

# The Post-Rationalist Projective Reactive, PRPR: Validation of the First Post-Rationalist Projective Test

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## Abstract

Starting from the epistemology of complexity and subjectivity, a new instrument has been devised to investigate the subjective ways in which experiences are self-referred at the level of immediate experience. The construction and validation process of the Post-Rationalist Projective Reactive (PRPR) are described, the first cognitive post-rationalist projective tool. It investigates Personal Meaning Organizations (PMOs) according to the adaptive and evolutionary post-rationalist approach.

Using 20 stimulus tables, it allows respondents to go deeper into the specific narrative plots of their personality and to understand their inner film, to focus on their subjective feelings. PRPR was administered to a cohort of 294 subjects. A Reliability Analysis and a Cluster Analysis were carried out.

Cluster analysis identified four clusters that overlapped with the theoretical PMOs description. PRPR pictures showed good internal consistency as Reliability Analysis. Significant convergent validity correlations were found with the results of the Mini Questionnaire of Personal Organization (MQPO;  $r = .71$ ,  $p < .001$ ) and of clinical interviews ( $r = .76$ ,  $p < .001$ ).

The PRPR proved to be both a valuable support for the PMO construct and an effective assessment tool capable of delving into the processes of subjective meaning construction to understand the cognitive organizational closure, reducing the distance between immediate experience and its explanations.

**Keywords:** adaptive post-rationalist approach, constructivism in cognitive psychotherapy, Personal Meaning Organizations (PMO), physical/semantic reciprocity, Post-Rationalist Projective Reactive (PRPR), subjectivity

## 1. Introduction

In the framework of cognitive theory, the post-rationalist approach has attempted to understand the processes of individual meaning construction. In particular, "*The mind appears to be an active, constructive system, capable of producing not only its output but also, to a large extent, the input it receives, including the basic sensations underlying the construction of itself*" (Guidano, 1987). Indeed, according to the developments of the epistemology of complexity and to evolutionary, explanatory, constructivist and holistic psychological approaches (von Glasersfeld, 1984; Mahoney, 2003; Neimeyer, 1993, 2009; Prigogine, 1980; Sameroff, 1982; Weimer, 1979), it is possible to focus on personal self-organization and self-determination as consequent to the openness and plasticity of personal developmental pathways (Fonagy, 2000). According to this point of view, the self can be investigated not as an entity connecting experience and behaviour, but as a reflexive selfhood process continuously remodelling and restructuring itself (Guidano, 1987, 1991; Maturana & Varela, 1987; Nardi, 2013a).

Subjectivity has laid the epistemological groundwork for the post-rationalist approach, whose mainstays are: a) the importance of the subject's manner of arranging and self-referring his/her immediate experience to construct self-identity and the lack of centrality and impartiality of the therapist-observer (knowledge is seen from the point of view of the experiencing subject) (Guidano, 1991); b) the interdependence between subjective and objective, emotional and cognitive, experienced and explained as constitutive elements of any human knowing process (Polanyi, 1966); and c) the role of the therapist as a "*strategically oriented perturber*" (Guidano, 1991; Nardi, Arimatea, Vernice, & Bellantuono, 2012a), helping the subject achieve a more adaptive mental functioning, a

result that can however be attained only within the invariant modalities structured by the subject during development. “*Core organising processes*” lie at the basis of every human psychological experience, either physiological and pathological. Furthermore, the conceptualisation of “*Personal Meaning Organisation*” (PMO) individuates “*the specific arrangement of personal meaning processes by which each individual is provided with a sense of oneness and historical continuity in the course of his/her lifespan*” (Guidano, 1987).

In recent years advances in neurosciences have provided the conceptualisation of new possible physiological and adaptive references for PMOs. A new interpretation of the adaptive meaning of different personality styles, based on the concept of PMO, has been proposed involving both the evolution of Homo sapiens and the development of each individual (Nardi et al., 2012a; Nardi, 2016). The main assumption of this approach is that the appearance of a specific PMO in Homo sapiens evolution allows the best possible adaptation to one’s environment and the construction of the most useful attachment (Bowlby, 1969, 1973, 1982) and reciprocity that are possible.

To emphasise the physiological significance of PMO evolution, Nardi introduced new terms for Guidano’s main PMOs: “*Controller*” (for Guidano’s “*Phobic*” PMO), “*Detached*” (for Guidano’s “*Depressive*” PMO), “*Contextualized*” (for Guidano’s “*Psychogenic Eating Disorders*” PMO), and “*Normative*” (for Guidano’s “*Obsessive*” PMO) (Nardi, 2016). Therefore, tacit reciprocity with the primary care-givers (Mikulincer & Horesh, 1999) drives personal adaptive abilities towards the construction of the most useful PMO with respect to one’s developmental environment at tacit level (Nardi, 2013a, 2016; Nardi et al., 2013; Nardi et al., 2011a; Polanyi, 1966).

