

**The heterogeneity of obsessive-compulsive
neurosis:
a cluster-analytic study**

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Voorwoord

Een eerdere versie van dit artikel was: "Some important distinctions within obsessive-compulsive neurosis". In die studie was de clustering nog exploratief gedaan, ofschoon ik ook toen over de voorspelde clusters beschikte. Verder kwam ik toen op zes clusters uit in plaats van vijf, op 34 proefpersonen i.p.v. 39. De theorie werd in de vorm van een interpretatie van deze zes clusters gepresenteerd (Intern rapport 80KL04).

Met de huidige versie doe ik meer recht aan de feitelijke gang van zaken: ik had de clusters van tevoren al gevormd op grond van klinische kennis van het fenomeen en van theoretische ideeën. De clustering betekende voor mij een theorietoetsing. Daarom heb ik de analyses over gedaan, en wel door de voorspelde clusters te testen en te herzien. Omdat ik er vijf voorspeld had, heb ik niet meer geprobeerd een zesde te construeren. Daar was ook geen aanleiding toe. Factoranalyse op een uitbreiding van deze vragenlijst leverde trouwens dezelfde vijf clusters op.

De opzet van het huidige artikel is: theorie, clustervoorspelling, toetsing en revisie, en discussie. Ten opzichte van de vorige versie is de theorie verder versimpeld en verduidelijkt.

prof. Nawas wil ik vriendelijk bedanken voor zijn correcties van mijn Engels.

Peter Prudon januari 1981

Preface

An earlier version of this report was called: "Some important distinctions within obsessive-compulsive neurosis". In that study the clustering had been done in an explorative manner, even though the cluster had already been predicted. It resulted in six clusters instead of the predicted five, on 34 subjects instead of 39. The report included an interpretation of these six clusters (Internal report 80KL04).

The present version is doing more justice to the real state of things: the five clusters had already been composed on the basis of clinical knowledge and theoretical notions. This clustering could be used for testing theory, so I redid the analyses, this time by testing and revising the clusters by means of what Tryon (1959) called "cumulative communality method of key cluster analysis". Rational because the pre-clustering is on the basis of theoretical notions; abridged because the diagonal is left vacant instead of containing the communalities per cluster. For the latter reason, he also characterized it as the "poor man's cluster analysis".

Because I had predicted five clusters I ignored the sixth from the 1980-report. Explorative factor analysis on an extended version of the questionnaire resulted in the same five clusters, by the way (apart from the new items).

The design of the present report is: theory, cluster prediction, testing and revising the clusters, and discussion. With respect to the former version the theory has undergone a further simplification and clarification.

I would like to thank Prof. Nawas very much for his corrections of my English (this translated and extended preface, written in 2011) not included).

Tryon, R.C. (1959). Domain sampling formulation of cluster and factor analysis. *Psychometrika*, 24 (2) 113-135.

1. Introduction: the heterogeneity of the obsessive syndrome

Descriptions of obsessive-compulsive neurosis in the literature are usually inclusive, containing as they do quite a number of different behavioral and experiential phenomena. These include among other things: excessive hand washing, compulsively cleaning or ordering things, exaggerated precision and formalism in trivial activities, repetitive checking of doors, gas-taps, etc., intrusive thoughts. The reason that such a variety of phenomena are included under a single label, is probably that they all have a compulsive character in common and that they often been found to be closely associated with each other. As a consequence, o-c patients are often treated in empirical studies and theoretical writings as a homogenous group (see, for instance, the work of Reed).

In studying different cases of o-c neurosis and attempting to explain the symptoms, however, we gradually became convinced that such a generalizing approach is not warranted. We noticed that there are at least four clusters of symptoms that occur more or less independently of each other. That is, a number of cases are characterized by only one such cluster, while other cases are characterized by two or more of them simultaneously. So the one does not necessarily imply the other and, therefore, must have a separate etiology. These four clusters are:

- i) contamination anxiety (washing compulsion),
- ii) obsessions,
- iii) cleaning and ordering compulsion,
- iv) ritualization of trivial activities (self-care, etc.).

Indeed, our theoretical analyses of o-c patients gave rise to the formulation of quite different etiological back-grounds of each cluster. In our view, the etiological back-ground of o-c behavior consists of certain structural characteristics of the behavior repertoire as a whole: a poor differentiation of it, a poor integration of it, or both at the same time. Obsessions arise, in our opinion, from the suppression of overt and covert aggressive behavior and a lack of assertive behavior.

In this paper we shall relate five clusters of o-c symptoms to the above-mentioned repertoire characteristics, predict the associated clusters in detail, and explain the nature and origin of these repertoire deficits. The predicted clusters will be tested in a series of clusters analyses of a questionnaire. The patients of our sample will be divided into three types on the basis of the same questionnaire. Comparing these types with matched normals on a number of tests and questionnaires will provide some support of our ideas on the etiology of the symptom clusters.

The reader may question the utility of making distinctions within an already small diagnostic category that, in other respects, is rather homogeneous. Phenotypical similarity of symptoms, however, does not guarantee genotypic similarity, and our understanding of a certain clinical condition will be strongly hampered if we lump together syndromes that are, however related, essentially different.

We feel strengthened in our position by the work of Rachman and Hodgson (1979) who have found it useful, if not necessary, to distinguish four independent clusters of o-c symptoms:

- i) washing and cleaning rituals,
- ii) checking rituals,
- iii) obsessions,
- iv) "primary obsessional slowness".

We deviate from their view, in that a) we believe washing and cleaning rituals to constitute independent clusters, b) we think that "ritualization of trivial activities" is a better and theoretically more neutral description of cluster iv, and c) we hold their cluster ii for a mixture of obsession-related compulsions and symptoms that are part of their cluster iv.

2. Our theory in a nut-shell

We believe that unfavorable life circumstances are a necessary but insufficient condition for producing o-c symptoms in a person. Certain serious, general deficits in the person's pre-morbid repertoire are a second necessary condition for o-c behavior to arise. Such

deficits are developmentally determined. They are the result of interactions between unfavorable educational practices of the parents, and the person's disposition and experiences as a child. These interactions lead to repertoires that are generally deficient in certain respects. The repertoire may be poorly differentiated, poorly integrated, or both. These deficits imply, firstly, that the person is ill-equipped to manage the more demanding tasks and challenges of adult life, and, secondly, that the individual will react in characteristic o-c ways after he is no longer able to cope in normal ways with these tasks and challenges. Poor differentiation, then, will give rise to hand washing compulsion and other magical behavior (cl. 1 and 2); poor integration will give rise to ritualization of trivial activities (cl. 5); and the combination of both will lead to cleaning and ordering compulsion (cl. 4).

