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Obsessions and compulsions: normative data on the Padua Inventory from an Italian non-clinical adolescent sample

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Abstract

In the present study the structure of obsessive–compulsive phenomena in non-clinical adolescents was investigated by ‘The Padua Inventory’ (PI). The PI is a self-report measure of obsessive and compulsive symptoms which is used in clinical and research settings. The use of PI in adolescents has been limited by the lack of normative data. Consequently, adolescent validation has both theoretical and practical implications.

PI was administered to 566 normal Italian high school subjects, ranging in age from 15 to 18 years.

The mean total score of PI and the mean score of ‘mental activities’, ‘becoming contaminated’ and ‘urges and worries’ sub-scales points to significant differences between males and females. Females reported more obsessions and cleaning rituals than males. Males show more urges and fears than females. Moreover, our data underline that younger subjects get higher mean scores than older subjects in all scales. © 1999 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Recent research has shown that the obsessive–compulsive disorder (OCD) is not so infrequent as was believed up to only 15 years ago. The numerous epidemiological studies carried out on adolescent subjects have produced a wide range of different prevalence values: Flament et al. (1988) found an OCD point prevalence of 1.0% ($\pm 0.5\%$ S.D.) and a lifetime

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prevalence of 1.9% ($\pm 0.7\%$ S.D.); Zohar et al. (1992) found a much higher point preference than Flament, namely 3.56% ($\pm 0.72\%$ S.D.); Valleni-Basile et al. (1994) found a prevalence of 2.95%, higher for males (3.26%) than for females (2.64%).

The results of the various studies are not always in agreement with regard to the expression of OCD symptoms in children and adolescents. Some authors consider that in most cases both obsessions and compulsions are present in both sexes (Flament et al., 1988; Swedo, Rapaport, Leonard, Lenane & Cheslow, 1989; Riddle et al., 1990), while Zohar et al. (1992) found that 50% of adolescents with OCD display only obsessions. On the other hand, Valleni-Basile et al. (1994), who studied young adolescents, found that compulsive symptoms prevailed in females and obsessive symptoms in males.

Analysis of the literature (Hollingsworth, Tanquay, Grossman & Pabst, 1980; Flament et al., 1988; Swedo et al., 1989; Rapaport, 1989; Burke, Burke, Regier & Rae, 1990; Riddle et al., 1990; Zohar et al., 1992; Valleni-Basile et al., 1994; Ravizza, Bogetto & Maina, 1997) reveals a high scatter of experimental data, particularly as far as onset, manifestation and trend of obsessive–compulsive symptoms are concerned, as well as both a quantitative and qualitative difference between the sexes. Furthermore, while considerable attention seems to be focused on the clinical manifestations of OCD, there is little apparent interest in the description and observation of obsessive and compulsive symptoms, above all in adolescent populations, although the epidemiological studies converge towards a prevalent onset of OCD in adolescence.

Current models of OCD (Rachman & de Silva, 1978; Rachman & Hodgson, 1980; Salkovskis, 1989) propose the existence of a continuum between normal intrusive thoughts and clinical obsessions which would enable the study of obsessive phenomena in non-clinical populations. Salkovskis's model begins with the assertion that clinical obsessions represent the extreme end of a continuum of normal, unpleasant, unwanted, intrusive cognition.

The first aim of the present study is to highlight trends of obsessive and compulsive traits in non-clinical Italian adolescents, with special reference to their phenomenological expression both between the sexes and with variations in age.

A number of self reported measures of obsessive–compulsive symptoms have been developed, including the Maudsley Obsessive–Compulsive Inventory (MOCI, Hodgson & Rachman, 1977), the Leyton Obsessional Inventory (LOI, Cooper, 1970) and the Compulsive Activity Checklist (CAC, Philpott, 1975). The limitation of these measures consists in the difficulty in generalizing the results as each of them measures mainly only a small number of OCD sub-types. Sanavio (1988) has developed the Padua Inventory (PI), which has the advantage of allowing the most important types of obsessive–compulsive disorders to be measured. The PI is a 60-item self-report inventory, which measures intrusive thoughts, doubts, checking and cleaning behaviours, urges, repetitive thinking about low-probability dangers and recurrent repugnant images. Sanavio (1988) reported a factor analysis of data 967 non-clinical adults. Factor analysis identified 4 factors which were used to derive 4 sub-scales: (1) impaired control over mental activities; (2) becoming contaminated; (3) checking behaviours and (4) urges and worries.