Indeed, any experience that the subject lives through as new and unexpected is a stressor for his/her ability to adapt, and produces an internal activation at multiple levels, including the neuro-vegetative, musculoskeletal, neuro-immune and, especially, the emotional and cognitive levels (Nardi et al., 2013; Nardi et al., 2011a; Nardi et al., 2011b; Nardi et al., 2008). A reliable caregiver, who appears to the child as a safe refuge, is capable not only to express that *empathy* that makes the child feel welcomed, reassured, and therefore encouraged to relate to the environment, but also knows how to *regulate the child’s exposure* to environmental stressors in relation to the competences and skills he/she gradually develops (Nardi, 2016).

### 1.1 PMO Description

Nardi highlighted two primary developmental axes driving PMO adaptive stabilisation.

The *first axis* drives stabilisation depending on how the child perceives the care-giver’s behaviour, i.e., whether such behaviour appears to be predictable in terms of emotional activation (i.e., if it is the same or different in similar situations).

#### 1.1.1 The Experience of Inward PMOs

The consistent repetition of the caregiver’s non-verbal behaviour in the same situations—in the form of similar internal activations expressed by the same basic emotions (Ekman, 1992)—soon turns stressors into “*behaviours that can be expected*” by the child, who learns early tacit recognition of the internal states he/she uses to self-refer current experience (Nardi, 2013b). Since the internal activations are initially the same as those of the caregiver, the child very soon stops feeling the need to refer to the caregiver to understand whether the situation he/she is experiencing is safe. Subsequently however, the acquisition and maturation of new operational competences involves discovery of his/her ability to manage a given stressor (e.g., a danger situation); this entails a change in his/her internal state, related to the awareness of having now the ability to control a situation that previously appeared as dangerous, and in the relevant emotional activations (for instance, the child feels safe and is no longer afraid). In inward PMOs (Arciero & Guidano, 2000; Arciero, 2002, 2006; Arciero, Gaetano, Maselli, & Gentili, 2004; Quiñones Bergeret, 2008; Mannino, 2010, 2011), the reading of experience is therefore based primarily on the internal sensory-perceptual activations and the relevant basic emotions (Ekman, 1992), with an early focusing on internal signals, which become central and guide the child in the definition of the external context. Experiencing internal wellbeing or *discomfort* thus induces *regulation of tacit self-knowledge* in relation to the context and a consequent (possible) behavioural adjustment to the situation the child is facing (Nardi, 2013a; Nardi & Moltedo, 2008). Tacit reciprocity is predominantly managed in *physical* and spatial terms through approaches and retreats with respect to the figures and the contexts that are significant for the subject, in the way that best matches his/her internal states (Nardi, 2013a; Nardi & Moltedo, 2008). The assimilation of experience—which becomes incorporated into the sense of self that the subject has developed until that moment, in a continuum between positive and negative sense of self that defines personal realization—is guided by *internal sensory-perceptual activations* and by *basic emotions* (Ekman, 1992) in relation to the two key *stress categories* that the subject learns to recognize, control, and manage to achieve a sense of personal realization: *danger* (in relation to all that can constitute a threat), and *loneliness* (as in situations where it is necessary to act in first person) (Nardi, 2016).

#### 1.1.2 The Experience of Outward PMOs

When non-verbal caregiver behaviours appear to vary in relation to the external context, or to depend on the respect of some rules more than on the child’s internal needs and signals, the caregiver’s attitudes at first appear to the child as “*poorly predictable*” and induce him/her to pay tacit attention primarily to the external environment,

which is therefore employed early to modulate and decode internal states when self-referring experience (Nardi, 2013b). The child tends to imitate the caregiver's attitudes towards the external environment, and it is precisely the priority given to external signals that prompts the child to continue to make reference to the caregiver (and later to other reference figures) to judge whether his/her own behaviour with respect to the current situation is correct. In such cases, the empathy and coherence of these significant figures appear to be critical to orient the child's affective state as he/she explores the environment and relates to others. In outward PMOs (Arciero & Guidano, 2000; Arciero, 2002, 2006; Arciero et al., 2004; Quiñones Bergeret, 2008; Mannino, 2010, 2011), the assimilation of experience—which becomes incorporated into the sense of self that the subject has developed until then, in a continuum between positive and negative sense of self that defines personal realization—is therefore guided by external signals and the relevant emotions (predominantly self-evaluative and social) in relation to the two key stress categories that the subject learns to recognize, control, and manage to achieve a sense of personal realization: judgement (i.e., external attitudes that are useful to understand something of oneself and of reality through the sensory-perceptual and emotional activations it induces) and duty (with respect to what is indicated as being right to do). Tacit reciprocity is predominantly modulated on the basis of a semantic register, based on what in the environment is perceived as important to oneself and most suitable to meet one's needs (Nardi, 2016).