Obsessions, in our opinion, emerge if a person of strong temperament displays insufficient assertive behavior and suppresses most of his overt and covert aggressive reactions to the frustrations and deprivation following from his behavior style (cl. 3). Obsessions are not an essential part of o-c states, though frequently associated with them. When they are present in poorly differentiated or poorly integrated people, characteristic compulsive rituals become associated with them.

Differentiation and integration are concepts from "cognitive style" psychology (e.g. Witkin, 1965; Harvey et al, 1961). Within this tradition these concepts are interpreted as formal characteristics of the person's "cognitive structure", which is supposed to affect his perception, experience, defenses, and coping style. We think, however, that the concept of "cognitive structure" is superfluous. Differentiation and integration describe formal characteristics of the person's behavior, not something "behind" it. The presence of such characteristics has to be understood directly from the person's learning history. Therefore, we shall approach these concepts from a behavioristic, mainly Skinnerian perspective.

In our view, differentiation refers to the degree of diversity, discrimination, and flexibility in instrumental behavior. Differentiation is high of a person has responses to many different situations that are relevant to his goals, and if he readily can make substitutions in means and action-objects designed to attain a certain goal. High differentiation further implies sensitivity to many cues from the environment and his own body (discrimination).

Integration refers to the degree in which behavior remains a unity, an organized whole, in spite of its differentiation. Such unity consists either in the goal-directed nature of behavior sequences, or in a direct relevance of the responses to the satisfaction of certain needs. It implies selectivity in responding: those action-objects and those responses are selected that are either functionally or hedonistically relevant.

3. Prediction of clusters of o-c symptoms

In this section five clusters of o-c symptoms will be analyzed and related to the three etiological conditioned mentioned before. From these conditions the clusters will be predicted in further detail.

a) A very poor differentiation: contamination anxiety

The phenomena are well-known, except perhaps for some clinically and theoretically interesting phenomena (its. 5, 9, 13, see Table I). The emotional response is often aversion rather than fear. Ritualistic cleaning is, in our opinion, no part of the cluster. There is only some cleaning in order to avoid contamination (it. 82).

The clue to a better understanding of this phenomenon is not so much the strong affect which is part of it, or the supposedly anxiety reducing effect of washing, but rather the poor discrimination it signifies. The patient does not seem to discriminate between actions and events that are, and that are not, sufficient to produce a harmful effect on either himself or others, within normal environmental arrangements. Perhaps he is able to make the discrimination on a rational level, but not emotionally. A very superficial, harmless contact (touching) is capable of eliciting a strong emotional response. Some patients feel already contaminated by sheer proximity to, or looking at, some dirty object (its. 5, 9). Others feel contaminated after thinking of something dirty, or after emotional events (it. 13). The literature reports cases of patients who felt even contaminated by nonmaterial properties of

people,, e.g. "hypocrisy" (Walton and Mather, 1963), "guilt" (Rackensperger and Feinberg, 1972), "unchastity" (Gebattel, 1938). Our conclusion is that the contamination feared has nothing to do with a literal contamination. Rather it is a manifestation of a very undifferentiated, magical experience of the self-environment relation. The patient behaves as if physical distance, lack of (sufficient) material contact, absence of a series of clearly specified actions, do not guarantee that dramatic effects on either the subject himself or other persons will *not* be produced.

The explanations patients give for their behavior, the substances they consider to be contaminating, are, therefore, only secondary to this basic experience of diffuse, magical impact. It is illustrative that the contaminating substances are always invisible: germs, cancer, poison, radio-activity, etc. Even in the case of dirt, it is not visible dirt that bothers the patient. The very variety of contaminating substances, linked to one and the same phenomenon, is an indication of their secondary status. It will also be clear that the excessive washing has nothing to do with an exaggerated hygiene. It is as magical as the contamination ideas: a simplistic, stereotype means of getting rid of the emotional impact of certain threatening or infringing events.

A further manifestation of the generally poor discrimination in contamination anxiety is the quick and unlimited generalization of the emotional response: a very superficial similarity or association of an object with something considered contaminated is sufficient to render it capable of eliciting the emotional response.

Such poor discrimination cannot be explained merely by the presence of strong emotions for a length of time, even though these tend to simplify responding (Sartre, 1937). We under scribe Quint's view that a developmental disorder must lie at the base of contamination anxiety (Quint, 1971). The phenomenon has a striking similarity to what Piaget called: the "magical-phenomenalist outlook on the world", characteristic of the very young child. According to Piaget (1975), a baby deals with the environment as if "no matter what event produce no matter what event" ("phenomenalism") and as if a certain, vaguely felt, complex of emotions, needs, feelings of effort, etc. were able to effectuate external events of interest, either directly or via some minimal action, whereby material contact of subject and environment is not necessary ("efficacy"). It is tempting to think that the patient with contamination fear has not sufficiently overcome this phase.

In Skinnerian terms (Skinner, 1953) this state of behavior, and the process in which it is overcome, could be described in the following way: A child starts life with very limited and indiscriminative behavior. However, if the parents are responsive to him, and if they arrange some simple playthings around him, some of the baby's responses are -in the presence of certain stimuli- rather consistently followed by interesting or need-satisfying events (re inforcement). Consequently, the association between this type of stimuli and this type of responses becomes stronger. In other words, a more discriminative and diversified repertoire of responding has developed. At first there is a lot of stimulus and response generalization in this newly acquired behavior. But by differential reinforcement of the right response on the right occasion, behavior becomes gradually more discriminative; by differential reinforcement of the more adaptive response, behavior becomes more and more refined (shaping). Initially, the behavior emitted to produce some effect is very minimal, but by the procedure of chaining longer, clearly specified, behavior sequences are acquired, that are differentially reinforced by their greater effectiveness. In this way, the child learns that in most environmental arrangements considerable, specific action and material contact is necessary in order to produce important effects; magical gestures, feelings, thoughts, wishes, cannot affect the world. The child has acquired a highly differentiated repertoire, attuned to the many complex contingencies of reinforcement in the social and physical environment.

