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Self-Directedness Predicts Quality of Life in Individuals with Psychotic Experiences: A 1-Year Follow-Up Study

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Self-directedness · Harm avoidance · Psychotic experiences · Schizotypy · Quality of life

Abstract
There is a high prevalence of psychotic-like experiences in nonclinical patient cohorts from Brazil. This study aimed to test whether personality dimensions, as well as schizotypy, are important predictors of quality of life (QoL) in individuals with psychotic experiences (PE). ***Method:*** 115 participants were recruited from Spiritist Centers in Brazil. At the 1-year follow up, 90 participants (78%) were reassessed. Instruments were the SCID-I (Structured Clinical Interview for DSM-IV), TCI-R 140 (Revised Temperament and Character Inventory), OLIFE-R (Oxford-Liverpool Inventory of Feelings and Experiences), and WHOQOL-BREF (World Health Organization QoL Instrument). ***Results:*** Mean age (±SD) was 36.8 (±12.5) years; 70% were female. Participants reported 74.4% of PE at time 1 and 72.3% at time 2. At time 1, temperament and character explained 47% of the psychological QoL variance; self-directedness was the strongest predictor of higher QoL, while harm avoidance and introverted anhedonia predicted worse QoL. At the 1-year follow-up, self-directedness remained the most important predictor of psychological QoL. ***Conclusion:*** Individuals reporting PE can show psychological QoL when they are high on self-directedness. Those with high levels of introverted anhedonia and cognitive disorganization can have a lower QoL and may be at risk for mental health problems.

Introduction

DSM-5 Changes: Psychotic Symptoms and Positive Schizotypy

One of the most important changes in the DSM-5 is the emphasis on so-called "schneiderian first-rank symptoms" [1]. Previously, research and clinical practice considered positive symptoms (hallucination and delusions) to be decisive criteria for the diagnosis of schizophrenia. Positive symptoms are now given as much weight as negative symptoms and cognitive impairment [1]. Although

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positive symptoms were always related to mental disorders, psychotic experiences (PE) can coexist with mental health, depending on the level, number, duration, and way an individual copes with these experiences [1, 2]. But how can one differentiate between healthy and unhealthy PE? One approach has used the multifactorial construct of schizotypy. Its 4 dimensions include: unusual experiences, cognitive disorganization, introverted anhedonia, and impulsive nonconformity [3].

Regarding mental health, the major distinction is between the positive schizotype, who scores high only in unusual experiences, and, on the other hand, the high schizotype, who scores high in all dimensions, and the negative schizotype, who scores high only in introverted anhedonia. Only individuals with a profile of high or negative schizotypy present a high vulnerability to mental health problems [3, 4]. A number of studies has highlighted an association between negative schizotypy and poor quality of life (QoL) [5, 6]. On the other hand, positive schizotypy has been related to high well-being, spirituality, intelligence, and creativity. Individuals showing this disposition towards unusual experiences, but not any of the other schizotypy dimensions, have been called "happy schizotypes" or considered to suffer from a kind of "benign schizotypy" [3].

These and other findings suggest that a disposition towards PE, including hallucinations and other positive schizotypy symptoms, are not necessarily good predictors of a mental disorder, while other psychotic symptoms, such as introverted anhedonia and cognitive disorganization, may indeed be robust markers of psychopathology [4]. However, we are still lacking evidence about the underpinning variables that can help us predict when a person with schizotypal features will develop in terms of QoL into a healthy or an unhealthy schizotype.

Self-Directedness as an Indicator of Mental Health in Individuals with PE

One potential variable underpinning the adaptive behavior in schizotypes is the personality structure, specifically self-directedness, which is characterized by personal maturity, self-responsibility, and goal-directed behavior [7]. Within the psychobiological model of temperament and character, self-directedness features as 1 of 3 character traits, which also include cooperativeness and self-transcendence, differ from the genetically inherited temperament traits of novelty seeking, harm avoidance, reward dependence, and persistence.

Clinical investigations of this personality model have shown QoL to be most strongly predicted by self-directedness, while harm avoidance had the strongest negative association with QoL [8]. Another study that compared psychiatric patients with first-degree relatives and a control group of subjects showed the first 2 groups to be significantly lower on QoL and self-directedness and higher on harm avoidance and self-transcendence than the controls [9]. We chose QoL as our outcome variable because this is a well-established indicator of poor mental health [6, 10]. More specifically, we wanted to test which temperament, character, and schizotypy dimensions best predicted QoL in individuals reporting PE at time 1 (when they sought support in a religious context) and at time 2 (1-year follow-up).

