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Schizotypy and interest in the paranormal among young people: cognitive disturbance and paradigm shift.

Abstract

A schizotypal personality is characterised by unusual experiences or cognitive distortion, and seems to be a predictor of paranormal belief in precognition, psi faculties, witchcraft and spiritualism, moderated by cognitive disorganisation. However, the paradigm shift process that accompanies some paranormal experiences could facilitate the development of a schizotypal personality structure. To this end, 675 young people aged between 13 and 25 years old (M = 16.8, SD = 1.9) completed the Schizotypal Personality Questionnaire (SPQ), the Revised and Modified Paranormal Belief Scales (R-PBS et M-PBS), the measurement of 8 kinds of paranormal experience and a self-reported measurement of Paradigm Shift (PS). The results confirm current literature, the girls corresponding to a profile of positive schizotypy characterised by paranormal beliefs and perceptions, and the boys corresponding to a profile of negative schizotypy, characterised by asocial, unusual and emotionally isolated behaviour. The younger the person when they have such an experience, the more they will tend to display symptoms of a schizotypal profile. The mediating role of paradigm shift between paranormal practices and schizotypy confirms the existence of cognitive-emotional stages in the process of the "paranormalisation" of reality and reinforcement of this cognitive distortion.

Keywords: schizotypy, paranormal experiences, paradigm shift, cognition, emotion

1. Introduction

1.1 The schizotypal personality

According to the criteria of the DSM IV, schizotypal personality disorder is characterised by at least 5 of 9 kinds of unusual experiences or cognitive distortion: misinterpretation of innocuous incidents, odd beliefs and magical thinking, unusual experiences, strange and over elaborate expression of thought and language, suspiciousness, constricted affect, odd behaviour, lack of friends and social anxiety. Just as schizophrenic disorders are psychotic disorders, schizotypal disorders are personality disorders (Delbrouck, 2008). Schizotypy can also be considered a pre-morbid condition on a schizophrenia spectrum, ranging from few clinical symptoms to symptoms of proven psychotic episodes (Siever, Koenigsberg, Harvey, Mitropoulou, Laruelle, Abi-Dargham, Goodman & Buchsbaum, 2002). This personality disorder could therefore be a clinical sign of vulnerability to schizophrenia (Dumas, Darlay, Saoud, D'Amato & Dalery, 2003) because they possibly share the same etiological origin, are perhaps merely differing degrees of the same disorder, or could be two different disorders that share many similar characteristics (Hansenne, 2003).

Of the 4 aspects of schizotypy: *cognitive disorganisation*, *introverted anhedonia*, *asocial behaviour* and *unusual experiences and peculiar beliefs*, it is this latter which is the strongest indicator of a schizotypal personality, according to Claridge, McCreery, Mason, Bentall, Boyle, Slade and Popplewell (1996). These *para-normal* perceptions and beliefs are associated with *positive* or *psychoticistic* schizotypy ("psychosis-proneness" or "psychoticism") (Miettunen & Jääskeläinen, 2008 ; Sumich, Kumari, Gordon, Tunstall & Brammer, 2008). Asocial behaviour, isolation and constricted affect (anhedonia) are associated with *negative* schizotypy (Loas, 2002) and would be more related to the male gender (Miettunen & Jääskeläinen, 2008). Categorisation can fluctuate

according to sociocultural context, according to Gassab, Mechri, Dumas, Saoud, D'Amato, Dalery and Gaha (2006).

1.2 Interest in the paranormal and schizotypy

Paranormal beliefs are not necessarily the result of psychopathology (Auton, Pope & Seeger, 2003 ; Goulding, 2004 ; Roussaux & Dubois, 2002) or lower intelligence (Musch & Ehrenberg, 2002 ; Tobacyk & Milford, 1983), but are a personality type in line with the fully dimensional model of schizotypy (Holt & Simmond-Moore, 2008). Thus believers in paranormal phenomena would be "made" this way. It is a cognitive bias in their fundamental belief system that characterises the difference in their personality and the presence of psychotic or schizotypal symptoms (Fyfe, Williams, Mason, Pickup, 2008 ; Harvey, Lombardi, Leibman, White, Parrella, Powchik & Davidson, 1996 ; Svedholm, Lindeman & Lipsanen, 2009).