The *second axis* drives the adaptive stabilisation of the subject's PMO depending on how close or distant the child perceives the care-giver's behaviour ("availability", "helpfulness"). When *availability* is *high* the child becomes accustomed to interacting frequently with the care-giver, when it is *low* he/she learns early to manage alone.

These two primary developmental axes, relating respectively to care-giver *predictability* and *availability*, lead to stabilisation of four main PMOs: *Controller, Detached, Contextualized and Normative* (Nardi, 2016).

In every PMO care-giver *predictability* and *availability* not depend on the—positive or negative—quality of significant relationships.

1) An inward environment (high care-giver *predictability*, predominantly physical reciprocity), where reliable references appear close and accessible ("available", "online forms of attachment"), enables the development of the ability to identify the dangers threatening the control of one's life, protective reference figures of proven reliability, and the tools required to manage situations that allow extending one's range of autonomous action (Nardi & Moltedo, 2008). The stressor represented by *danger* (a direct or indirect, concrete and simple, abstract and complex threat) thus leads to the development as a fundamental competence of the ability to manage the various situations so as to live them safely. Such managing ability is obtained from an awareness of the internal states, particularly the physical and emotional tones of peacefulness or anxiety, which are closely related to currently available operational tools. The subject gradually discovers that he/she can not only perceive, but also identify reliable reference figures in relation to the need to feel safe, while at the same time enjoying areas of freedom. Such tacit attitude prompts the subject to manage life contexts personally or, when this cannot be done, to identify those who can do it reliably (Nardi, 2007). The reliability of others is established precisely from the response the subject receives with respect to his/her internal needs, and this is the discriminating factor guiding in the identification of significant references and in the construction of the relational network (Nardi, 2016). In all these cases, which are *inward* with high physical reciprocity, the "Controller" PMO becomes stable.

2) On the other inward side (high care-giver *predictability*, predominantly physical reciprocity), in an environment where references appear more distant from one's internal needs, less accessible, and not always immediately available ("offline" forms of attachment) the stress the subject has to face and learns to achieve self-realization is represented by being encouraged to confront specific situations *in first person and alone* (Nardi, 2013a). Indeed, the caregiver does not get involved each time, but provides the instructions and the prompts that, keeping into account the abilities the child has developed, enable the gradual extension of his/her range of action and autonomous functioning; this allows the child to learn to take on new tasks alone, but without feeling abandoned, and gradually to acquire confidence in his/her own abilities. The stressor represented by *loneliness* (a situation where the subject must act in first person which however also provides a space for personal experience and operation) leads to the development of the fundamental skill of self-management (Nardi, 2007). The subject evolves an early sense of responsibility that prompts personal commitment. Feeling encouraged to take on experience increasingly alone enables the subject to develop early management competences, to become responsible, to acquire confidence in his/her own means, and to learn to appreciate his/her autonomy, self-determination, reliability, and responsabilization (Nardi & Moltedo, 2008). These abilities also provide the means to weave his/her relational network and to seek new significant figures (Nardi, 2016). All these cases, which are *inward* with low physical reciprocity, result in stabilisation of the "Detached" PMO.

3) In an outward environment (low care-giver *predictability*, predominantly semantic reciprocity), where reliable reference figures appear close and available ("available" "online" forms of attachment), the subject identifies for each specific, carefully focused situation the advantageous behaviours, the results that can be achieved, and the opinion that can be formed (Nardi & Moltedo, 2008). The child, through sensory-perceptual and emotional activations that match the attitudes, demands, and indications of significant figures, is guided to understand some aspects of the self and the world, learning to manage the former and to find a useful relationship with the latter.

From the sum of these situational experiences the subject begins to identify the basic themes that need to be addressed to achieve a successful life through the indications, suggestions, comparisons, and tools that the significant figures provide each time (Nardi, 2007). The very fact of making reference to the primary attachment figures to read the attitudes and expectations of the external world (thus updating the inner world and selecting the behaviour to be held) leads, since school age, to the identification of new significant references—peers as well as adults—as models and terms of comparison. The stressor constituted by external *judgement* (i.e., internal representations of what the other may think and do, which are useful to gain an understanding of oneself) leads to develop as a key competence the ability to manage *personal exposure* to obtain the desired results (Nardi, 2016). All these cases, which are *outward* with high semantic reciprocity, lead to stabilisation of the “*Contextualized*” PMO.