In the traditional Brazilian Spiritism, people with psychotic-like experiences are named as "mediums" in the religious context. For this reason, this is a privileged nonclinical sample to observe PE and their relationship with personality, psychosis proneness, and QoL [11].

We expected high self-directedness, low harm avoidance, and low introverted anhedonia to be the strongest predictors of a better QoL. In addition, we predicted that unusual experiences would not, by itself, be associated with worse QoL outcomes. To our knowledge, this is the first longitudinal study that has attempted to test the role of personality structure in mental health outcomes within a sample of positive schizotype individuals.

Method

We present the prospective data from a cohort of 115 individuals who sought religious/spiritual help for many kinds of problems (example: help for a sick relative) in Spiritist Centers in Juiz de Fora, Brazil. Participants were regarded by the spiritual healers as "mediums" (individuals allegedly able to contact the spiritual dimension) [4]. We included subjects older than 18 years who were not former participants of the Spiritist Center. First, 150 individuals were contacted to participate, but 35 declined or did not complete the questionnaires.

The study received ethical committee approval, and participants gave written informed consent. They did not receive any payment for study participation. All participants completed the SCID-I (Structured Clinical Interview for DSM-IV) and a qualitative interview about the presence of anomalous experiences at time 1 [4]. They were individually interviewed by 2 psychologists and PhD students between April 2009 and August 2010. At time 1, we collected data for the TCI (Temperament and Character Inventory), WHOQOL-BREF (World Health Organization QoL Instrument), and O-LIFE (Oxford-Liverpool Inventory of Feelings and Experiences).

At time 2, we used only a QoL scale, because we consider 1 year a very short interval to collect personality data again, and, also, because we wanted to check if personality dimensions and schizotypal traits were able to predict 1-year-longer QoL. We presented

Table 1. Hierarchical regression predicting each domain of quality of life (QoL) collected at time 1 (n = 115)

	Physical QoL		Psychological QoL		Social QoL		Environmental QoL	
	β	*t*	β	*t*	β	*t*	β	*t*
Step 1								
F	5.480**		12.170**		5.533**		6.542**	
R^2_{Adj}	0.26		0.47		0.27		0.31	
Sex	–0.115	–1.352	–0.120	–1.672	–0.119	–1.406	–0.033	–0.404
Age	–0.162	–1.719	–0.042	–0.523	–0.130	–1.383	–0.271	–2.965**
Novelty seeking	–0.137	–1.300	–0.099	–1.109	–0.064	–0.609	–0.109	–1.072
Harm avoidance	–0.312	–2.677**	–0.212	–2.155*	–0.151	–1.298	–0.230	–2.036*
Reward dependence	–0.047	–0.423	–0.093	–1.004	0.080	0.728	–0.111	–1.045
Persistence	0.123	1.140	–0.006	–0.064	–0.151	–1.394	0.024	0.228
Self-directedness	0.100	0.769	0.451	4.121**	0.318	2.464**	0.250	1.994*
Cooperativeness	0.147	1.188	0.153	1.467	0.208	1.684	0.246	2.051*
Self-transcendence	0.070	0.658	0.053	0.592	0.065	0.608	–0.068	–0.655
Step 2								
F	4.268**		10.308**		3.979**		5.398**	
R^2_{Adj}	0.27		0.52		0.26		0.34	
Sex	–0.111	–1.313	–0.115	–1.668	–0.122	–1.423	–0.041	–0.500
Age	–0.172	–1.831	–0.058	–0.760	–0.142	–1.495	–0.291	–3.238**
Novelty seeking	–0.168	–1.495	–0.085	–0.935	–0.088	–0.771	–0.169	–1.581
Harm avoidance	–0.285	–2.350*	–0.191	–1.936	–0.151	–1.230	–0.235	–2.030*
Reward dependence	–0.067	–0.569	–0.150	–1.575	0.032	0.269	–0.187	–1.670
Persistence	0.131	1.199	–0.017	–0.192	–0.166	–1.492	0.001	0.011
Self-directedness	0.036	0.260	0.307	2.723**	0.266	1.896	0.191	1.441
Cooperativeness	0.135	1.057	0.086	0.831	0.196	1.512	0.246	2.009*
Self-transcendence	0.134	1.226	0.111	1.243	0.106	0.956	0.010	0.096
Unusual experiences	–0.205	–1.910	–0.142	–1.627	–0.104	–0.961	–0.214	–2.094*
Cognitive disorganization	–0.057	–0.486	–0.072	–0.755	–0.001	–0.006	0.026	0.233
Introverted anhedonia	–0.048	–0.472	–0.174	–2.118*	–0.119	–1.159	–0.174	–1.794
Impulsive nonconformity	0.099	0.794	–0.082	–0.807	0.041	0.324	0.141	1.177