The repertoire of a patient with contamination fear must have remained poorly differentiated on this fundamental level. We think of two very different types of upbringing that may preclude the acquisition of a strong, differentiated repertoire: a restrictive and rejecting attitude of the parents, and a "laissez-faire" or spoiling attitude.

Restriction means that the child is kept away from many situation; as a result he cannot acquire differentiated behavior with respect to these situations. It also means that many types of actions are suppressed and, thus, get no opportunity to become more refined and discriminative. Rejection means that the parents are not responsive in a positive way; consequently, much of the child's behavior will not be strongly (differentially) reinforced.

The child's repertoire will, thus, remain under-differentiated; insofar it is differentiated, this differentiation is weak and vulnerable.

A "laissez-faire" upbringing means that the parents allow the child too much freedom and impose hardly any demands upon him. He is, therefore, in a position to avoid many situations with which he should have learned to cope, and many activities which he would be better off becoming skilled at. He is not forced to develop complex, social behavior. If the parents spoil him, they continue to reinforce minimal behavior (crying, shouting, commanding) of their child: he is not forced to acquire long, precise chains of action to attain his goals. This child, too, will remain poorly differentiated, though he will differ from the former child in many other respects.

Our theory of contamination anxiety and compulsive washing states that these phenomena arise if i) a person's repertoire is poorly differentiated on this fundamental level, and ii) strong emotional responses to the social environment are present for some length of time.

Of course, poor differentiation does not mean that the patient has learned nothing since he was a baby. He has engaged in many complex activities before his contamination anxiety came into existence, and he still does; he is skilled in many respects. However, although many of the S-R and R-R associations, necessary for dealing with the complexities of the social and physical environment, have been acquired, they have remained relatively weak by the restricted number of learning trials and the lack of strong, differential reinforcement. Therefore, if a strong emotional response to certain persons and situations is elicited for some time, it is able to suppress all these better-adjusted responses. In strong emotions, behavior in general tends to become simplistic or even magical (Sartre, 1937), let alone the behavior of someone whose reinforcement history showed important omissions.

The things, events or persons that evoke strong emotional responses require a defensive response that should neutralize their harmful impact. But since adequate ways of dealing with them have not been acquired or are now blocked, the person falls back on a response that is adequate only with respect to a harmful, *material* impact of events: washing. Washing should neutralize the negative *emotional* impact of events. Because it loses its conventional function (hygiene) and has to accomplish something for which it is not suited, the patient has no longer a criterion for determining whether he has washed himself sufficiently. To avoid that he would have to continue washing indefinitely, he introduces artificial criteria on which to base a decision about termination of this activity (its. 74, 78, 107).

b) A very poor differentiation: other manifestations

Its. 1 and 50 from cl. 1 represent a kind of "active contamination anxiety": a fear that the subject will contaminate the environment. The direction in which the harm is done is reversed in this case. There are other phenomena that involve a fear of damaging other people in an equally far-fetched and poorly specified way as is the case in "active contamination anxiety". For instance, a female patient felt she carried fire with her somehow, which might set houses on fire (it. 17). Some patients feel they may cause accidents on the road, even though they are only walking (its. 90, 105). Other instances are its. 21, 29, 98 and 108.

In all these cases the harm is done in a very diffuse, magical way. We think, therefore, that a very poor differentiation is a necessary condition for these symptoms too. That the direction of causing harm is from subject to environment in these cases implies that the patient feels he is a threat to other people. We accept the psychoanalytic view (e.g. Stekel, 1949) that he so feels because of the presence of suppressed aggressive responses to other. Because of his poor differentiation, he is afraid that this aggression might materialize without specified, extensive action.

The same-lack of realism, combined with suppressed aggression, leads to exaggerated responsibility-taking and unrealistic worries (its. 37, 94, 98, 103). Magical thinking is also involved in its. 33, 101, 104.

All these symptoms will cluster because they have a very poor differentiation as a base. This cluster will show a moderate, positive correlation with cl. 1, because of common etiology. But, otherwise, the symptoms of both are too different to form one major cluster.

c) Suppression of aggressive behavior: obsessiveness

In the cluster of obsessiveness (cl. 3, table I) we have included thoughts of doing harm to significant others, whether directly (its. 7, 34, 41) or indirectly (its. 23, 26, 39). Also included are worries that significant others may have been harmed by an independent cause, for *which* the patient nevertheless feels responsible (its. 15, 19). (The most diffuse and magical of these worries have been allocated to cl. 2). In compulsive persons, such worries often give rise to preventive measures and checks (its. 64, 72, 84). Obsessions may also have the character of suppressed overt responses of harming someone (its. 11, 23, 47). These sensitize the subject for sharp objects (it. 27), and motivate him to preventive measures and checks (its. 68, 76).

Although such patients often deny the presence of aggressive tendencies, psychoanalysts are probably right in postulating suppressed aggression as the basis of obsessions (e.g. Quint, 1971; Stekel, 1949). These patients are probably strongly frustrated by certain family-members and by their own non-assertive, non-hedonistic lifestyle. Serious frustration usually elicits a number of covert and overt aggressive responses. In the case of obsessional patients a number of such responses, however, have not been acquired or have been extinguished, while the remaining ones are strongly suppressed - even the covert aggressive responses. The obsessional so behaves because he is too dependent on these family members (cannot afford to think badly of them), or has been punished as a child for such responses, or (probably) both. We think, however, that the obsessional's temperament is too strong to allow for a complete suppression of all these covert responses. Obsessions are, in our view, those covert aggressive responses that are suppressed incompletely (see also its. 88, 92).

The patient is in a position to believe that he is not aggressive, because typical aggressive responses are indeed lacking. He does not recognize the frustrations, because even *covert* assertive responses which could have contrasted with compliant behavior are absent. The repeated occurrence of thoughts on harm is, therefore, a bit of a mystery to him.

Continuous frustration and an non-hedonistic life-style simultaneously imply severe deprivation of need-satisfying behavior. On the basis of this, primitive, need-related responses become strong. They are also suppressed, but the patient is afraid the suppression has not been complete (its. 30, 41, 47, 52, 56). The same holds for envious and rebellious responses (its. 31, 34, 60). The inability to change this unsatisfactory type of life generates self-blame and may give rise to thoughts of, or impulses to, self-aggression and suicide (its. 45, 80).