The cognitive-perceptual component of schizotypy could predict paranormal belief (Genovese, 2005), specifically *precognition*, *psi faculties*, *witchcraft* and *spiritualism* (Hergovich, Schott, & Arendasy, 2008 ; Houran, Irwin & Lange, 2001). Indeed, it seems that *cognitive disorganisation* enables a schizotypal person to use their paranormal beliefs or experiences as a framework for interpreting their life (Goulding, 2005 ; Claridge, Clark, Powney & Hassan, 2007). And this cognitive disorganisation could lead adolescents who believe in *precognition*, *psi faculties*, *witchcraft* or *spiritualism* to schizotypy (DSM IV-TR *in* Delbrouck, 2008 ; Hergovich & al., 2008). Schofield and Claridge (2007) specify that cognitive organisation would moderate whether the impression left by a paranormal experience was pleasant or distressing. The greater the cognitive disorganisation, the more the paranormal experience is perceived as distressing.

1.3 Focus of research: Schizotypy, the paranormal and paradigmatic shift

Previous research reveals a link between the paranormal practice of *spiritualism* and an anxiety that is preceded by a sudden realisation, which calls the person's relationship with reality (*worldview*) into question (*paradigm shift*). This state of cognitive weakening (*Hermit Crab Syndrome*) leaves the person very vulnerable to attacks of cognitive dissonance (Mathijsen, 2010, 2011_a). It is therefore possible that, if the individual does not manage to find an acceptable compromise with the former paradigm, this cognitive disturbance may continue. In this case, an unstable relationship with reality could explain an over elaborate response to all unusual or unexplained phenomena justified or "sensified" as para-normal. This could explain the development or reinforcement of a schizotypal personality. Therefore, our first hypothesis postulates that a paradigm shift could mediate the relationship between paranormal experiences and schizotypy. Secondly, we hypothesize that, the weaker the initial paradigm structure (i.e. in pre-adolescents), the more vulnerable they are to hypothesis 1.

2. Method

2.1 Participants and procedure

1200 Western francophone young people (mostly from Belgium, 2/3 from rural areas) were invited to complete an online survey (LimeSurvey). 859 young people responded and 675 completed and valid surveys were retained. The results represent 66.2% girls and 33.8% boys between the ages of 13 and 25 years old (M = 16.8, SD = 1.9), mainly secondary school pupils. The survey was anonymous but allowed students to provide their email address for entry into a prize draw to win cinema tickets. The procedure adhered to the requirements of the *British Psychological Society Ethical Guidelines*.

2.2. Measurement

1) A validated French translation (Dumas, Rosenfeld, Saoud, Dalery & d'Amato, 1999) of the *Schizotypal Personality Questionnaire* (SPQ) by Adrian Raine (1991), measuring the 9 schizotypal traits, as listed in DSM IV, was used. This scale of 74 items assesses these subscales using forced yes/no questions: 1) reference ideas (e.g. *I sometimes feel like people are talking about me*), 2) excessive social anxiety (*I am very uncomfortable talking to people I don't know very well*), 3) odd beliefs or magical thinking (*I feel like I have already managed to communicate with other people telepathically*), 4) unusual perceptual experiences (*My thoughts are sometimes so intense that I can almost hear them*), 5) odd or eccentric behaviour (*People sometimes avoid me due to my odd appearance*), 6) no close friends (*I find it hard to be close to people*), 7) odd speech (*People sometimes comment that my conversation is confusing*), 8) constricted affect (*I tend to keep my feelings to myself*) and 9) suspiciousness (*I often feel that others have it in for me*). This scale considers schizotypal disorder a sign of vulnerability to schizophrenia (DSM IV-TR), either as a personality disorder (Eysenck, 1985) or a mild form on the schizophrenia spectrum (Kendler, 1994 ; Delbrouck, 2007).

