results in the use of defenses, especially denial, and is excessive and pervasive in this clinical group. In turn, the use of defense mechanisms has important implications for the health behaviors and survival of cancer patients. The early detection of maladaptive defense mechanisms is considered crucial for preventing adverse progression of the illness (Beresford *et al.*, 2006). Better detection and understanding of the distinctive defensive patterns in cancer patients may support psychological interventions that promote adaptive illness management (Perry *et al.*, 2015), ultimately leading to improved disease outcomes and overall well-being (Kreitler *et al.*, 1993).
ii) *Narrative interviews.* Research suggests that the telling of a personal narrative might illustrate one's use of defense mechanisms and level of defensive functioning (Békés *et al.*, 2017; McAdams, 1998). Adults typically give their lives a sense of unity and purpose by constructing self-defining life stories that shape their identities. Such stories are told to others and to an internalized audience or listener who serves as an ultimate judge and interpreter of the narrative. Defense mechanisms represent the narrative strategies individuals use to shape how their lives are conveyed to others and to their internalized selves. Life events and experiences are incorporated into a life story to the extent that the internalized audience can make sense of the telling. Defenses function to make some stories more tellable than they might otherwise be and to keep other potentially storied accounts from ever reaching the status of being told (McAdams, 1998). In other words, defense mechanisms may work as narrative strategies that help to determine not only how a life story is told but also what stories are deemed tellable. As researchers begin to consider the psychological process of identity formation through life-story-telling, they are likely to encounter the workings of defense mechanisms such as denial, projection, intellectualization, rationalization, isolation, and identification. Research into life stories, therefore, could benefit from a concerted examination of the literature on defense mechanisms, and the empirical study of defense could also benefit from considering insights into human personality and identity offered by recent narrative theories and frameworks.
iii) *Attachment interviews.* Interviews aimed at assessing parents' attachment styles, for example, the Working Model of the Child Interview (WMCI; Zeanah *et al.*, 1994), as applied to pregnant and new mothers. A previous study (Porcerelli *et al.*, 2016) suggests that maternal defense mechanisms are important in understanding the nature of the earliest parent-child relationship and subsequent child adjustment in the early years of life. Examining maternal defenses and other forms of coping may be particularly important during the prenatal and postnatal periods because this is typically a physically and emotionally demanding time, especially for women experiencing adversity and risk such as single parenthood, economic disadvantage, and difficulties with partners and social support.

Aims

The primary aim of this study is to validate the DMRS-Q for assessing patients' defensive functioning based on clinical interactions, distinct from therapy sessions. In particular, we examined: i) the inter-rater reliability of raters trained to use the DMRS-Q on these non-therapy clinical samples; ii) the concurrent validity of the DMRS-Q in comparison to the gold-standard observer-rated DMRS in the same samples; and ii) convergent and discriminant validity of the DMRS-Q in comparison to various psychological measures in these non-therapy clinical samples.

Specifically, we expected the overall DMRS-Q inter-rater reliability for the ODF to range from good (intraclass correlation coefficient [ICC]=.60 to .74) to excellent (ICC≥.75), according to Shrout and Fleiss (1979), with potential differences among the three clinical interview samples. We also expected the overall DMRS-Q ODF construct validity coefficients to reach medium-to-large effect sizes (r=.40 to .50), according to Cohen (1988), with specific correlations varying among the three clinical interview samples. Finally, we anticipated small-to-medium effect sizes (r=.20 to .30) between DMRS-Q ODF and symptom measures (convergent validity), and small effect sizes (r=.10) with demographic measures (discriminant validity) across the three clinical interview samples.

The use of clinical interviews in psychology research is widespread. However, the assessment of defense mechanisms is typically facilitated by a free and sustained narrative, as in a psychotherapy session, which allows internal conflict and unpleasant thoughts to emerge, necessitating the use of defenses that therefore can be observed and evaluated (Lingiardi *et al.*, 2010). Therefore, it is important to empirically verify the reliability and validity of the DMRS-Q used in various forms of clinical interviews. In this study, we chose to analyze only the ODF scale, a global defense maturity index commonly used as an outcome measure in clinical studies, which can also be assessed through short interviews.