Obsessiveness is not tied to compulsive states, since non-compulsive people may also be characterized by weak assertive behavior and by suppression of aggressive behavior. By the same token, compulsive people need not be obsessional because aggressive responses may be absent, or may be more successfully suppressed, or may be not frightening to them; consequently obsessiveness will be independent of the other clusters.

d) Poor integration: ritualized behavior

Our cl. 5 (not cl. 4:) coincides more or less with what Rachman and Hodgson (1980) have called "primary obsessional slowness". The core of this cluster is the over-concentrated, meticulous, formalized and time-consuming way in which the patient performs the daily routines (self-care, household activities, minor parts of his professional duties) and trivial activities, such as closing the door, signing a letter (its. 65, 69, 89, 96). From case-studies we learned that these behavior patterns have gradually developed from a peculiar lack of satisfaction with, or conviction about, the results of such activities (its. 36, 40).

It seems hard to understand why simple and trivial activities, which did not present any problem in the past have become so troublesome. These activities, however, have one characteristic in common: none of them is very interesting or meaningful in itself, but yet people are motivated to display them because they are instrumental, or preparatory, or contributing to those activities that offer greater reward, challenge, satisfaction to people. For instance: self-care put the subject in a better position to perform the more interesting or important jobs of the day; household activities are necessary for creating the conditions for more rewarding or significant aspects of married life; labor spend on the minor aspects of a professional task is useful as soon as the main task has been accomplished: then, they offer the finishing touch. In other words, the daily routines and trivial activities are

maintained by their functional relevance (secondary reinforcement) to activities of greater hedonistic relevance (primary reinforcement).

Our hypothesis is that these latter, more rewarding or more important activities have gotten lost, or are blocked for some reason, or have been impaired in those cases in which compulsive rituals are to develop. Instances of these are moving from a lively city to a dull village, getting professional duties that are either much more boring or difficult, impairment of one's marital relation, loss of maternal tasks after the children left home, loss of employment, etc. An increasingly compulsive approach to a job is another source of reduced satisfaction. As a consequence, the daily routines, the minor activities, have lost much of their functional relevance. Under such circumstances, depressive patients simply cease to perform them; the compulsive patient's reaction is to ritualize them.

What happens in the latter case is that the person reacts to the reduced relevance of the results of the minor activities, as if he were not yet sufficiently informed about them (checking: its. 57, 73), or as if were still imperfect from an objective point of view. Therefore, he repeats the activity (it. 77), increases precision and concentration (its. 65, 69), becomes perfectionist on minor aspects of the result. Such intensified efforts at good-results may also be seen as compensatory attempts toward producing meaningful outcomes where they no longer can be accomplished in more appropriate areas (see also Gebattel, 1938; Göppert, 1960; Boekel et al, 1976; Rachman and Hodgson, 1979, p. 394), comparable to positive contrast phenomena (Reynolds, 1961).

Anyway, since the result aimed at has been reached from an objective point of view, all these efforts do not contribute to it any further. Just because the major activities have gotten lost, this continual dissatisfaction with the minor activities becomes threatening to the person. Therefore, he continues to strive for a "good performance". Since the result is no longer able to provide the people, under these circumstances, remain oriented to the major tasks and challenges of life and continue to struggle directly for regaining the lost areas or for finding satisfactory substitutes for them. Only a few persons fixate themselves in a useless, continuous revision of methods for accomplishing trivial results.

Clearly, a second - structural - condition must be fulfilled beyond the motivational conditions mentioned: a poor integration of the behavioral repertoire. Poor integration means that a great part of the behavior is not strongly goal-directed and need-related. With difficult tasks, performed under stress, or following impairment of those few activities that were sufficiently reinforcing to maintain the daily routines, the poorly integrated person readily loses the orientation to his main goals (it. 24); there is, then, nothing to keep him from becoming fixated on these daily routines.

Poor integration is seen by us as a consequence of serious omissions in the person's learning history, as a developmental disorder. Normally, the individual builds up an ever increasing repertoire of shorter and longer goal-directed behavior sequences by the procedure of chaining (Skinner, 1953; Whaley and Malott, 1971). Such sequences are strongly organized, (secondarily) well-reinforced throughout the chain, and directly rooted in experience with the environment. By means of the graduated procedures of shaping and fading, they will be refined and brought under more precise discriminative control, without losing their organized, well-reinforced character. The acquisition of goal-directed behavior is further based on models and instructions (knowledge). However, unless the sequences thus acquired are for the greater part reducible to experience-based, goal-directed behavior, they will be far less strongly organized.

Equally, the degree in which an individual's present behavior remains sub-ordinate to his needs, depends on his learning history. If parents respond inadequately to their child's need-related behavior, or if they interfere excessively with it, the child will not learn, or will unlearn, to emit the appropriate behavior when certain need-states are present (compare Bruch, 1974).

Two types of upbringing preclude the development of a well-integrated, experience-based repertoire: i) restrictive, rejecting, ii) "infiltrative".

i) If a person has been brought up in a restrictive way, his experience-based repertoire will be narrow (see section 3a). In adulthood he will, unavoidably, meet difficult situations that ask for a long, intricate, goal-directed sequence. However, that part of his repertoire which is grounded in experience falls short of providing him many of the elements of which such a response is composed. Consequently, he will either react with a simplistic response (hand washing), or will derive an appropriate goal-directed sequence from

models and instructions. The latter behavior, however, is poorly integrated for reasons, mentioned above.

The probability that he will derive his response from models and instructions instead of reacting simplistically, is increased if his parents were critical of him and imposed high demands upon him. For, then, he would have been forced to acquire differentiated behavior in order to cope with their demands. At the same time, however, the parents would not have given him the opportunity to develop such behavior gradually and naturally, starting from spontaneous, need related behavior.

ii) An "infiltrative" upbringing means that the parents occupy themselves a lot with the child: they play with him, teach him many things, undertake all kinds of activities with him. At first glance this may seem favorable, but the actual implication may be that they provide insufficient room for the child's own initiatives, for displaying behavior in congruence to his own needs, for learning from experience with the environment rather than from instruction and model. In that case, he will develop a differentiated (actually, an over-differentiated) repertoire, but, on the other hand, he will have both unlearned to act independently and do so in harmony with his own needs. His behavior will lack strength and integration. (Compare Bruch, 1974, on anorexia nervosa).