2) *Paranormal beliefs* are measured using the *Revised Paranormal Belief Scale* (R-PBS), by Tobacyk (2004) and the *Modified Paranormal Belief Scale* (M-PBS) by Williams, Francis et Lewis (2009). These two scales (Likert in 7 degrees) empirically measure six kinds of PB: psi belief, witchcraft, superstition, spiritualism, extraordinary life forms and precognition. The R-PBS by Tobacyk (2004) also measures *conventional religiosity*, which, according to him, has similarities with paranormal belief such as the existence of spiritual entities and life after death. Williams et al. (2009) refute this argument since this kind of belief reacts differently to the other 6 on the *Francis Scale of Attitude toward*

Christianity. Consequently, they propose excluding the 4 items measuring traditional religiosity from the total score of the measuring scale.

3) *Paranormal experiences* (rather than *beliefs*) are measured on the basis of the aspects of the R-PBS by Tobacyk (2004) and experiences which young people aged between 16 and 25 years old (M = 21, SD = 2.6) they themselves defined as paranormal during qualitative "life story" interviews (Mathijsen, 2010). A means of measuring 8 types of experience has been established: 1) practicing white magic 2) or black magic, 3) practicing spiritualism, 4) practicing satanic rituals, 5) perceiving unusual unexplained sounds and lights, 6) perceiving spirits (apparitions, ghosts), 7) consulting a healer or hypnotist or 8) a clairvoyant.

4) The perception of a change in basic paradigm, that is to say the total of all accumulated and organised knowledge in the representation that the individual has of themselves and the world (Miller, Galanter & Pribram, 1960 ; Epstein, 1980, 1991), was measured using a self-reporting scale of *Paradigm Shift* (PS) (Mathijsen, 2011_b). The measurement of PS is one-dimensional and consists of 5 items on a 5-point scale (i.a. *There has been a profound shift in the way I see things* or *My view of the world is no longer the same*). Cronbach's α = 0.97.

3. Results

3.1. Young people and schizotypy

This research mainly brought together whole class groups of young people who responded on site in their school's IT rooms. Therefore, measurements were mostly taken from any young person without any particular profile. Following the method recommended by Raine (1991), the threshold scores were set at the 10th and 90th percentiles, which represent 12/74 and 46/74 for our sample. On this basis, if the critical threshold is the 90th percentile, 9.8% of young people

from our whole sample would be diagnosed with proven schizotypal personality disorder, pending confirmation following an in-depth interview.

3.2. Paranormal experiences and schizotypy

Our study confirms existing literature since it is those dimensions of schizotypy associated with *positive* or *psychoticistic* schizotypy (i.e. *unusual experiences* and *odd beliefs*) that correlate most significantly with all the experiences considered paranormal by the young people. The sample is therefore well representative and the results reliable (table 1). In addition, it is passive PEs, not pursued or expected, which show significantly higher correlations. This finding allows us to consider further analysis of the hypothesis of a link between cognitive control of the experience and schizotypy.

Table 1: PE and schizotypycal dimensions

	passive PEs		**active PEs**					
	anomalous perceptions	apparitions	healer	clairvoyance	satanic rituals	spiritualism	white magic	black magic
***Positive* or *psychoticistic* schizotypy**								
Reference ideas	.37**	.25**	.15**	.17**	.17**	.11**	.11**	.07
Odd beliefs	.35**	.43**	.22**	.30**	.10**	.28**	.20**	.13**
Unusual experiences	.50**	.37**	.22**	.22**	.11**	.28**	.19**	.18**
Odd speech	.26**	.16**	.14**	.04	.07	.13**	.07	.04
***Negative* schizotypy**								
Social anxiety	.18**	.02	.09*	.06	.10**	.00	.01	.01
Suspicious attitude	.28**	.20**	.12**	.08*	.09*	.16**	.05	.06
Eccentric behaviour	.24**	.22**	.07	.07	.13**	.12**	.16**	.12**
Lack of friends	.11**	.12**	.12**	.11**	.12**	.05	.09	.12**
Constricted affect	.19**	.14**	.11**	.04	.09*	.09*	.00	.06