* $p < 0.05$; ** $p < 0.01$

cross-sectional and mental health data in another study by Alminhana et al. [4]. Follow-up data (78% of time 1 participants) were collected only for QoL between April 2010 and August 2011; 24 participants were lost to follow-up because they had moved house or did not reply to our call; 3 participants passed away.

Measures

SCID-I [12]. This questionnaire examines the presence of axis I disorders according to the DSM-IV (2003). We used a previously validated Portuguese version.

Short TCI-R (140). The revised short TCI-R is a 140-item questionnaire that uses a 5-point scale. We used the Portuguese validated version (all Cronbach α > 0.7) [13].

Revised Short Version of the OLIFE-R [14]. This OLIFE consists of 40 items and uses a no/yes point rating scale. Internal consistency was high (0.72–0.89) [14]. For the present study, we developed a Portuguese translation that was back translated and checked for inconsistencies.

WHOQOL-BREF [15]. The scale consists of 26 items that assess 4 domains: *physical health:* pain, sleep, dependence on medication, and working capacity; *psychological:* positive and negative feelings, and memory; *social:* personal relations, sexual interactions, and social support; and *environment:* information, recreation, access to health and social care, and physical safety. Each item is rated on a 5-point scale; The Portuguese version showed a good internal consistency (Cronbach α = 0.77) [15].

Sociodemographic Data. Age, gender, educational level, occupation, marital status, and religion were also assessed.

Statistical Analysis

Data were analyzed with SPSS (version 20.0). We carried out 4 hierarchical regressions to test which personality/schizotypy dimensions predicted QoL. In step 1, we included personality features from the TCI, controlling for sex and age. Schizotypy dimensions were added in step 2, specifically because we wanted to observe if they would explain QoL variability better than character TCI dimensions. We carried out separate regression analyses for time 1 and time 2 (Tables 1, 2).

Table 2. Hierarchical regression predicting each domain of quality of life (QoL) at time 2 (n = 90)

	Physical QoL		Psychological QoL		Social QoL		Environmental QoL	
	β	*t*	β	*t*	β	*t*	β	*t*
Step 1								
F	2.698**		3.069*		2.976**		2.248*	
R^2_{Adj}	0.15		0.18		0.17		0.11	
Sex	–0.057	–0.484	–0.057	–0.491	–0.060	–0.521	–0.032	–0.268
Age	–0.259	–2.156*	–0.105	–0.885	–0.164	–1,383	–0.154	–1.258
Novelty seeking	–0.174	–1.256	0.096	0.682	–0.178	–1.259	–0.009	–0.059
Harm avoidance	–0.371	–2.580*	–0.171	–1.205	–0.216	–1,477	–0.215	–1.425
Reward dependence	–0.084	–0.667	–0.070	–0.567	0.137	1.103	0.127	–0.993
Persistence	0.062	0.467	–0.118	–0.900	–0.237	–1.794	0.043	0.312
Self-directedness	0.029	0.168	0.490	2.856**	0.283	1.645	0.197	1.106
Cooperativeness	0.061	0.439	–0.097	–0.706	–0.018	–0.132	0. 041	0.288
Self-transcendence	–0.024	–0.184	0.032	0.250	–0.007	–0.057	–0.113	–0.859
Step 2								
F	1.879*		2.529*		2.331*		1.648	
R^2_{Adj}	0.12		0.19		0.17		0.09	
Sex	–0.045	–0.378	–0.045	–0.388	–0.042	–0.356	–0.029	–0.240
Age	–0.258	–2.095*	0.096	0.811	–0.164	–1.374	–0.164	–1.309
Novelty seeking	–0.216	–1.386	0.026	0.172	–0.255	–1.691	–0.057	–0.361
Harm avoidance	–0.368	–2.315*	–0.092	–0.604	–0.191	–1.239	–0.166	–1.030
Reward dependence	–0.095	–0.684	–0.082	–0.617	0.120	0.895	0.094	0.669
Persistence	0.059	0.418	–0.135	–1.006	–0.244	–1.794	0.017	0.116
Self-directedness	–0.003	–0.015	0.390	2.074*	0.219	1.149	0.141	0.707
Cooperativeness	0.063	0.425	–0.107	–0.757	–0.016	–0.111	0.038	0.255
Self-transcendence	0.011	0.077	0.078	0.596	0.051	0.384	–0.091	–0.653
Unusual experiences	–0.115	–0.766	–0.014	–0.094	–0.166	–1.139	0.054	0.352
Cognitive disorganization	–0.038	–0.232	–0.310	–1.962*	–0.129	–0.808	–0.191	–1.139
Introverted anhedonia	–0.035	–0.268	–0.070	–0.556	–0.059	–0.468	–0.097	–0.731
Impulsive nonconformity	0.108	0.627	0.143	0.869	0.196	1.174	0.084	0.479