Poor integration, thus, gives rise to formalization of behavior, and sometimes to clear-cut disintegration of it (its. 20, 24, 32). Because the patient's needs and goals are no longer a strong basis

for response selection, his motivation becomes increasingly weak or ambivalent (its. 4, 12, 16). He has to rely strongly on rules for regulating his behavior (it. 100). Another implication is that his environment is no longer structured, subjectively, in terms of the relative hedonistic and functional relevance of the various objects around him. It is experienced as a chaos (it. 48).

e) The combination of a poor integration and a poor differentiation: cleaning and ordering compulsion

On clinical and theoretical grounds we believe that cleaning compulsion is independent of washing compulsion. It rather clusters with compulsive ordering, straightening and clearing away things (see table I, cl. 4). The patient is intolerant of even minor disruption of the clean, orderly and stable state of his little domain (it. 63). He is also very rigid in his behavior (its. 6, 22). In a mild form, such behavior constitutes the so-called "compulsive character".

This type of behavior must be seen as ways of facilitating response selection and improving control of the environment. Non-compulsive people resort to it in complicated, risky circumstances; compulsive people resort to it in every-day circumstances, because they generally have trouble in response selection and obtaining control. These troubles arise from the combination of a poor integration and a poor differentiation. Poor integration implies that the regulation of behavior is impaired, because functional as well as hedonistic relevance of responses are no longer a strong basis for their emission (see section 3d). Poor differentiation implies insufficient control, because a number of useful responses are lacking and discriminative control is poor with respect to an number of situations (see section 3a).

In order to ensure ongoing, goal-directed action, the compulsive person must rely on planning, adhering to schemes, and on customary patterns. Otherwise, he will be uncertain about what to do. Restricting the number of situations and range of events to be met must reduce the risk of becoming confronted with uncontrollable situations. Stabilizing the course of events and the position of action-objects and tools serves to improve control by increasing the predictability of the environment. Ordering things according to formal criteria heightens the predictability. Clearing the environment of non-functional objects becomes important because even without such irrelevant stimuli the tendency to emit irrelevant responses is already strong. Such objects, moreover, might easily become an obstacle to action that is already hampered from within. Cleaning serves to preclude a (material) contamination of the tools and products involved in new activities by remnants of past activities; it may partly be seen as the removal of minor obstacles to smooth action, and partly as a way of stressing the distinct nature of two successive activities (compare section 3d).

In other words, by imposing external structure on both his behavior and his environment, the person compensates for his lack of "internal" (i.e. subjective) structure (compare Reed, 1968).

Under certain conditions, a normal preference for cleanliness, order, etc. assumes pathological forms, in that the person's need for cleaning, etc., becomes insatiable (its. 14, 18), and in that these activities cease to be functional.

One such a condition might be the development of a strong aversion and aggression against the partner or other significant persons, as a consequence of an increasing number of infringements the person has to endure. Like the compulsive washer, this type of patient is unable to fight the other persons on the proper level. Rather, he fights them on the level of minor encroachments upon his domain (its. 2, 63, 99). However, the present behavior differs from washing compulsion in that it involves *visible, material* encroachments upon the patient's *domain*, rather than *invisible, immaterial* encroachments upon the patient's *body*. Therefore, we think that in the present case differentiation is less fundamentally impaired than in the case of washing compulsion.

Defending one's body (washing) as well as defending one's domain must be seen as a simplistic means to an important goal. The symptoms mentioned in its. 79, 83, 87 are interpreted by us in the same terms. In these cases too, a poor differentiation is a necessary structural condition for such symptoms to arise.

A second condition under which mildly compulsive behavior assumes pathological forms may be the presence of strong emotional or need-related responses which threaten the programmed life-style of the patient. A third condition is a further impairment of the basis for response selection by extinction and satiation, or by unresolved conflict (Gebattel, 1938), with respect to important activities. Cleaning, ordering, etc., are intensified under these conditions in order to safeguard ongoing action. Again, the patient utilizes an improper means to an important goal.

Such behavior, because of its irrelevance, leaves one unsatisfied (its. 14, 18); because of his poor integration, this type of patient reacts to such a continuous negative feedback with criterion substitution and ritualization of the unsuccessful behavior, in the way described in 3d (its. 55, 91, 95).

In this respect, the patient presently under discussion differs from the patient discussed in 3d. The latter ritualized his behavior because he had lost his goals, the present patient, however, is still striving for important goals, though with improper means. He is still busy with the environment and with creating the conditions for ongoing action, whereas the former patient is merely busy with his own behavior (see also Helwig, 1961). We have, therefore, the impression that this cluster of symptoms is produced only in patients with a strong temperament, in whom emotions are suppressed rather than missing. This hypothesis is supported by the numerous items that refer to irritation, aversion and restlessness (its. 2, 10, 18, 63, 67).

The upbringing of this type of patient is probably to be characterized as restrictive and rejecting, because his produces both poor differentiation (see 3a) and poor integration (see 3d). Cl. 5 and cl. 4 will show a rather high positive correlation, because poor integration is a common factor in both.

f) Conclusion

We have predicted five clusters of o-c phenomena, as well as positive correlations between cl. 1 and 2, and between cl. 4 and 5. A number of compulsions, such as an urge to pull hairs, to steal, to gamble, to eat, etc., are not to be considered as part of the syndrome, because these activities involve an element of excitement, pleasure or bodily irritation that is lacking in our five clusters (see also Akhtar et. al., 1975).

4. Method

The degree in which a patient suffers from a certain o-c symptom was operationalized by us as that patient's rating on an item of a questionnaire. Clustering of symptoms was operationalized as clustering of items. 108 statements about actions, thoughts and feelings that were thought by us to be characteristic for (a sub-group of) o-c patients were formu-

lated (see appendix). Various items were cast in a rather compound form in order to better distinguish the behavior implied from similar but normal behavior. Full applicability implied a severe o-c problem. Subjects had to rate the degree to which the statements did apply to them on a 5-point scale.

Patients were recruited via therapists who received as a guide the author's description of o-c neurosis. Therapists were asked to exclude patients suffering from obsessions only and who had no compulsions. Forty-three subjects cooperated, 12 males and 31 females. The ages ranged from 21 to 67 years. In addition the cooperation of 52 normals (via an advertisement) was obtained, with a crudely similar age distribution and male-female ratio. External validation of the questionnaire (subdivided in clusters) was determined by comparing these original groups, but the cluster analyses were performed on a group of 39 patients, from amongst whom patients who scored 4 or 5 on almost none of the items had been removed. Along with the afore-mentioned questionnaire, a number of instruments were administered including our questionnaire which purports to measure "mildly compulsive behavior style" in normals.