4) On the other outward side (low care-giver *predictability*, predominantly semantic reciprocity), in an environment where references appear to be available to provide indications only when necessary, and are not therefore always available (“*poorly available*”, “*offline*” attachment), the stress the child learns to manage to achieve self-realization constitutes the motivation to do what is *right*, learning to identify a sort of thoroughfare to overcome life’s limitations and contradictions (Nardi & Moltedo, 2008). To learn to recognize these aspects allows to focus on the problems of life, choosing the aspect that appears to be the best, initially based on the caregiver’s indications and subsequently in an increasingly responsible and autonomous way. The possibility of making reference to specific interiorized criteria allows weighing the pros and cons of situations and to choose, when this seems necessary, among the contrasting aspects of reality that appear to be equivalent, without experiencing ambivalence (which occurs only in clinical disturbances). The stressor constituted by *duty* (in the sense of doing what is right) leads to the development of the key skill of commitment as the ethical basis of one’s behaviour. Based on the caregiver’s indications, as the subject matures he/she takes an increasingly active role in verifying, integrating or changing that which he/she should or should not follow. Whereas in outward Contextualized PMOs external judgements, comparisons with others, and results achieved are used to test one’s resources and competences in the case at hand, outward Normative PMOs principally tend to draw from judgements and comparisons an affinity and the sharing with others of what the subject thinks counts in life (Nardi & Moltedo, 2008). Personal commitment thus acquires a predominant role—as an expression of taking on personal responsibility—over results, which in turn do not depend exclusively on the subject, but also on external variables, and therefore cannot be fully ascribed to oneself. The discovery of one’s ability to conduct a responsible search for values and the behavioural rules connected with them allows discriminating what appears useful from what may be superfluous, overcoming the nuances of experience by making responsible choices (and avoid remaining trapped in them, losing oneself in an obsessively vacuous perfectionism). This tacit orientation also allows to search in the different experiences and seasons of life what may be of value and what may be shared with those who express affinities with oneself (Nardi, 2016). In conclusion, in all such cases, which are *outward* with low semantic reciprocity, the “*Normative*” PMO becomes stable.

Significant differences in emotional connection activation between *inward* and *outward* subjects have been confirmed by different types of research into the biological correlates of PMOs via genetic studies of certain polymorphism classes related to personality (Nardi et al., 2013; Nardi et al., 2011a; Nardi et al., 2011b; Piva, Giulietti, Nardi, Bellantuono, & Principato, 2010). The PMO construct has also found confirmation by *functional* neuroimaging (Bertolino et al., 2005; Nardi et al., 2008; Rubino et al., 2007).

Recently the *Mini Questionnaire of Personal Organization (MQPO)* (Nardi et al., 2012b) has been developed to investigate the major PMO aspects, supporting the PMO construct and the adaptive-evolutionary post-rationalist approach. The MQPO is a self-report test and is therefore susceptible to many biases (Yovel & Friedman, 2013); however, evaluating the complexity of the processes of development and maintenance of personal meaning requires focusing on unaware, non-verbal and emotional processes linked to immediate experience (Maturana, 2006; Polanyi, 1966). In this framework, the adaptive and evolutionary post-rationalist approach aims to distinguish *immediate experience* from its *explanations*.

### 1.2 Basis of Post-Rationalist Projective Reactive (PRPR) Construction and Validation

Based on these considerations a projective tool has been devised to investigate PMOs by focusing on tacit self-reference experience mechanisms, to obtain meanings of immediacy of experience rather than experience explanations; the tool operates like Guidano’s *moviola* (*slow motion setting*; Guidano, 1987), framing PMOs.

In theory, focusing on the inner film may allow distinguishing experience from its explanations and grasping the meaning of a subjective emotional experience (Damasio, 1999), where the individual is viewed as an active builder of meanings (Guidano, 1987, 1991; Nardi et al., 2012a). Projective instruments allow capturing the immediacy of experience (Guidano, 1991) without the need for recourse to memories or past experiences. Nevertheless the term *projective* indicates that the objective characteristics of the stimulus are enriched and modified by the subject’s attributing to those stimuli the content of her/his experience, psychic world, personal characteristics and what he/she feels (van de Vijer, 1999; Wood, Harms, & Vazire, 2010), which are basically the elements on which the *slow motion setting* allows to focus (Guidano, 1987).