N = 342 ** significant correlation at level 0.01 (bilateral)

* significant correlation at level 0.05 (bilateral)

3.3. Age at time of paranormal experience and schizotypy

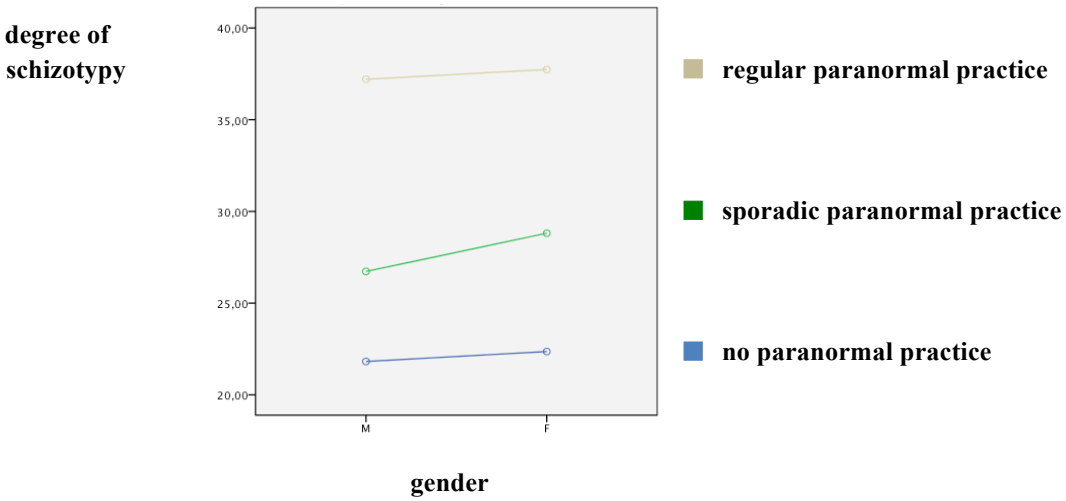
It appears there is a link, albeit a weak one, between the age of the young person at the time of their PE and the schizotypal personality. A correlation between *age at the time of the experience* and *overall schizotypy* shows a slight negative correlation ($r(372) = -0.12$, $p < 0.05$). A linear regression shows the same trend as *age at the time of the PE* seems to predict (even though it is not strongly significant), an inverse *overall schizotypy* ($\beta = -0.11$, ($t(370) = -2.02$, $p = 0.044$). That is to say, the younger the person when they have the experience, the more they have the tendency to display all of the traits of a schizotypal personality. In contrast, as the young person gets older while continuing to have these experiences, the greater the correlation with specific characteristics: *asocial and odd behaviour* ($r(339) = -.18$, $p < 0.01$), *lack of friends* ($r(339) = -.15$, $p < 0.01$) and *constricted affect* ($r(339) = -.10$, $p < 0.05$), the 3 aspects of schizotypy generally attributed to the masculine sex.

3.4. Gender and schizotypy

In line with current literature, a t-test confirms significant predictions of gender on the aspects of schizotypal personality. Female gender significantly predicts *reference ideas* ($t(673) = 11.54$, $p = .001$), *social anxiety* ($t(673) = 26.88$, $p < .001$) *and odd beliefs* ($t(673) = 9.25$, $p = .002$). Masculine sex reveals an identical prediction of *odd behaviour* ($t(673) = 26.88$, $p = .009$) and on *lack of friends* ($t(673) = 6.94$, $p = .009$). There is no significant effect on *constricted affect*. An analysis of covariance between gender, overall schizotypy and degree of paranormal practice shows an increase in schizotypy as paranormal practice increases. Gender makes no difference to the degree of schizotypy ($p > 0.5$). A Post Hoc test (Duncan) shows that the degree of schizotypy is significantly higher ($\alpha = 0.05$) among young people who have regular paranormal

experiences (37.60) compared to those who never (22.15) or rarely (28.09) have a paranormal experience (see *Figure 1*).