Analyses

Items with a very low means and with an SD below 1.0 were rejected, in addition to it. 78 due to its overlap with it. 106, it. 35 (identical to it. 3) and it. 102 (the meaning of a low score was equivocal). A product-moment correlation matrix was produced. The predicted clusters were inspected on loadings and mean intercorrelations of the clusters. From each cluster, items loading .40 or less were removed. From the residue that resulted, items with a loading of .SD or more on a cluster were allocated to it. These revised clusters were again tested and inspected. Items loading more highly in another cluster than their original one were re-allocated to the former. Items from the residue that loaded .40 or more on one of the clusters were placed in that cluster. These revised clusters were tested and the same procedure was repeated. After that the clusters were stable. (See table VI in the appendix for loadings, means and SD's per item).

These final clusters provided a test of our prediction. However, they were not optimal for diagnostic purposes. Therefore, 21 items from two other questionnaires were included in additional analyses: items loading less than .50 or insufficiently discriminating between two clusters were removed. The cluster-scores (mean item-score per cluster, ranging from 1.0 to 5.0) presented in this paper are based on these latter clusters.

On the basis of 25 small, homogeneous clusters, thought to be representative of o-c neurosis, patients were divided into 3 mutually exclusive groups (types) with the procedure "Relocate" from Clustan 1c (Wishart, 1978). The cluster-scores of these types, as well as some of the other test results, are also presented.

5. Results

Table I shows which items were and which were not correctly predicted. Eight items were rejected because they had a low means and an SD below 1.0 (see table I and table VI). Inspection of table I indicates that we have made most errors in distinguishing cl. 2 ("magical behavior") and cl. 3 (obsessionality). Its. 33, 101 and 103 (disagreeable thoughts:) had to be re-allocated to cl. 3. Its. 19, 23, 26, 34, 39 and 72 (unintentionally harming people in very *diffuse* ways:) from cl. 3 had to be re-allocated to cl. 2. So "magical behavior" is no longer the common denominator of cl. 2, but "harming other people in diffuse ways". It. 50 from cl. 1 can also be interpreted in these terms.

Table I: Predicted vs. final clusters: item comparison

Cl.	predicted cluster	final cluster
1	1 5 9 13 50 54 58 62 66 70 74 (78) 82 86 106 107	1 5 9 13 54 58 62 66 70 74 82 86 106 107
2	17 21 25 29 33 37 90 94 98 101 103 104 (105) 108	17 <u>19</u> 21 <u>23</u> <u>26</u> 29 <u>34</u> <u>39</u> <u>50</u> <u>72</u> 90 94 98 108
3	3 7 11 15 19 23 26 27 (30) (31) 34 (35) 39 (41) 45 47 52 (56) 60 64 68 72 (76) 80 84 88 92	3 4 7 11 <u>12</u> 15 <u>16</u> 27 <u>33</u> 45 47 64 68 88 92 <u>101</u> <u>103</u>
4	2 6 10 14 18 22 51 55 59 63 67 71 75 79 (83) (87) 91 95 99	2 6 10 14 18 <u>28</u> 51 59 63 67 71 75
5	4 8 12 16 20 24 28 32 36 38 40 42 43 44 46 48 49 53 57 61 65 69 73 77 81 85 89 93 96 97 100	20 <u>22</u> 24 <u>25</u> 32 36 40 42 43 44 46 49 <u>55</u> 57 65 69 73 77 <u>79</u> 81 85 89 91 93 <u>95</u> 96 <u>97</u> <u>99</u> 100 <u>104</u>
Rejected items	<u>30 31 35 41 56 76 78 83 87</u> 102 105 underlined: sd < 1.0 not underlined: problematic formulation	Non-clustered, non-rejected items: 8 37 38 48 52 53 61 80 84

Items in the left column printed bold had been predicted correctly, those in normal print were reassigned to another cluster or became non-clustered (false positives). Items in the right column printed underlined had incorrectly been predicted to belong to another cluster (false negative = missing).

Of cl. 4 only the items on cleaning, ordering clearing, intolerance of rubbish, dust, etc. remained. Six items appeared to be more typical of cl. 5. Its. 25 and 104 (extreme uncertainty about one's own behavior) had to be re-allocated from cl. 2 to cl. 5. Indecisiveness, ambivalence and vague guilt (its. 4, 12, 16) appear to be more strongly related to cl. 3 than to cl. 5.

Table II: Psychometric qualities of the predicted vs. final clusters

Cl.	C _p	C _f	H	p(H)	M	F	AP _{it}	CO _p	CO _f	α _p	α _f	AP _{co}
1	15	14	14	2.16	0	1	.96	.524	.534	.94	.94	.98
2	13	14	7	1.88	7	6	.44	.229	.460	.80	.92	.50
3	21	17	11	3.68	6	10	.48	.236	.368	.87	.91	.64
4	17	12	11	2.10	1	6	.73	.358	.472	.91	.92	.76
5	31	30	22	9.59	8	9	.59	.236	.361	.91	.94	.65
Σ Mn	97	87	65	19.41	22	32	.63	.371	.439	.82	.93	.71

C_p = cluster size predicted cluster; C_f = cluster size final cluster. H = hits; p(H) = hits scored by chance = C_p * C_f / ΣC_p; M = missed items (false negatives); F = false positives. AP_{it} = accuracy of the prediction in terms of items; CO_p = cohesion predicted clusters; CO_f = cohesion final cluster; α_p = Cronbach's alpha for the predicted cluster; α_f = ditto for the final cluster; AP_{co} = accuracy prediction in terms of cohesion = CO_p / CO_f (yet uncorrected for the average of the correlation matrix).

$$AP(it) = \frac{H - p(H)}{\sqrt{(C_p - p(H)) \cdot (C_f - p(H))}}$$

Table II reflects the degree in which the prediction was successful. One measure for success in prediction is the ratio CO_p / CO_f, since this approaches 1 if predicted and final cluster have many items in common and if predicted but rejected items load highly on the final cluster. Another measure is "AP", which ranges from 0 to 1.

For a further evaluation, 5 clusters of randomly selected items (from the 97 analyzed ones), corresponding in size to the predicted clusters, were tested. Their mean item-inter correlations averaged .121 against .317 and .439 for the predicted and final cluster respectively. Their CO_p/CO_f ratios averaged .262 against .706 for the predicted cluster. This indicates that our prediction is much better than random guessing. The reliability of the final clusters is quite satisfactory, as reflected in table II.