In recent years a number of studies have been carried out to analyse and verify the dimensional structure and the convergent and divergent validity of the PI (van Oppen, 1992; Kyrios, Bhar & Wade, 1996). Some research (Sternberger & Burns, 1990; van Oppen, 1992;

Kyrios et al., 1996) points to a high internal consistency between total score and the various sub-scales (Cronbach's coefficient, $\alpha > 0.80$) but not for the 'urges and worries' sub-scale, for which conflicting evidence has been found. For concurrent validity Sternberger and Burns (1990), van Oppen (1992) and Kyrios et al. (1996) found a high correlation (range 0.65–0.75) between total PI score and total MOCI and LOI scores. High correlation was found also for the sub-scales: between PI 'mental activities' and MOCI 'doubt' (range 0.68–0.69), between PI 'becoming contaminated' and MOCI 'cleaning' (range 0.53–0.74) and between PI 'checking behaviours' and MOCI 'checking' (range 0.67–0.84), while for the PI 'urges and worries' scale it was found to be more difficult to trace concurrent validity using customary OCD assessment tools owing to the lack of an equivalent scale in these tests.

The PI has also been used in a number of surveys concerning the phenomenology of the obsessive–compulsive disorder in several different countries: Italy (Sanavio, 1988), Germany (van Oppen, 1992; van Oppen, Hoekstra & Emmelkamp, 1993), USA (Sternberger & Burns, 1991) and Australia (Hafner & Miller, 1990; Kyrios et al., 1996). In the wake of these studies, our second aim is to increase the currently scant availability of normative data for the PI in adolescents.

2. Method

2.1. *Subjects and procedure*

The present study involves a sample comprising upper middle school pupils. All the subjects live in cities in central-southern Italy.

The sample comprises 566 adolescents aged 15–18 years, with a mean age of 16.84 (± 0.93 S.D.), 290 (51.2%) males and 276 (48.8%) females. The sample was subdivided into four groups on the basis of age: 15 years, with a total numerosity of 35 (13 females, 22 males); 16 years, with a total numerosity of 192 subjects (94 females, 98 males); 17 years, comprising 169 subjects (80 females, 89 males) and 18 years, consisting of 170 adolescents (89 females, 81 males).

The subjects were administered the Padua self-report inventory (Sanavio, 1988). Participating subjects have been informed of the survey in progress only at the moment they were administered PI, moreover they were guaranteed anonymity. Such procedure has enabled to exclude a self-selection of subjects attributable to the experimental situation and to obtain a participation of equal to 100%.

2.2. *The Padua Inventory*

The inventory consists of 60 items, each of which scored on a 0–4 point scale according to the intensity of the disorder: 0 indicates the absence of disturbing behaviour, while 4 indicates behaviour that is highly disturbing for the subject.

The Padua Inventory (PI) gives a total score that varies from 0 to 240 indicating the presence of obsessive–compulsive features and 4 scores referring to the following sub-scales:

1. Impaired control over mental activities (hereinafter denoted as ‘mental activities’): for example, reduced capacity for removing undesirable thoughts, difficulty in making simple decisions and doubts, uncertainty concerning one’s responsibility in the case of incidents, rumination over unlikely hazards, etc. Scored between 0 and 68.
2. Becoming contaminated: for example, stereotyped cleaning activity, severe preoccupation with dirt, unrealistic fear of contamination, etc. Scored between 0 and 44.
3. Checking behaviours: for example, checking whether doors have been closed, gas and other taps turned off; counting letters, money, numbers, etc. over and over. Scored between 0 and 32.
4. Urges and worries of losing control over motor behaviour (hereinafter denoted as ‘urges and worries’): for example, violent impulses directed against animals and objects, unaccountable urge to kill oneself and others; fear of losing control over antisocial or sexual urges. Scored between 0 and 28.

3. Results

The mean total and sub-scale scores (\pm S.D.) obtained from the sample were as follows: ‘total’ 51.28 (\pm 27.87 S.D.); ‘mental activities’ 16.43 (\pm 11.36 S.D.); ‘becoming contaminated’ 12.20 (\pm 7.25 S.D.); ‘checking behaviours’ 8.16 (\pm 5.75 S.D.) and ‘urges and worries’ 3.75 (\pm 4.92 S.D.).