Materials and Methods

Sample and procedure

Three pre-existing datasets reflecting three different studies were used to assess the reliability and validity of DMRS-Q: a sample of adults undergoing outpatient treatment for a variety of can-

cers (n=50; Porcerelli *et al.*, 2015), an adult community sample (n=93; Tanis *et al.*, 2025), and a community sample of pregnant women (n=90; Porcerelli *et al.*, 2016).

Sample 1

The cancer sample included 32 women and 18 men with a mean age of 60.32 (standard deviation [SD]=12.75). The sample individuals were mostly married or living with a partner (62%), Caucasian (84%), had at least a college degree (86%), and had incomes higher than $39,000 per year (70%). Forty-eight percent had either Stage 3 or 4 cancer. Participants were recruited from the waiting room of a suburban outpatient cancer center in Detroit, Michigan, USA. The study was approved by the Institutional Review Board (IRB) of Wayne State University.

For this sample, transcriptions of recorded interviews, using Mayman's Early Memory Interview (EMI) protocol (Mayman, 1968), were available. The EMI version used in this study asked participants to recall seven memories: their earliest childhood memory, their next earliest childhood memory, their earliest memories of their mother and father, memories of a high and a low point in life, and a turning-point memory. After each memory, participants were asked to describe what the people in the memories were thinking and feeling.

Sample 2

The adult community sample (Tanis *et al.*, 2025) included 60 women and 30 men with a mean age of 32.58 (SD=12.53). The sample was predominantly single (63%) and Caucasian (68%), with most individuals having at least some college education (86%) and annual incomes greater than $40,000 (64%). Participants were recruited from a private urban Catholic University and an urban healthcare clinic in Detroit, Michigan, USA. The study was approved by the University of Detroit Mercy IRB.

For this adult community sample, 90 transcribed recorded interviews, using the McAdams' Life Story Interview (LSI) structure, were available. The LSI was developed as a research tool to gather life narratives of individuals to study various aspects of personality (McAdams, 2008). For this study, only the key scenes and future script components of the interview were used to code defenses. Key scenes were obtained by asking participants to identify multiple critical memories (high point, low point, turning point, positive childhood memory, negative childhood memory, vivid adult memory, wisdom event, and a religious/spiritual/mystical experience). For each memory, participants are asked to discuss the details of the memory, when and where it happened, who was involved, what they were thinking and feeling, and why they think the scene is important to their life. Future scripts were obtained by asking participants to describe their hopes, dreams, and plans for the future.

Sample 3

The community sample of pregnant women (Porcerelli *et al.*, 2016) included 93 women with a mean age of 26.52 (SD=5.60). The sample consisted primarily of married or cohabiting individuals (55%), African Americans (59%), participants with at least some college education (83%), and individuals with annual incomes below $25,000 (63%). Participants were recruited from social service agencies in southeast Michigan. The study was approved by the Eastern Michigan University IRB. For this community sample of pregnant women, 93 transcribed recorded interviews, using the WMCI (Zeanah *et al.*, 1994), were available for our secondary analyses. The WMCI is a semi-structured interview that assesses a caregiver's representations of the infant, the self as a caregiver, and the mother-infant relationship (Zeanah *et al.*, 1994). All interviews were administered by trained graduate students.

Procedures for the secondary analyses of the existing datasets

Defense Mechanisms Rating Scales Q-sort

The DMRS-Q (Di Giuseppe & Perry, 2021) uses a Q-sort methodology to assess the original 30 defenses from the observer-rated DMRS (Perry, 1990). The original DMRS is an observer-rated scale consisting of 30 defense mechanisms organized into seven hierarchical levels, which can be further grouped into three broad categories: mature, neurotic, and immature. ODF is calculated by dividing the sum of the number of defenses at each level, multiplied by the corresponding level score (from 1 to 7), by the total number of defenses across all seven levels. Inter-rater reliability of the ODF score is excellent (*i.e.*, ICC>.80) (Perry & Henry, 2004). The ODF score has demonstrated good criterion, convergent, and discriminant validity (Di Giuseppe *et al.*, 2020b; Perry & Hogland, 1998) as well as known groups validity (Zimmerman *et al.*, 2019). Inter-rater reliability (ICC) for ODF in the EMI, LSI, and the WMCI were .80, .74, and .81, respectively. Separate pairs of experienced raters were used to code the DMRS for each sample. A two-way random effect model was used for all three ICCs.