The *PRPR* is a projective tool based on the story-building technique (Teglasi, 2001); it involves administration of 20 black and white printed stimulus pictures showing impersonal human figures (i.e., figures demonstrating no expression or emotion). For each stimulus picture the subject is required to imagine and describe a story whose *screenplay* includes three phases, *previous scene*, *current scene* (the stimulus picture), and *later scene*, and is asked to play the role of *Director*, avoiding that of critic or judge. In telling each story, the subject must dive into the *hic et nunc* of her/his subjectivity; in answering, he/she gives her/his point of view and meanings regarding what he/she has perceived through the portrayal of the characters and the description of their actions, needs and, especially, emotions. As Guidano wrote (1991), “when we think about a scene of a movie and, starting from the words and actions of a character, we are trying to reconstruct the moods, the affective motivations, the more or less secret intentions, and so on; the character who has been tried to be reconstructed in this way is none other but ourselves”. Tacit elements related to reciprocity and emotions emerge. PMOs are obtained coding these subjective elements (Jenkins, 2010): meanings and emotions, but unlike in other apperceptive tests (e.g., TAT) (Morgan & Murray, 1935; Lilienfeld, Wood, & Garb, 2000) they are gleaned from the subject’s manner of arranging and self-referring the experience stimulated at the immediate tacit level by the picture. The *PRPR* scoring criteria are described below.

While the story is being told the examiner investigates the elements that are significant for the respondent using a standard question list comparable to a semi-structured interview investigating mainly emotions and roles of the characters (e.g., *How feels each character?* and *Who are the characters for you? “Which do you prefer?”*). The examiner’s main goal is to help the subject switch from the role of critic and passive observer to that of *Director* and at the same time bring her/him back from the explanatory level to the *here and now* of the personal story. Since the test is complex it requires a prolonged time of administration (at least 5 minutes per picture) and training on administration methods and results scoring.

Two major elements characterise the *PRPR* stimulus pictures: a) the *relationship*, since the concreteness of the stimulus and its story aim to bring forth the tacit perception of the self and of the other (Auhagen & Hinde, 1997; Hinde, Finkenauer, & Auhagen, 2001), eliciting reciprocity (physical or semantic) and perception of the other (as available or unavailable) on the basis of the theoretical approach (Nardi, 2013a, 2016); b) the subjective experience in terms of possible different emotional activations. The more complex element was the *relationship*, and the pictures were devised according to the following areas of relationship: with oneself; with a child (asymmetric); with the group; with the natural environment; and with the opposite sex (here the human figures had clear gender characteristics). Ten topics were selected from these five areas of relationships: 1) Approach and Removal; 2) Contact and Detachment; 3) Risk and Safety; 4) Reproach and Approval; 5) Inattention and Accuracy; 6) Cooperation and Individual activity; 7) Irresponsibility and Responsibilities; 8) Choice and Obligation; 9) Exposure and Social Withdrawal; 10) Arguing and Love.

This work undertakes to describe for the first time the process of construction and validation of the *Post-Rationalist Projective Reactive (PRPR)*, the first tool designed to distinguish experience from its explanations, in the framework of the adaptive and evolutionary post-rationalist approach. More in detail, through a Reliability Analysis and a Cluster Analysis, the objective of this research is to verify the effectiveness and validity of the *PRPR* in investigating subjectivity and, in particular, the PMOs.

## 2. Materials and Methods

### 2.1 Participants

The *PRPR* test was administered to a cohort of 294 young adult healthy Italians (110 M, mean age 27.20, SD = 9.79, age range 19-71 years), without an Axis I diagnosis as evaluated with the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders IV. The sample was representative in terms of gender, age, education level and geographical residence (American Psychological Association, 1999). Volunteers were recruited by advertising the study on the notice boards of the Polytechnic University of Marche (UPM) Medical School and the Health Service offices of Ancona.

The study was approved by the UPM Research Ethics Committee. All subjects gave their written informed consent to participate and authorized processing of their personal data in line with the relevant Italian regulations (Legislative Decree no. 196, 30 June 2003).