Table III: Correlations between the 5 final clusters

Cl.	1	2	3	4
2	.42			
3	.12	.39		
4	.07	-.06	.41	
5	-.14	-.37	-.01	.57

n = 39; Correlations ≥ |.37| are significant at p = .02.

Table III shows that each cluster is independent of or slightly opposite to two or three other clusters. The predicted correlation between cl. 1 and 2, as well as between cl. 4 and 5, is confirmed.

The correlation between cl. 2 and 3, and that between cl. 3 and 4, had not been anticipated. The correlations between the final clusters averaged .142 (.206 for the predicted clusters). This is further support for the assumption of independent clusters in this very form. For a comparison: the random clusters correlated on the average .668:

Table IV: External validations and norms

Cl.	ocd-patiënts		normals		T-score	z-score	high scores on neuroticism		
	M	SD	M	SD			M	SD	M-W: p
1	2.60	1.22	1.31	.37	6.69	-5.18	1.41	.41	.001
2	2.07	1.00	1.34	.47	4.39	-4.26	1.59	.58	.046
3	2.24	.95	1.48	.50	4.78	-4.81	1.82	.60	.070
4	2.70	1.14	1.77	.64	4.78	-4.36	2.01	.72	.016
5	3.46	1.07	1.85	.63	8.72	-6.30	2.08	.70	.000
	n=43		n=52		T-test	Mann-Whitney	n=16 (vs. 43 ocd-pat.)		

T-test of differences between the original groups ocd-patiënts and normals: all T-scores significant at p=.000. Mann-Whitney U-test of these differences: all z-scores significant at p=.000.

Subjects scoring highly on neuroticism: the 30% highest scoring normals on N of the EPQ, compared with the ocd-group: p = significance of the differences on the Mann-Whitney U-test.

Our 5 clusters appear to be externally valid: the o-c patients score significantly higher on all clusters than normals. Even so, the cluster scores of o-c patients are not high, except for cl. 5. But this is in line with our assumption that o-c neurotics are not a homogeneous group: most patients do not score highly on all clusters simultaneously. Therefore, it is more instructive to study the scores of the three types:

Table V: Cluster-scores of the types and "compulsive normals"

Cl.	type 1 poor integration		type 2 poor integratie + poor differentiation		type 3 poor differentiation		compulsive normals (trait)		non-compulsive normals	
	M	SD	M	SD	M	SD	M	SD	M	SD
1	1.68	.76	3.57	.50	3.63	.83	1.45	.42	1.13	.26
2	1.62	.73	2.16	.82	3.18	1.04	1.50	.57	1.14	.20
3	1.91	.88	2.45	.87	2.47	.77	1.67	.57	1.28	.30
4	2.49	.65	3.98	.84	2.07 ^{ns}	1.07	2.19	.56	1.33	.18
5	3.89	.50	4.44	.37	2.20 ^{ns}	.93	2.25	.55	1.38	.19
trait	3.78 ^{ns}	.46	4.35	.45	2.56 ^{ns}	.96	4.07	.49	2.28	.42
	n=18		n=10		n=9		n=23		n=19	

The scores of the types differ significantly from matched normals (Wilcoxon, pair-wise: p ≤ .05), unless ns is printed.

"trait" = scores on a questionnaire for "mildly compulsive behavior-style". Compulsive normals: non-clinical subjects with high scores on this questionnaire; non-compulsive normals: those with low scores on it. All five cluster scores of the first group are significantly higher than those of the second group (Mann-Whitney U-test).

Type 1 is characterized by a high score on cl. 5 only. Type 3 is characterized by high scores on cl. 1 and 2 only; on cl. 4 and 5, and on the "trait-score", type 3 subjects do not even differ significantly from matched normals. Type 2 is the only group with a high score on cl. 4. It is further characterized by an extremely high score on cl. 5, by washing compulsion and by a very high trait-score.

6. Discussion

Methodological objections can be raised against our operationalization of o-c behavior, the use of product-moment correlations, the small size of the sample, and sampling biases. Space limitations do not permit us to dwell on these issues. We shall now consider support for the postulated etiological factors:

Poor differentiation

The label "poor differentiation" is supported by the maintenance of the "magical" items 5, 9 and 13 in cl. 1. The final cl. 2, more than the predicted one, with its emphasis on *diffuse* ways of harming people, resembles contamination anxiety. The correlation of .42 between both clusters supports the assumption of a common denominator.

Poor differentiation is most unequivocally represented by type 3. Some of the test results of this type provide tentative support to the etiological formulations. Compared to pairwise matched normals, type 3 was worse on the Embedded Figures Test (group version), which is supposed to measure differentiation (Witkin, 1965) ($p=.009$, $n=8$). In line with the supposed serious developmental disorder, type 3 does indeed yield a significantly higher "psychoticism"-score on a Dutch revision of Eysenck's EPQ. On a "learning history questionnaire" (from the present author) type 3 showed the picture of a "laissez-faire upbringing" (as suggested in section 3a). Although such an upbringing leads to a poor differentiation, it probably leaves intact the integration of the repertoire as well as assertive and aggressive reactions. In line with this, type 3-patients had favorable scores on a Dutch assertiveness questionnaire. This might also explain their high score on cl. 2 (if we are right in assuming aggression as one of the conditions for these symptoms to arise).

Their high scores on cl. 1 and 4 imply that type 2-patients must also be poorly differentiated. Compared to matched controls they scored worse, indeed, on the EFT ($p=.013$, $n=8$) and had a higher psychoticism-score ($p=.047$, $n=9$). But they differed considerably from type 3 on our learning history questionnaire: they characterized their upbringing as restrictive, rejecting, inconsistent and aggression-suppressing (as suggested in 3e). They had low scores on the assertiveness questionnaire.

Poor integration

The concept of poor integration is supported by the clustering of most of the items, thought by us to be related to it, including a number of the rather less obvious items (e.g., 20, 24, 32, 46, 81, 85 and 100). Further support comes from the positive correlation between cl. 4 and 5 (.57). This correlation is rather high, but the comparison between type 2 and 1 shows that we were right in considering cl. 4 a separate cluster. The six items from cl. 4 that had to be re-allocated to cl. 5, are easily interpretable as manifestations of a poor integration.