The DMRS-Q is comprised of 150 items (5 items per defense) to be sorted into seven ranks of frequency of use. Rank 1 includes 60 items describing defenses that are not used at all; rank 2 includes 30 items describing defenses that are very rarely used; rank 3 includes 20 items describing defenses that are rarely used; rank 4 includes 16 items describing defenses that are sometimes used; rank 5 includes 10 items describing defenses that are often used; rank 6 includes 8 items describing defenses that are frequently used; finally, rank 7 includes 6 items describing defenses that are always used. Inter-rater reliability of the ODF and defensive categories score is excellent for trained raters (*i.e.*, ICC>.80). Inter-rater reliability of the ODF is also excellent for non-trained raters (ICC=.88), while inter-rater reliability of defensive categories ranges from poor to excellent for non-trained raters (Békés *et al.*, 2021).

Psychological distress

The Patient Health Questionnaire-4 (PHQ-4; Kroenke *et al.*, 2009) is a four-item scale that assesses psychological distress. It is comprised of two depression items ("*Little interest or pleasure in doing things*" and "*Feeling down, depressed or hopeless*") from the PHQ-9 (Kroenke *et al.*, 2001) and two anxiety items ("*Feeling nervous, anxious, or on edge*" and "*Not being able to stop or control worrying*") from the Generalized Anxiety Disorder-7 (GAD-7; Spitzer *et al.*, 2006). These four items are combined to form the PHQ-4 total score. Items are scored on a 4-point Likert-type scale ranging from 0 (not at all) to 3 (nearly every day). Total scores range from 0 to 12. Validity data for the PHQ-4 are reported in Löwe *et al.* (2010).

Post-traumatic stress symptoms

The Posttraumatic Stress Disorder Checklist, Civilian Version (PCL-C; Weathers *et al.*, 1993), is a 17-item self-report

measure for assessing Post-traumatic Stress Disorder (PTSD) according to the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition*. The symptoms can be clustered into intrusion, avoidance, and hyperarousal symptoms. Participants rate the severity of each item during the past 30 days on a 5-point scale, ranging from 0 (not at all) to 4 (extremely). Total PTSD scores range from 0 to 68. Convergent validity has been demonstrated by a strong correlation (r = 0.93) between the total PCL score and the Clinician-Administered PTSD Scale, along with a diagnostic efficiency of 0.90 when compared with the Clinician-Administered PTSD Scale.

Emergency room visits

A single item from the Multidimensional Health Profile-Health Functioning (MHP-H; Ruehlman *et al.*, 1998) was used to assess the number of emergency department visits during the past year. Participants indicate the frequency of visits using a 5-point scale ranging from 0 (none) to 4 (six or more). Higher scores indicate greater utilization of services.

Physical functioning

The Medical Outcomes Study Short Form-20 (SF-20; Stewart *et al.*, 1988) is a 20-item self-report scale that assesses the impact of physical health on bodily pain, general health perceptions, mental health, and physical and role functioning. For this study, only six physical health items from the Physical Health Composite were administered, including physical functioning, physical pain, and health perceptions. Raw scores for each scale are converted to percentage scores ranging from 1 to 100, with higher scores indicating better physical functioning. Reliability and validity data are reported in Stewart *et al.* (1988).

Happiness

The Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) is a 4-item scale in which participants either rate themselves or compare themselves to others. Item 1 evaluates the degree to which the individual thinks they are happy from 1 (not a very happy person) to 7 (a very happy person). Item 2 evaluates how happy a person feels compared to others from 1 (less happy) to 7 (happier). Items 3 and 4 measure the degree to which the individual is usually very happy or not very happy from 1 (not at all) to 7 (a great deal). Reliability and validity data are reported in Lyubomirsky and Lepper (1999).

Health behavior

The HealthStyle: A Self-Test (Babroff, 1999) was developed to assess multiple health domains, including tobacco use, eating habits, exercise, and stress control. Cigarette smoking is assessed using a single item ("*I avoid smoking cigarettes*"). The Eating Habits subscale includes four items (*e.g.*, "*I limit the amount of saturated fat, trans fat, and cholesterol*", "*I eat from meats, eggs, butter, cream, shortenings, and organ meats such as liver*"). The Exercise/Fitness subscale includes three items (*e.g.*, "*I do moderate to vigorous exercise 30 min a day at least five times a week*"). The Stress Control subscale was not used in this study. All items are rated on a 3-point Likert-type scale ranging from 0 (almost never) to 2 (almost always). Higher scores on each of the subscales indicate more health-promoting behavior.