* $p < 0.05$; ** $p < 0.01$.

Results

Table 3 shows descriptive statistics of the sample at time 1 and time 2. The most prevalent SCID disorders were: generalized anxiety disorder (55%); depressive disorder (28%); bipolar disorder (10%), and psychotic disorder (7%). The most prevalent anomalous experiences were: visual hallucinations (63%); auditory hallucinations (53%), and anomalous dreams (37.4%); 50% of participants claimed to have such experiences once a week since childhood [4].

Only participants who met criteria for psychotic disorders showed a full-blown psychosis. All the others had a milder form of psychotic-like/anomalous experiences. The psychotic disorder patients were already treated for their illness, and those with psychotic-like disorders were encouraged to seek psychological support in the clinical centers of the city. Further descriptive information is given elsewhere [4].

Results for Time 1

Temperament and character variables explained a significant proportion of all domains of QoL; the highest percentage of explained variance was for psychological QoL. Harm avoidance was the strongest predictor of low QoL, and self-directedness was the most robust predictor of high QoL. Adding schizotypy to the model in the second step added little explanatory power to the model. Harm avoidance predicted worse physical and environmental QoL; self-directedness and cooperativeness were

Table 3. Descriptive characteristics of the sample at time 1 and time 2

	Time 1 (n = 115)	Time 2 (n = 91)
Age, years	36.8 (12.5)	35.7 (11.4)
Women, %	70.4	71.4
Undergraduate, %	55.9	59.4
Employed, %	58.7	59.8
Married, %	44.3	47.3
Psychotic experiences[a], %	74.4	72.3
Quality of life		
Physical	67.1 (18.1)	58.0 (11.1)*
Psychological	61.2 (19.1)	61.5 (15.1)
Social	63.3 (23.9)	65.8 (20.9)
Environmental	63.8 (14.9)	64.1 (15.4)

[a] Psychotic experiences were visual and auditory hallucinations. * $p < 0.05$ vs. time 1 (paired-sample t test).

the only predictors of better psychological and environmental QoL, respectively. Unusual experiences predicted worse environmental QoL, and introverted anhedonia predicted worse psychological QoL.

Results for Time 2

In step 1, temperament and character variables explained considerably less variance in QoL dimensions. However, similarly to time 1, self-directedness was the most robust predictor of psychological QoL. Harm avoidance predicted low physical QoL. Adding schizotypy to the model in step 2 did not improve it. Self-directedness and harm avoidance remained significant predictors of QoL. Cognitive disorganization, on the other hand, was a significant predictor of low psychological QoL.

Discussion

In this study, we tested the predictive role of personality traits and schizotypal dimensions on QoL over the course of 12 months in a sample of adults who reported frequent PE. We had predicted that high self-directedness, low harm avoidance, and low introverted anhedonia would be the strongest predictors of QoL. We also expected, based on the "benign schizotypy" theory, that there would be no negative association between unusual experiences and QoL.