### 2.2 Scoring

The test was administered individually to each participant. For each story in the test examiner assigned points on three scales: *Emotions*, *Reciprocity*, and *Intensity of Availability* (hereinafter, *Intensity*); the score for each scale ranged from a maximum of 3 to a minimum of 1. On the *Emotions* scale a score of 3 was assigned when self-assessing emotions were present in the story; a score of 2 when both basic and self-assessing emotions were present; and a score of 1 when basic emotions were present. On the *Reciprocity* scale a score of 3 was assigned when the reciprocity with others (among characters) in the story was purely semantic; a score of 2 when it had both a physical and a semantic meaning; and a score of 1 when it was purely physical. On the *Intensity* scale a score of 3 was given if the story involved high intensity of the others’ availability (among characters); a score of 2 for

moderate intensity, and a score of 1 for unavailability of the others'. Scoring criteria were related to the different types of emotions, reciprocity and level of availability that characterize the PMOs. The examiner counted the frequency of each score in each scale (20 stories). Combined PMOs were also found, i.e. profiles where no single scale showed a score prevalence (for instance nine "3" scores, two "2" scores and nine "1" scores on the *Intensity* scale), similar to clinical practice. These were felt to require further answer evaluation (in the example, on the *Intensity* scale); examination of the complete profile emerging from the full set of pictures then yielded a predominant PMO.

### 2.3 Reliability Analysis

Internal validity was evaluated by Cronbach's alpha. To test convergent validity, the MQPO was also administered to all 294 subjects; a smaller sample of 99 participants underwent clinical interview. Inter-rater reliability was determined by comparing the scores of two different *PRPR* examiners (double-blind method). Indeed, to prevent any examiners bias based on, for example, subject's origin or PMO profile was applied anonymity. The examiner did not know the previous evaluation made by the colleague.

### 2.4 Introduction to the Clustering Techniques

Cluster analysis is a statistical method applied to identify groups of related observations in a dataset (Everitt, Landau, & Leese, 2001). In this study it was used to group participants based on their score patterns on the *Emotions*, *Reciprocity*, *Intensity* scales.

This was done in two steps. The first involved identifying the appropriate number of clusters in the data. Crucially, this number was not predetermined, to enable a robust cluster solution to emerge. This step suggested a four-cluster solution, where the cohesion value was 0.7 (good cohesion) and the ratio of cluster sizes was 4.31 (indicating that the largest cluster included four times more subjects than the smallest one). As regards the variable "importance" in grouping subjects, *Intensity* appeared to have a greater importance (= 1) than *Reciprocity* (= 0.83) and *Emotions* (= 0.82).

The second step was required to resolve between-clusters heterogeneity, which was addressed using the iterative partitioning method (k-means) (Aldenderfer & Blashfield, 1984) where, based on a number of cluster centres, the analysis places each case in the cluster that has the nearest centre point. Four initial cluster centres were specified.

i) The profile of *Contextualized* subjects should be characterised by a predominance of "3" scores on all three scales (*Emotions*; *Reciprocity*; *Intensity*). The *Contextualized* PMO is characterised by an external reading of immediate experience lived in terms of judgment (*outward*), high semantic reciprocity and high availability (*online attachment*).

ii) *Normative* subjects should have a predominance of "3" scores on the *Emotions* scale, "3" scores on the *Reciprocity* scale, and "1" scores on the *Intensity* scale. This PMO is characterised by an external reading of experience (*outward*) low semantic reciprocity and low availability (*offline attachment*), where the need to comply with external parameters, principles and rules predominates.

iii) *Controller* subjects should have a predominance of "1" scores on *Emotions*, a majority of "1" scores on *Reciprocity*, and a majority of "3" scores on *Intensity*. This PMO is characterised by an internal reading of experience (*inward*), with high physical reciprocity and high availability (*online attachment*).

iv) *Detached* subjects should exhibit a predominance of "1" scores on all three scales. The *Detached* PMO is characterised by themes relating to *inward* modes with low physical reciprocity and low availability (*offline attachment*).

These cluster centres were used to assign each participant in the sample to a cluster; this was achieved by calculating the distance between his/her score to each cluster centre, and assigning him/her to the cluster involving the smallest distance.

## 3. Results

### 3.1 Reliability Analysis

The reliability of the three *PRPR* scales was found to be quite high. In particular Cronbach's alpha was 0.81 for the *Emotions* scale, 0.80 for *Reciprocity* and 0.82 for *Intensity*. Moreover, the *PRPR* showed significant correlations with the other measures, since it correlated with the MQPO ( $r = 0.71, p < 0.001$ ) as well as with the PMO emerging from clinical interview ( $r = 0.76, p < 0.001$ ). Inter-rater reliability was high ( $\kappa = 0.75$ ).