A series of one-way ANOVAs with sex and age as independent variables allowed significant differences to be observed. For the variable sex the following significant differences were observed with regard to both total score ($F_{1,564} = 21.79$; $p < 0.001$) and the sub-scales ‘mental activities’ ($F_{1,564} = 50.23$; $p < 0.001$), ‘becoming contaminated’ ($F_{1,564} = 19.52$; $p < 0.001$) and ‘urges and worries’ ($F_{1,564} = 3.89$; $p < 0.05$), while no differences were found for the sub-scale ‘checking behaviours’. Values and standard deviations are reported in Table 1.

These data indicate that females display higher mean scores than males in both the total score and in those of ‘mental activities’ and ‘becoming contaminated’. Conversely, for the scale ‘urges and worries’ males had higher mean scores.

As regards the variable age the following significant differences were observed with regard to both total score ($F_{4,561} = 7.32$; $p < 0.001$) and the sub-scales ‘mental activities’ ($F_{4,561} = 3.49$; $p < 0.05$), ‘becoming contaminated’ ($F_{4,561} = 4.52$; $p < 0.01$), ‘checking behaviours’.

Table 1
Mean and standard deviation for the sex variable

	Mental activities		Becoming contaminated		Checking behaviours		Urges and worries		Total	
	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.
Male	13.26	10.17	10.91	6.50	7.81	5.76	4.15	5.48	46.04	26.80
Female	19.75	11.62	13.56	7.75	8.52	5.72	3.34	4.23	56.79	27.95

($F_{4,561} = 3.23$; $p < 0.05$) and ‘urges and worries’ ($F_{4,561} = 6.82$; $p < 0.001$). Mean values and S.D. are reported in Table 2.

A preliminary analysis indicates a decreasing trend in mean values with increasing age.

Post-hoc analysis of the total scale using the Duncan Test shows that the 15 year old subjects score higher on average than 17 year olds ($p < 0.05$) and 18 year olds ($p < 0.001$). It also emerges that 16 year olds score higher on average than 18 year olds ($p < 0.01$). As far as the ‘mental activities’ scale is concerned, 15 and 16 year old adolescents are found to score higher on average than 18 year olds ($p < 0.05$ and $p < 0.05$, respectively). Similar results were found for the ‘becoming contaminated’ scale ($p < 0.05$ and $p < 0.05$). For the ‘checking behaviours’ scale, statistical analysis attributed significance to the differences between the mean scores of the 15 year olds with respect to 17 and 18 year olds ($p < 0.05$ and $p < 0.01$). Lastly, for the scale ‘urges and worries’ it was found that 15 year olds score significantly higher on average than 16, 17 and 18 year olds ($p < 0.05$, $p < 0.01$ and $p < 0.001$). Moreover, 16 year olds score higher on average than 18 year olds ($p < 0.05$).

Sex–age interaction was found to be non-significant.

4. Discussion

The results of our survey, carried out using the Padua Inventory, indicate a high level of obsessive–compulsive features in the non-clinical adolescent population. We consequently agree with the hypothesis put forward by several authors (Rachman & de Silva, 1978; Rachman & Hodgson, 1980; Salkovskis & Harrison, 1984; Sanavio, 1988; Salkovskis, 1989) concerning a connection between normal and pathological obsessions and thus a similarity in the cognitive processes involved. This suggests that non-clinical and clinical obsessionality will differ more in degree than in kind (Clark & Purdon, 1995). Moreover, there are several evidences that OCD in non-clinical populations is similar to clinical OCD. Burns, Formea, Keortge and Stenberger (1995) found that some of individuals in the high-scoring group on a self-report measure of obsessional symptoms met diagnostic criteria for OCD.