Figure 1: degree of schizotypy and frequency of paranormal practice by gender



3.5. Intelligence type and schizotypy

The schizotypal profile (negative or positive) could result from the type of intelligence system predominant in one or other gender. Indeed, the findings of a feminine prevalence in paranormal belief are numerous (Aarnio et Lindeman, 2005 ; Auton & al., 2003 ; Dag, 1999 ; Hergovich, 2004 ; Lange, Irwin & Houran, 2001 ; Spinelli, Reid & Norvilitis, 2003 ; Tobacyk & Milford, 1983 ; Tobacyk, Miller & Jones, 1984) and correspond to positive schizotypy. However, we observed that there are only two aspects of schizotypy that correlate with experiential intelligence (all other kinds show non-significant or negative correlations) (greyed out in table 1). It could therefore be that the positive schizotypal profile predominant among women is predicted by experiential intelligence.

Table 2: Intelligence type and schizotypy

Prevailent intelligence system	Rational Intelligence	Experiential Intelligence
***Positive* or *psychoticistic* schizotypy**		
Reference ideas	-.05	.07
Odd beliefs	.05	.25**
Unusual experiences	.06	.19**
Odd speech	-.07	-.03
***Negative* schizotypy**		
Social anxiety	-.25**	-.18**
Suspicious attitude	-.05	-.03
Eccentric behaviour	.05	.04
Lack of friends	-.00	-.12**
Constricted affect	-.10*	-.10*

N = 675
** significant correlation at level 0.01 (bilateral)
* significant correlation at level 0.05 (bilateral)

3.6. Mediation of Paradigm Shift and schizotypy

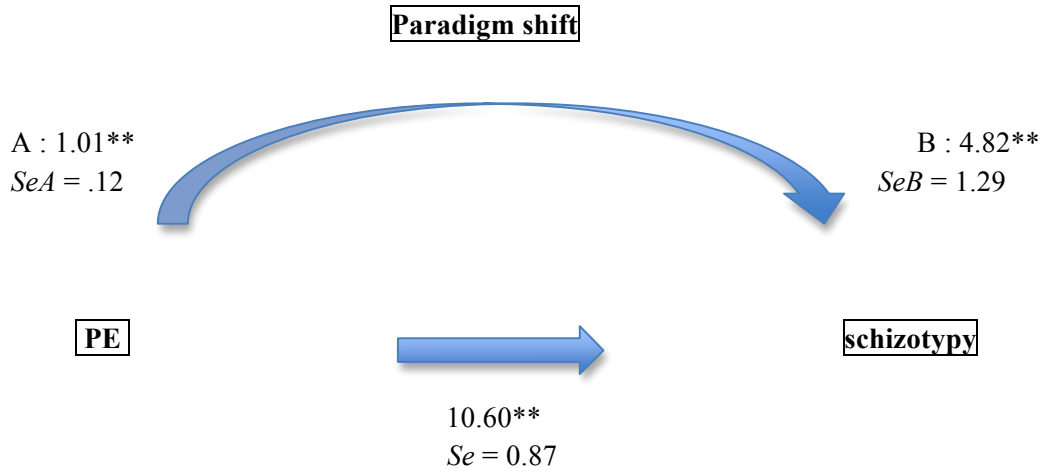
A non-parametric correlation shows a significant link between *overall schizotypy* (ST) and *paradigm shift* (PS) ($r(673) = .35$, $p < 0.01$). Each of the 9 traits of *ST* correlates significantly with PS ($p < 0.01$). Comparing the means and analysing variance between classes of low *PS* ($N = 164$) and high *PS* ($N = 177$) with the traits of *ST*, shows a significant effect of the degree of *PS* on 7 of the 9 schizotypal profiles ($p < 0.01$). *Odd speech* reacts a little less ($p < 0.05$) and *social anxiety* does not react at all, but do have similarly high means in the two groups of *PS*.