### 3.2 Cluster Analysis

We performed a hierarchical cluster analysis based on a Euclidean distance for establishing the distance matrix. In order to compare clustering results against the external, theoretically driven, classification, a measure of agreement is needed. To do so, we estimated a metric of performance, the Adjusted Rand Index (henceforth, ARI). ARI can be regarded as a measure of agreement between different classifications; the index ranges from 0 to 1; values close to 0 indicate random labelling, whereas values approaching 1 indicate that clusterings are identical between

classifications. In our case, ARI proved to be .817, indicating a strong association between the theoretically driven classification and the final cluster partition.

The final cluster solution is reported graphically in Figure 1 and numerically in Table 1. Figure 1 shows the typical scale scores obtained by the members of each cluster.

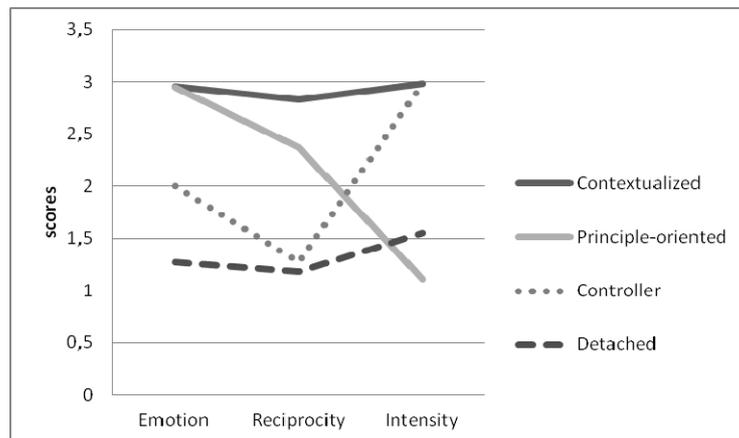


Figure 1. Scores (cluster centre points) to the three scales of the members of different clusters

Table 1. Final cluster centres for each scale

	Emotions	Reciprocity	Intensity
Contextualized	2.96	2.83	2.98
Controller	2	1.27	2.98
Normative	2.95	2.37	1.11
Detached	1.27	1.18	1.55

The typical cluster 1 member had a prevalence of “3” scores (cluster centre = 2.96) on the *Emotions* (prevalence of self-assessing emotions), *Reciprocity* (reciprocity appeared to be purely semantic; cluster centre = 2.83), and *Intensity* (cluster centre = 2.98) scales. This profile was comparable to that of subjects with a *Contextualized* PMO.

The typical cluster 2 member was characterised by a prevalence of “2” scores (cluster centre = 2.0) on *Emotions*, both basic feelings and self-assessing emotions being present in the story. They also showed a majority of “1” scores (cluster centre = 1.27) on *Reciprocity*, i.e., the stories involved above all physical reciprocity. Finally they showed a high prevalence of “3” scores (cluster centre = 2.98) on the *Intensity* scale. The profile of the members of this cluster was comparable to that of subjects with a *Controller* PMO.

The members of cluster 3 were characterised by a prevalence of “3” scores on *Emotions* (prevalence of self-assessing emotions) and *Reciprocity* (the story mainly expressed semantic reciprocity; cluster centres = 2.95 and 2.37, respectively), and by a prevalence of “1” scores on *Intensity* (cluster centre = 1.11). Their profile was comparable to that of subjects with a *Normative* PMO.

Cluster 4 members showed a majority of “1” scores (cluster centre = 1.75) on all scales: *Emotions* (prevalence of basic feelings; cluster centre = 1.27); *Reciprocity* (physical reciprocity; cluster centre = 1.18); and *Intensity* (low or no availability; cluster centre = 1.55). Their profile was comparable to that of subjects with a *Detached* PMO.

Finally, cluster 1 (*Contextualized*) included 200 subjects, cluster 2 (*Controller*) was made up of 64 subjects; cluster 3 (*Normative*) included 19 subjects, and cluster 4 (*Detached*) included 11 subjects.

#### 4. Discussion

As reported in the introduction, an approach to the subjective patterns, as in post-rationalism, can be better improved by a reactive than a questionnaire (which investigates the rational explanations). In fact, using a reactive (as the PRPR) it is possible to produce an experimental situation in which the subject investigated can express his/her perceptions and emotional activations through the situation shown in a table. The results obtained from validation of the PRPR test showed that interpretation of its internal validity was fairly complex. Significant correlations were found with other measures related to the PMO construct and the evolutionary-adaptive post-rationalist approach. The PRPR evaluations correlated with those of the MQPO ( $p < .001$ ), indicating a similarity of the PMO profiles obtained with the two instruments and confirming that they

are based on the same theoretical construct despite the difference between the methods. The effectiveness of the PRPR test and the fact that it was found to be comparable with clinical PMO evaluation showed that the test is currently the sole instrument capable of leading respondent to their immediate experiencing, whereas the MQPO and other post-rationalist tools are closely related to self-describing or self-deceiving modes. However, the PRPR and MQPO should be viewed as being complementary rather than alternative; despite the greater effectiveness and reliability of the PRPR in investigating PMOs, its 20 tables cannot be used in large-scale studies, because the PRPR test requires a long time of administration and a trained therapist. The limitations of one method are the strengths of the other: the rapidity and ease of administration of the MQPO make it eminently suitable for large-scale research, whereas the accuracy and effectiveness of the PRPR make it a valuable tool for close examination of the clinical context.