Social support

The Social Support Scale, part of the MHP, is a nine-item measure that assesses perceived social support (Ruehlman *et al.*, 1999). Three of the nine items were included in this study to evaluate current emotional, informational, and tangible support. Emotional support assessed the extent to which participants felt supported by friends and family over the past year. Informational support measured how much guidance or information participants received from friends and family during the same period. Tangible support assessed how often close friends or family members provided practical assistance or material aid when needed during the past year. Items are measured on a 4-point Likert scale from 1 (none) to 4 (a great deal). The three scores were averaged to provide a single estimate of social support, with a maximum score of 12. The reliability and validity of the MPH-P Social Support Scale are reported in Ruehlman *et al.* (1999).

Child abuse

Childhood Trauma Questionnaire-Brief Form (CTQ-BF; Bernstein *et al.*, 2003) is a 28-item self-report scale assessing childhood and adolescent experiences of abuse and neglect. The scale includes five subscales (physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect). Each subscale includes five items, ranging from 1 (never true) to 5 (very often true). Subscale scores range from 5 to 25. For this study, a total score from all 5 subscales was used. The scale demonstrates good reliability and validity (Bernstein *et al.*, 2003).

Analyses

Inter-rater reliability was assessed by comparing DMRS-Q codings from two raters, randomly selected from a team of PhD students previously trained in the use of the DMRS-Q. Reliability was evaluated by calculating the ICC on the ODF scale. Pearson correlation analyses were used to test concurrent, convergent, and discriminant validity. Correlations between the DMRS-Q and DMRS ODF score were used to test the concurrent validity of the DMRS-Q. We then examined correlations between the DMRS-Q ODF subscale and several sociodemographic and psychological variables to test convergent and discriminant validity. Specifically, age, race, education, marital status, income, and psychological distress were assessed in all samples. Gender and somatization were assessed in Sample 1 and Sample 2. Emergency room visits and physical functioning were assessed only in Sample 1. Happiness, health behaviors, and social support were evaluated only in Sample 2. Post-traumatic stress and child abuse were assessed only in Sample 3.

Results

Research question 1: inter-rater reliability

Table 1 shows the exact ICC and the median coding scores (Cronbach's α) of the two DMRS-Q raters on the ODF scale. According to Koo & Li's guidelines (2016), inter-rater reliability on the DMRS-Q's ODF scale was good to excellent, ranging from .63 to .75 (Shrout & Fkiess, 1979). Similarly, the median coding scores were excellent, ranging from .78 to .86 (Taber, 2018).

Research question 2: DMRS-Q *vs.* DMRS

Table 2 displays the Pearson correlations between DMRS-Q and the DMRS ODF scale. Significant correlations were found on the ODF scale for the merged sample and the three independent samples. Pearson coefficients showed large correlation in the expected direction (r>.50) for two of the three samples and moderate correlation (r=.43) for one of the samples (Sample 2).

Research question 3: DMRS-Q *vs.* symptoms

Table 3 shows the correlations between the DMRS-Q ODF scale and several sociodemographic and psychological scales assessed in three samples separately. In Sample 1 (cancer, n=50), we found significant negative correlations between DMRS-Q ODF and outcome measures of psychological distress, emergency room visits, and physical functioning. In Sample 2 (adult community, n=90), a negative correlation was found with income. Significant positive correlations were observed between ODF and happiness, health behaviors, and social support. In Sample 3 (pregnant women, n=93), none of the sociodemographic and psychological scales were significantly correlated with the DMRS-Q ODF scale, although all coefficients were found in the expected direction. Convergent and discriminant validity were not assessed on the merged sample because of a lack of consistency in the interview measures originally used in the three samples.

Discussion

In this study, we aimed to validate the DMRS-Q (Di Giuseppe *et al.*, 2014; Di Giuseppe & Perry, 2021) for assessing the overall defensive maturity in clinical interviews. Traditionally, the gold standard observer-rated assessments of patients'

Table 1. Reliability of two independent DMRS-Q raters on the ODF scale.