The mediating role of paradigm shift between *paranormal experience* (PE) and *schizotypy* can be seen from significant correlations between the three variables

for each combination: *paranormal experiences* (IV) and *schizotypy* (DV) = $r(339) = .46$, $p < 0.01$, between *PE* (IV) and *paradigm shift* (M) = $r(339) = .39$, $p < 0.01$ and between *PS* (M) and *schizotypy* (DV) = $r(339) = .32$, $p < 0.01$.

Furthermore, *paranormal experiences* (IV) significantly predicted *schizotypy* (DV), $\beta = .35$, ($t(339) = 9.61$, $p < .001$). Introducing the hypothesis of a mediating role of *PS*, *paranormal practices* predicts significantly *PS* ($\beta = .33$, ($t(339) = 6.50$, $p < .001$) with a coefficient of 1.01 ($Se = .12$, $p < .001$) and *PS* predicts *schizotypy* ($\beta = .16$, ($t(338) = 2.94$, $p = .003$) with a coefficient of 4.82 ($Se = 1.29$, $p < .001$). The Sobel test shows a fully significant coefficient of 3.42 ($p = .0003$, two-tailed). The mediating role of paradigm shift between paranormal practices and ST is therefore confirmed.

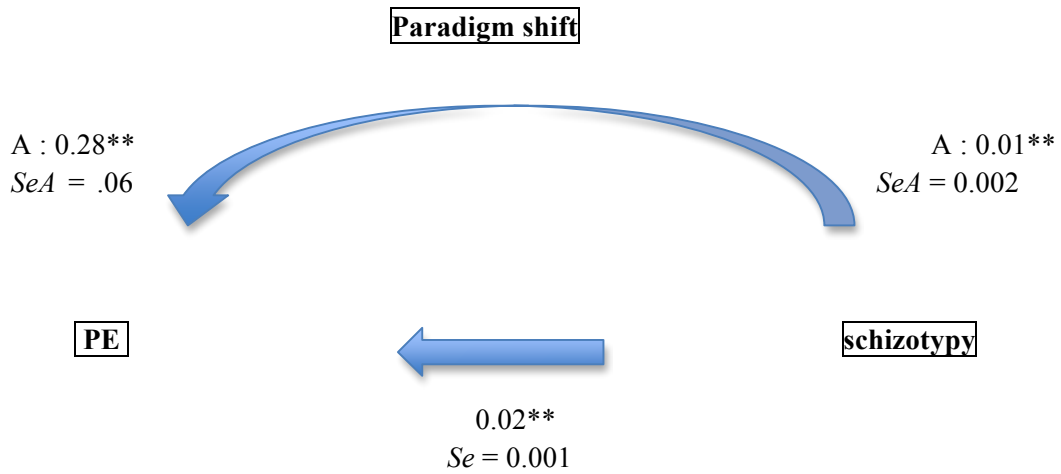
Figure 2: Mediation of paradigm shift between paranormal experiences and schizotypy.



3.7. A reversed model

By reversing the mediation model, paradigm shift continues to mediate between *schizotypy* and *PE*. Although the residuals no longer show a perfectly normal distribution, in an inverse model, *schizotypy* (IV) significantly predicts *paranormal experiences* (DV), β = .35, ($t(672)$ = 9.61, p < .001) with a coefficient of 0.02 (*Se* = .001, p < .001). *Schizotypy* also predicts *PS* (β = .22, ($t(339)$ = 4.22, p < .001) and has a coefficient of 0.01 (*Se* = .002, p < .001). And *PS* predicts *PE* (β = .26, ($t(338)$ = 5.70, p = .001) and gives a coefficient of 0.28 (*Se* = .06, p < .001). The Sobel test confirms significant mediation (3.41, p = .0003, two-tailed).

Figure 3: Reversed model of mediation of paradigm shift between paranormal experiences and schizotypy.



4. Discussion

The results uphold the literature in finding a link between gender and the schizotypal profile: girls corresponded more to a positive schizotypal profile,

characterised by paranormal beliefs and perceptions, and boys to a negative schizotypy, characterised by asocial, odd and emotionally isolated behaviour. This profile could, however, originate in the prevalence of each gender in either experiential or rational intelligence types.