It is interesting to note that the mean total score obtained by our subjects (mean = 51.28) and the mean total score obtained by subjects of Sanavio (1988) (mean = 57.36) are higher

Table 2
Mean and standard deviation for the age variable

Age	Mental activities		Becoming contaminated		Checking behaviours		Urges and worries		Total	
	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.	<i>X</i>	S.D.
15 years	18.37	13.02	13.28	6.99	10.00	6.69	5.86	7.32	60.68	32.24
16 years	17.78	11.71	13.44	8.62	8.69	5.87	4.38	5.57	55.90	28.23
17 years	16.72	10.53	12.02	6.44	8.09	5.13	3.83	4.32	51.53	25.43
18 years	14.20	11.15	10.75	6.04	7.24	5.87	2.54	3.70	43.89	27.32

than that found in other studies using the Padua Inventory carried out by Sternberger and Burns (1991) in North America (mean = 41.33), by van Oppen (1992) in Germany (mean = 27.86) and Kyrios et al. (1996) in Australia (mean = 42.7). Considering that this study and Sanavio's have been carried out on Italian subjects it could be argued that such an outstanding difference of the results may be due to the fact that these subjects show a higher presence of obsessive–compulsive traits, compared with subjects of other nationalities (such as American, German and Australian ones).

We found considerable differences in the sex variable. The mean score of the total PI scale is much higher for females than for males. It should be noted however that in all the research using the PI in different countries in the world (Hafner & Miller, 1990; Sternberger & Burns, 1990; van Oppen, 1992; Kyrios et al., 1996), this sex-related difference was found only in the work of Sanavio (1988). If we observe the various studies carried out using the PI on non-clinical populations, it is found that the only differential point in our study and that of Sanavio vis-à-vis the others refers to the nationality of the sample as well as the presence of younger subjects aged 15–16 years. It is reasonable to postulate that these differences may be attributed to these two variables.

Also in the case of the 'mental activities' and 'becoming contaminated' sub-scales of PI, we found a higher mean score for females. These results agree with the study carried out by van Oppen (1992) using PI and indicate a greater presence of obsessive and ritual washing traits in females than in males. As far as the 'mental activities' scale is concerned, these findings are in agreement with those of Flament et al. (1988) and Swedo et al. (1989), who observed a stronger presence of obsessions in females than in males. The same agreement is found with reference to the 'becoming contaminated' scale in the studies by Rettew, Swedo, Leonard, Lenane, and Rapaport (1992) and Hoekstra, Visser, and Emmelkamp (1989) who found a higher degree of ritual washing in females. The consistency between these studies, although carried out on adult subjects, and our results, together with the lack of significance of the sex×age interaction, points to a different expression of obsessive and compulsive features in the two sexes that is independent of age.

The significant differences found in the age variable for all the PI scales point to a particular relationship between age and mean. This relationship consists in the gradual decrease in obsessive–compulsive features with increasing age (15 to 18 year olds). This is consistent with what has already emerged from the literature concerning a substantial peaking of the onset of obsessive–compulsive symptoms around the age of 15 and the subsequent decrease in new cases with increasing age up to the next onset peak at around 23–25 years.

References

- Burke, K. C., Burke, J. D., Regier, D. A., & Rae, D. S. (1990). Age at onset of selected mental disorders in five community populations. *Arch. Gen. Psychiatry*, 47, 511–518.
- Burns, G. L., Formea, G. M., Keortge, S., & Stenberger, L. G. (1995). The utilization of nonpatient samples in the study of obsessive compulsive disorder. *Behav. Res. Ther.*, 33(2), 133–144.
- Clark, D. A., & Purdon, C. (1995). Meta-cognitive beliefs in obsessive–compulsive disorders. Paper presented at the *World Congress of Behavioural and Cognitive Therapies*, Copenhagen, Denmark, July, 1995.
- Cooper, Y. (1970). The Leyton Obsessional Inventory. *Psychol. Med.*, 1, 48–64.