The result of cluster analysis was even stronger despite the exclusion from the test, for methodological and statistical reasons, of qualitative elements (Process Elements); this could theoretically involve an impoverishment of the personality profile of a projective, yet in PRPR test PMOs emerge in any case.

It may be useful to describe the frequency of the main themes of each PMO in the stories, because they were found to correspond closely to the theoretical construct: e.g., Controller subjects wrote stories characterised by themes such as safety and freedom or danger and constraint, with a greater presence of fear. In particular the theme of danger in their stories was confirmed as main stressor. Furthermore, they demonstrated a greater understanding of and attention to their bodily states than of/to their emotions; the description of their feelings was therefore often associated with “doing” whereas in others, like Contextualized subjects, it was usually associated with “being”.

In particular in the stories of Contextualized subjects the external environment was often described as an indicator of the level of self-evaluation, reflecting the dependence of the subject’s self-image on “what others think I am”, i.e., their characters often had judging roles. Thus, the theme of judgement in the stories of these subjects was confirmed as the most important and frequent stressor. Consequently, the main emotions they described were guilt, directed at achieving a better image of “what s/he thinks of me”, shame, inadequacy and pride (like “they appreciate my achievement”).

The stories constructed by Normative subjects frequently exhibited decisions on dichotomies such as right/wrong and positive/negative, although the predominance of the need for certainties and for compliance with internal rules was always present. Duty emerged as a major stressor in the stories of these subjects. The emotions they described were therefore often ambivalent and dichotomous, too, e.g., diffidence and curiosity, interest and disapproval, good and bad effect/feeling at the same time.

In the stories of Detached subjects loneliness was a frequent common thread; when asked, they replied that they perceived loneliness as inevitable and necessary, albeit not desired (and therefore as a stressor). In particular the stories marked by fate often had a negative ending characterised by distance and removal from others. These choices were characterised by internal focalisation, since they stemmed from an internal tendency towards detachment rather than being a consequence of others’ negative behaviours.

The effectiveness and standardisation of the scoring method were confirmed by its significant correlation with inter-rater reliability.

Finally, clinical practice daily demonstrates the high frequency of Contextualized and Controller PMOs in the population. This involved considerable difficulties at the time of sample recruitment for MQPO validation (Nardi et al., 2012a); similar difficulties in finding subjects whose PMO was characterised by off-line care-giver availability (Normative and Detached PMO) were encountered for the PRPR sample recruitment. As confirmed by results, the low number of subjects with Normative and Detached PMO in the sample represents a limit for the validation process, but not for the identification of these PMOs. The main limits of PRPR, as described above, are the long time of administration due to its accuracy and the fact that PRPR can only be administered by a trained therapist.

After the validation process, PRPR could be further developed by evaluating the strength of each table to detect or produce stressors. PRPR states that each table can be *read* freely by the subject, but the themes that emerged from the stories have shown that some tables are able to elicit more frequently specific stressors for each PMO. Therefore, it could be possible, in specific cases, to use only a part of the 20 tables, reducing the overall time of administration.

Moreover, identifying the PMOs allows us to focus on specific needs of the subject (i.e., positive judgement in Contextualized PMOs; safety in the Controller PMOs; certainties and values in Normative PMOs, and autonomy in Detached PMOs). Therefore, PRPR data could integrate clinical tools and may be correlated to instruments that investigate individual needs.

## 5. Conclusions

Unlike self-administered tests, the PRPR allows focusing on the immediacy of experience thus enabling PMOs to emerge. The test proved to be a useful tool to investigate personality as a process, according to the post-rationalist approach. The results described here document a reliability and effectiveness that are comparable to those of the clinical interview. The PRPR is the first post-rationalist projective tool and a further, valuable support to the PMO construct. According to Nardi's evolutionary-adaptive paradigm, the test allows focusing on emotional and reciprocity processes and is an innovative instrument to investigate both PMOs and the psychopathological mechanisms that make personal experience not "viable" (Maturana & Varela, 1987), hence not adaptive.

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