The link between schizotypy and *paranormal experiences* (PE) is also confirmed, and is significantly greater in young people who have regular experiences compared to those who never or occasionally have such experiences. In addition, the age of the young person at the moment of their first PE could influence the schizotypal diagnosis. Indeed, it appears that the younger a person is when they have a PE (in general < 13 years old), the more they tend to display symptoms of overall, structural schizotypy. While a young person who has a PE later on (> 13 years old) will adopt "only" the characteristic of isolation. It could be that the incomplete developmental stage of the pre-adolescent does not establish a paradigm structure strong enough to ensure cognitive enlargement which would not be radically modified or reoriented by the paranormal (Spinelli & al., 2003 ; Tobacyk & al., 1983). In addition, the three schizotypal traits which appear with later PEs could reflect a type of adolescent personality with a "schizotypal" behavioural and social range (*asocial and odd behaviour, lack of friends* and *constricted affect*) without corresponding to an effective, overall (even cognitive) schizotypy (Evrard, 2010).

The results do not explain clearly whether it is frequenting the paranormal world which induces a way of thinking and attitude which would lead to or reinforce a schizotypal personality (i.e. Claridge & al., 2007), or whether the schizotypal personality precedes the experience, that is to say, an interest in such practices would originate in a type of personality characterised by a sensitivity to these subjects (i.e. Svedholm & al., 2009). It is a case of the proverbial dog chasing its

tail. The first model (PE -> paradigm shift (PS) -> schizotypy (ST)) is confirmed insofar as a distressing experience can lead someone to review their way of looking at things sometimes so strongly that their whole personality is permanently affected (Epstein, 1991 ; Janoff-Bulman, 1989 ; Rimé, 2005).

The second model (ST -> PS -> PE) would suggest reinforcement of schizotypy, as the schizotypal person seeks confirmation that the reality perceived is indeed paranormal. In personality type, this kind of person is attracted to the paranormal. But what is striking, is that by reversing the mediation model, paradigm shift continues to mediate between schizotypy and PE. It is as if the person were seeking comfort through repeated "realisations" that what they had perceived was "true". Mediation by PS would therefore reinforce schizotypy. This finding should be verified by other studies. A possible explanation could only be found by carrying out longitudinal studies on sample populations before and after PEs. Nonetheless, this modelling confirms the role of one or more cognitive-emotional stages (paradigm shift) in the process of the schizotypal "paranormalisation" of reality.

Future research could usefully explore a relationship between schizotypy, paranormal beliefs and types of coping. Without going into further detail, our sample of young people showed a correlation between overall schizotypy and the use of paranormal experiences mainly as a means of emotional support coping, as opposed to distraction coping which seems rejected by schizotypal profiles.

From a clinical point of view, and as mentioned above, this research mainly brought together whole class groups of young people without any particular profile. Following the method recommended by Raine (1991), 9.8% of young people from our whole sample would be diagnosed with proven schizotypal personality disorder, pending confirmation following an in-depth interview. The

PEs that showed the most significant correlations were those considered *passive*, that is to say, not explicitly pursued - *unusual sensory perceptions* and *apparitions*.

These PEs meet the definition of psychotic hallucinations set out by Slade and Bentall (1988), that is to say, a *percept-like experience which: a) occurs in the absence of an appropriate stimulus; b) possesses the full force or impact of the corresponding real perception; and c) is not amenable to voluntary or direct control by the experiencer*. However, this affects too many previously "normal" young people to be a clear psychotic symptom. Typical clinical non-pathological implications must be considered. Evrard (2011) describes many studies that reach a similar conclusion, and, with regard to adolescents, he cites a study by McGorry, McFarlane, Patton & al. (1995), which found that almost half of the students surveyed met the criteria of the prodromal phase of schizophrenia. And for Van Os, Linscott, Myin-Germeys, Delespaul & Krabbendam (2009), this type of experience could even form part of normal development in adolescence. This is all a question of degrees along a continuum of psychotic experiences: these borderline states of mind, paranormal or liminal, also referred to as schizotypal, must be subjected to qualitative clinical investigation before potentially being diagnosed as pathological.

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