Sample	Cronbach's α	ICC	p
Merged sample (n=233)	.82	.70	.000
Cancer sample (n=50)	.85	.74	<.001
LSI (n=90)	.78	.63	<.001
WMCI (n=93)	.86	.75	.000

ICC, intraclass correlation coefficient; LSI, Life Story Interview; WMCI, Working Model of the Child Interview.

Table 2. Concurrent validity of the DMRS-Q vs. the DMRS on the ODF scale.

Sample	Pearson's *r*	p
Merged sample (n=233)	.53	<.001
Cancer sample (n=50)	.59	<.001
LSI (n=90)	.43	<.001
WMCI (n=93)	.57	<.001

LSI, Life Story Interview; WMCI, Working Model of the Child Interview.

Table 3. Convergent and discriminant validity of the DMRS-Q on the ODF scale for the three samples.

Samples	Cancer (n=50) Pearson's *r* (p)	LSI (n=90) Pearson's *r* (p)	WMCI (n=93) Pearson's *r* (p)
Age	.00	−.08	.13
Gender	.10	.10	
Race	−19	−.15	.22
Education	.16	.14	.26
Marital status	−.27	−.11	.26
Income	.16	−.29* (p=.01)	.05
Psychological distress	−.31* (p=.03)	−.06	−.24
Post-traumatic stress			−.23
Somatization	−.17	−.13	
Emergency room visits	−.34* (p=.01)		
Physical functioning	−.29* (p=.04)		
Happiness		.25* (p=.02)	
Health behavior		.29* (p=.01)	
Social support		.23* (p=.03)	
Child abuse			−.24

LSI, Life Story Interview; WMCI, Working Model of the Child Interview; *p≤.05.

defense mechanisms have focused on transcripts from therapy sessions. However, other types of clinical interactions, such as clinical interviews, might also provide valid data for the assessment of patients' levels of defensive functioning. We conducted observer ratings using the DMRS-Q on transcribed clinical interviews collected across three separate psychological studies, each involving a distinct sample: cancer patients, a community sample, and pregnant mothers. The use of three different interview samples allowed us to generalize our conclusions with regard to the application of the DMRS-Q in interview data. The present study demonstrated the good reliability and the concurrent, convergent, and discriminant validity of the ODF scale assessed with the DMRS-Q.

The inter-rater reliability of trained graduate students was good for the DMRS-Q ODF scale, although lower than reported when rated in psychotherapy session transcripts (ICC=.90 in Békés *et al.*, 2021). The lower level of agreement between trained raters on the DMRS-Q may be attributable to the brief and structured nature of the interviews, which did not explore patients' emotional experiences as deeply as psychotherapy sessions. For example, the interviews focused on brief early memory protocols, key scenes, and future scripts within the life story interview, and pregnant mothers' descriptions of their imagined relationship with their child after birth. Each of the interviews used in this study tended to be shorter and more theme-focused than the usual therapy sessions or clinical interviews applied in previous research (Di Giuseppe *et al.*, 2014; Di Giuseppe *et al.*, 2020a; Di Giuseppe *et al.*, 2020b).

The concurrent validity of the DMRS-Q was assessed by comparing the DMRS-Q's ODF scale to the DMRS's ODF scale. As expected, scores on the DMRS and its Q-sort version were highly correlated on the ODF scale, consistent with previous findings comparing the DMRS-Q to its self-report version (ICC=.63 in Di Giuseppe *et al.*, 2020b). This finding suggests some consideration about the methodology used to assess defensive functioning. In the DMRS, the ODF is calculated by adding the weight of each defense identified in the transcript and then dividing the sum by the number of recognized defenses. For example, if the rater detects 3 neurotic defenses, 1 disavowal defense, and 1 action defense, the ODF will be 3.8, as a result of the following calculation: ODF = (3×5) + (1×3) + (1×1). In the DMRS-Q, the ODF is calculated through an algorithm that considers all defense mechanisms included in the hierarchy, including those barely present. Therefore, it is possible that the methodology used to assess defensive functioning could impact the slightly different ODF provided by the DMRS and the DMRS-Q.