The results confirmed in part our key hypotheses. Harm avoidance and self-directedness predicted a lower and higher QoL, respectively, both cross-sectionally and at the 1-year follow-up. Adding schizotypy to the model added little or nothing beyond personality variables. Nevertheless, introverted anhedonia and unusual experiences were negatively associated with QoL at time 1, and cognitive disorganization was a predictor of lower psychological QoL at time 2.

As expected, self-directedness was the major predictor of high psychological QoL at both time points. This suggests that individuals with a high frequency of PE showed a better psychological QoL when they were able to take responsibility for their own actions, were goal directed and self-critical, and had a developed ego maturity (autonomy). These results mirror those of other studies with clinical samples [16, 17].

Why is self-directedness a robust predictor of QoL in individuals presenting a high frequency of PE? One potential explanation is that this represents a dimension of personal maturity in the way people deal and cope with their unusual experiences. One example of this personal maturity is a recent study comparing individuals showing PE with or without need for care [2]. Those in the nonclinical group did not report emotional problems, showed high self-esteem, presented healthy schemas about the self, and had an elevated general well-being. According to the authors, as PE might occur without pathological consequences, the aim of therapy should not be to eliminate them but to appraise them in a less threatening and persecutory way [2].

Moreover, these findings support biopsychosocial models and epigenetic factors which interact with the etiology of psychosis [2]. Thus, self-directedness and, more generally, the psychobiological model of temperament and character can be a useful instrument to distinguish between healthy and unhealthy unusual experiences. As we can see, participants presenting unusual experiences with a high score in self-directedness (at time 1 and/or time 2) can possibly be described as "healthy/happy schizotypes." In other words, they can be considered as "mature schizotypes." Beyond a mere description of traits, personality dimensions may highlight the capacity of management and a balanced way to understand and cope with PE.

Another expected outcome was unusual experiences which did not predict QoL after 1 year and were only correlated to worse environmental QoL at time 1. This is consistent with our initial hypothesis that PE are not good markers of mental disorders. One hypothesis that could possibly explain the association between unusual experiences and worse environmental QoL (which measures fi-

nancial resources, leisure, access to health, and physical safety) may be the high frequency of anxiety which, by consequence, may interfere in the feeling of environmental insecurity in a general way.

Harm avoidance was correlated to worse physical QoL at both time points. People with high harm avoidance are very fearful and anxious about novel experiences, including the PE they are experiencing (that could explain the high level of generalized anxiety disorder in the sample) [4]. We hypothesize that most of our sample would be less disturbed by this PE if they had a cognitive framework or a social support group to help them cope with it. Moreover, people with high harm avoidance having PE are very worried about themselves and their health, what may in turn generate lower scores on the physical QoL domain.

Introverted anhedonia correlated to worse psychological QoL cross-sectionally, and cognitive disorganization predicted worse psychological QoL after 1 year. Lin et al. [18] observed that anhedonia and problems related to worse QoL appeared before positive symptoms in individuals at high risk for psychosis. The study suggests a neurodevelopmental path of schizotypy, which can be independent of positive symptoms. Furthermore, Sigaudo et al. [19] found a strong correlation between disorganization (e.g., stereotyped thinking, poor attention, disorientation, difficulty in abstraction, and preoccupation etc.) and poor QoL in individuals with stable schizophrenia.

Conclusions

The study results are in line with some of the core hypotheses of the present study positing that harm avoidance is an important indicator of worse QoL and self-directedness is the major indicator of better QoL. The current results do not show a clear association between the presence of unusual experiences and poor QoL in our study cohort. In contrast, introverted anhedonia and cognitive disorganization were found to be associated with worse QoL.

The major finding of this study was that self-directedness was a plausible protective trait in individuals drawn from the general population and patients with PE. Therefore, people reporting PE can have psychological QoL when they are self-directed even after 1 year or longer. The answer to the question of why self-directedness is so important to individuals with PE is because they are able to deal and cope with their unusual PE with maturity, responsibility, and autonomy. On the other hand, those with high levels of introverted anhedonia and cognitive disorganization can have a lower QoL and may be at risk for mental health problems.

One limitation of this study was the inclusion of only 1 QoL measure at time 2. Further studies with a prospective design investigating the relationship between benign schizotypy and self-directedness in individuals with PE are needed.

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Disclosure Statement

The authors have no conflicts of interest.

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