- Flament, M. F., Whitaker, A., Rapaport, J. L., Davies, M., Berg, C. Z., Kalikow, K., Sceery, W., & Shaffer, D. (1988). OCD in adolescent: an epidemiological study. *J. Am. Acad. Child Adol. Psychiatry*, 27, 764–771.
- Hafner, R. J., & Miller, R. J. (1990). Obsessive–compulsive disorder: an exploration of some unresolved clinical issues. *Aust. N. Z. J. Psychiatry*, 24, 480–485.
- Hodgson, R. J., & Rachman, S. (1977). Obsessional–compulsive complaints. *Behav. Res. Ther.*, 15, 389–395.
- Hoekstra, R. J., Visser, S., & Emmelkamp, P. M. G. (1989). A social learning formulation of the etiology of obsessive–compulsive disorders. In P. M. G. Emmelkamp, W. T. A. M., Everaerd, F. W. Kraaimaat & M. J. M. van Son (Eds.), *Fresh perspective on anxiety disorders*. Lisse: Swets and Zeitlinger.
- Hollingsworth, C. E., Tanquay, P. E., Grossman, L., & Pabst, P. (1980). Long term outcome of obsessive–compulsive disorder in childhood. *J. Am. Acad. Child Psychiatry*, 19, 134–144.
- Kyrios, M., Bhar, S., & Wade, D. (1996). The assessment of obsessive–compulsive phenomena: psychometric and normative data on the Padua Inventory from an Australian non-clinical student sample. *Behav. Res. Ther.*, 34, 85–95.
- Philpott, R. (1975). Recent advances in the behavioural measurement of obsessional illness: difficulties common to these and other instruments. *Scot. Med. J.*, 20, 33–40.
- Rachman, S. J., & de Silva, P. (1978). Abnormal and normal obsessions. *Behav. Res. Ther.*, 16, 233–244.
- Rachman, S. J., & Hodgson, R. J. (1980). *Obsessions and compulsions*. Englewood Cliffs, NJ: Prentice Hall.
- Rapaport, J. L. (1989). *Obsessive–compulsive disorder in children and adolescents*. Washington, DC: American Psychiatric Press.
- Ravizza, L., Bogetto, F., & Maina, G. (1997). *Il Disturbo Ossessivo-Compulsivo*. Milan: Masson.
- Rettew, D. C., Swedo, S. E., Leonard, H., Lenane, N. C., & Rapaport, J. L. (1992). Obsessions and compulsions across time in 79 children and adolescent with obsessive–compulsive disorder. *J. Am. Acad. Child Adol. Psychiatry*, 31(6), 1050–1056.
- Riddle, M. A., Scahill, L., & King, R. et al (1990). Obsessive–compulsive disorder in children and adolescents: phenomenology and family history. *J. Am. Acad. Child Adol. Psychiatry*, 29, 766–772.
- Salkovskis, P. M. (1989). Obsession and intrusive thoughts: clinical and nonclinical aspects. In P. Emmelkamp, W. Everaerd & M. van Son (Eds.), *Anxiety disorders: annual series of European research in behavior therapy* (Vol. 4). Amsterdam: Swets.
- Salkovskis, P. M., & Harrison, J. (1984). Abnormal and normal obsessions: a replication. *Behav. Res. Ther.*, 22, 549–552.
- Sanavio, E. (1988). Obsession and compulsion: the Padua Inventory. *Behav. Res. Ther.*, 26(2), 169–177.
- Sternberger, L. G., & Burns, G. L. (1990). Obsessions and compulsions: psychometric properties of the Padua Inventory with an American college sample. *Behav. Res. Ther.*, 28, 341–345.
- Sternberger, L. E., & Burns, G. L. (1991). Obsessive–compulsive disorder: symptoms and diagnosis in a college sample. *Behav. Res. Ther.*, 22, 546–569.
- Swedo, S. E., Rapaport, J. L., Leonard, H., Lenane, M., & Cheslow, D. (1989). Obsessive–compulsive disorder in children and adolescent: clinical phenomenology of 70 consecutive cases. *Arch. Gen. Psychiatry*, 46, 335–341.
- Valleni-Basile, L. A., Garrison, C. Z., Jackson, K. L., Waller, J. L., McKeown, R. E., Addy, C. L., & Cuffe, S. P. (1994). Frequency of obsessive–compulsive disorder in a community sample of young adolescents. *J. Am. Acad. Child Adol. Psychiatry*, 33(6), 782–791.
- van Oppen, P. (1992). Obsessions and compulsions: dimensional structure, reliability, convergent and divergent validity of the Padua Inventory. *Behav. Res. Ther.*, 30, 631–637.
- van Oppen, P., Hoekstra, R., & Emmelkamp, P. (1993). The assessment of obsessive–compulsive disorder: a psychometric evaluation among clinical groups. Paper presented at the *European Congress of Behaviour Cognitive Therapy*, London.
- Zohar, A. H., Ratzoni, G., Pauls, D. L., Apter, A., Bleich, A., Kron, S., Rappaport, M., Weizman, A., & Choen, D. J. (1992). An epidemiological study of obsessive–compulsive disorder and related disorders in Israeli adolescents. *J. Am. Acad. Child Adol. Psychiatry*, 31, 1057–1061.