The convergent and discriminant validity of the DMRS-Q was moderate. The DMRS-Q ODF correlated with several sociodemographic and psychological variables, demonstrating moderate convergent and discriminant validity of the index of defensive maturity assessed with the DMRS-Q. Since the three studies employed different psychological measures, we assessed convergent validity separately for each sample. Findings revealed that the ODF scale was significantly associated with measures of depression, anxiety, emergency room visits (past year), physical functioning, happiness, health behaviors, and social support, indicating a good correspondence between defensive functioning and overall psychological and physical functioning. Conversely, the ODF was not significantly related to most of the sociodemographic characteristics assessed, indicating good discriminant validity of the DMRS-Q ODF scale.

Overall, our findings show that the DMRS-Q may potentially be a reliable and valid tool for the assessment of defensive functioning in interview transcripts, in addition to its use for therapy session transcripts, as previously demonstrated by research applying the DMRS on clinical interview transcripts (Porcerelli *et al.*, 2015; Porcerelli *et al.*, 2016; Tanis *et al.*, 2025). Findings also demonstrated that the ODF index, a measure of defensive maturity provided by all DMRS-based measures, was strongly associated with several aspects of psychological functioning and can therefore be considered a useful process and outcome index in clinical research and practice (Boldrini *et al.*, 2020; Di Giuseppe *et al.*, 2024; Fiorentino *et al.*, 2024; Hersoug *et al.*, 2002; Perry & Bond, 2012; Silvestro *et al.*, 2025; Tanzilli *et al.*, 2022).

Limitations

Several limitations can be highlighted. First, the study retrospectively analyzes data from three previous studies that employed various assessment tools (Porcerelli *et al.*, 2015; Porcerelli *et al.*, 2016; Tanis *et al.*, 2025). Except for the DMRS-Q and the DMRS, which were used in all three studies, other measures were only used in some samples and not others. Consequently, the sample size in the analyses of convergent and discriminant validity varied according to the availability of retrospective data. Second, the functional range of patients across the three samples was limited, as all participants were relatively high-functioning and not actively seeking mental health care, unlike typical psychotherapy patients. Third, the DMRS-Q ratings were done by two independent raters with varying levels of experience. Moreover, in this study, we focused on the ODF and did not consider other deeper levels of scoring. We did not expect the material to be comprehensive enough to cover all areas of mental functioning, as represented by the defensive categories, defense levels, and individual defenses. This means that, although the DMRS-Q may be a valid and reliable tool for brief interviews, we did not assess whether it captures the depth that a full DMRS-Q evaluation during a therapy session would provide.

Future validation studies should consider larger samples with highly variable defensive characteristics, including participants with or without relevant clinical conditions. Future studies should also consider including both self-report and observation-based examinations of patients' defensive functioning, and possibly include measures of coping mechanisms, emotional regulation, as well as other outcome measures.

Clinical implications

The study of defenses has become extremely important for understanding individual adaptive processes and their specific vulnerabilities in implicit emotional regulation. The demonstrated validity and reliability of the DMRS-Q applied to various types of clinical interviews indicate the instrument's versatility in multiple contexts beyond its traditional use in psychotherapy. In particular, the ODF assessment provides an indication of global defensive maturity, which can be used both in the diagnostic phase and during the treatment to monitor patient changes like other outcome measures. Moreover, the computerized assessment procedure of the DMRS-Q (https://webapp.dmrs-q.com), allows the reliable assessment of defensive functioning with high ease of use (Békés *et al.*, 2021). This allows for a broader application of the gold-standard DMRS model in a variety of contexts by different coders, including psychotherapy trainees, healthcare professionals, school staff, recruiting personnel, or interviewers with basic DMRS-Q training and sufficient familiarity with the instrument (Messina *et al.*, 2018).

Conclusions

The assessment of defense mechanisms is still an open challenge that needs further investigation (Amaslidou *et al.*, 2023; Silverman & Aafjes-van Doorn, 2023). The availability of valid and reliable assessment tools is crucial for advancing the study of this psychological construct, which is fundamental to understanding emotional regulation and overall psychological functioning (Gutjahr & Benecke, 2024; Prout *et al.*, 2019; Rice & Hoffman, 2014; Tanzilli *et al.*, 2021). Equally important is the accessibility and cost sustainability of measures to be applied in various fields of study, from clinical to research, from training to supervision. The DMRS-Q is the first DMRS-based tool that has enabled the application of the gold-standard DMRS theory across a wide range of contexts, thanks to its open-source software and user-friendly design, along with a comprehensive and detailed qualitative and quantitative assessment of defensive functioning that no other currently available measure provides.

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