Though items 38 and 61 had to be excluded from the final cl. 5, they appeared to distinguish type 1 from type 2 (3.17 vs. 2.05, $p=.03$). This type of behavior is probably contrary to the active attitude we postulated for the patient, characterized by cl. 4 symptoms (see section 3e), but it seems related, indeed, to poor integration. Items 4 and 48, which had been allocated to cl. 5, appeared to be characteristic of o-c neurosis in general: all three types had much higher scores on them than their controls.

There were striking differences between type 1 and 2 on the learning history questionnaire. Type 1 subjects did not evince significantly more unfavorable descriptions of their upbringing, except in reporting more protection, compared to their controls. But they reported to have been as children more anxious ($p=.03$), less undertaking (.03), helpless (in

the sense of Seligman, 1975) and obedient (.03 and .07 respectively), and to have felt more threatened (.07) and sinful (.04). Perhaps type 1-patients were easily educable children with a quiet temperament. With such children a type of parent-child interaction may readily arise that we briefly described as "infiltrative" in 3d. It was, therefore, interesting that "compulsive normals", compared to non-compulsive ones, described their upbringing in terms that could be summarized by the label "infiltrative". (As a matter of fact, the controls of type 1 had high scores on the "compulsive trait"-questionnaire).

In section 3d we argued that an infiltrative upbringing should produce over-differentiation as well as poor integration, at least on neutral areas of living. In line with this argument is the fact that type 1 has much better results on the EFT than their controls (matched on sex, age, education and Raven) ($p=.01$, $n=15$). As expected, they also made more groups on the first trial of a replication of Reed's Vygotsky-blocks experiment (Reed, 1969b), whereas type 2 and 3 did not. In a replication of Reed's essentials-test (Reed, 1969a) they underlined more concepts, thought to be essential for another concept ($p=.066$), whereas type 2 and 3 did not.

Type 1-did not have a higher psychoticism score than the controls, but did score lower on the assertiveness questionnaire.

Obsessionality

Suppressed aggression may be the element which cl. 3 has in common with cl. 2 and 4, explaining the correlation with both clusters (.39, .41). The re-allocation of its. 4, 12 and 16 to cl. 3 is understandable from the supposed presence of strong conflicting tendencies in obsessionals, as a result of punishment and moralizing by the parents on the one hand, and a strong emotional temperament on the other hand. Indeed, our patients who had obsessions reported to have been punished and having felt sinful as children, much more than did their controls ($p=.026$, $p=.01$, resp.).

7. General conclusion

Starting off from the impression that o-c neurosis is not a homogeneous group of symptoms, we predicted and found 5 clusters of phenomena, which, in turn, we related to poor differentiation, poor integration, and suppression of aggression as etiological factors. In order to study these factors, we constructed three types of o-c patients from our sample and found typical differences on a number of instruments that were more or less in agreement with ideas presented previously in the paper. Our conclusion must be that it is no longer meaningful to treat o-c patients as a homogeneous group in theory and research.

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Table VI: Items-loadings on the clusters; mean item-scores

Item	Cluster					39 ocd-patients		52 normals		t-test
	1	2	3	4	5	M	S.D.	M	S.D.	p
1	.575	.405	.213	-.052	-.334	2.38	1.65	1.06	0.31	<.001
2	.054	.024	.580	.808	.356	2.68	1.38	2.23	1.28	ns
3	.186	.310	.774	.219	-.170	2.54	1.55	1.87	1.21	<.025
4	.218	.240	.497	.125	.022	3.74	1.35	2.02	1.35	<.001
5	.797	.393	-.010	-.082	-.220	2.82	1.70	1.40	0.80	<.001
6	.110	-.166	.230	.638	.476	3.33	1.51	1.65	0.90	<.001
7	.014	.331	.724	.285	-.143	1.72	1.28	1.12	0.43	<.005
8	.123	-.027	.049	.312	.350	1.95	1.28	1.27	0.77	<.005
9	.555	.123	.134	.229	.144	1.72	1.32	1.15	0.54	<.005
10	.004	.025	.433	.709	.280	3.08	1.42	1.81	1.01	<.001
11	-.187	-.001	.587	.441	.044	1.54	1.14	1.23	0.58	<.05
12	-.109	.225	.712	.281	.173	2.41	1.41	2.06	0.96	ns
13	.635	.251	.181	.277	-.049	2.41	1.67	1.40	0.85	<.001
14	-.180	.142	.271	.627	.385	3.13	1.51	1.56	0.96	<.001
15	.183	.420	.773	.393	-.061	2.41	1.60	1.65	1.14	<.005
16	.141	.363	.663	.433	.051	3.21	1.49	1.84	1.14	<.001
17	.342	.656	.286	.025	-.212	1.69	1.28	1.13	0.60	<.005
18	-.044	-.137	.351	.869	.480	2.72	1.54	1.73	1.16	<.001
19	.343	.710	.489	.081	-.311	2.03	1.35	1.23	0.55	<.001
20	.084	-.157	.049	.343	.476	2.37	1.46	1.17	0.65	<.001
21	.103	.604	.156	-.094	-.225	3.03	1.48	1.50	0.96	<.001
22	-.187	-.284	.078	.525	.669	3.18	1.35	1.75	1.01	<.001
23	.345	.723	.052	-.155	-.520	1.56	1.17	1.08	0.39	<.005
24	-.074	-.213	-.028	.516	.680	3.26	1.60	1.38	0.82	<.001
25	-.073	.012	.216	.381	.525	2.79	1.49	1.48	0.78	<.001
26	.389	.796	.352	.102	-.086	2.54	1.50	1.67	1.10	<.001
27	.097	-.020	.511	.187	-.046	1.59	1.19	1.19	0.66	<.025
28	.146	-.085	.341	.773	.612	3.28	1.56	2.31	1.18	<.001
29	.237	.649	.142	.005	-.142	1.92	1.34	1.27	0.89	<.005
30	-.129	.061	.339	.195	.131	1.10	0.45	1.10	0.36	ns
31	.245	.063	.340	.208	-.069	1.31	0.80	1.00	0.00	<.005
32	.080	-.144	-.177	.380	.579	2.82	1.57	1.29	0.72	<.001
33	-.008	.292	.790	.173	-.032	2.13	1.52	1.40	0.85	<.005
34	.147	.521	.363	.313	.158	2.28	1.54	1.77	1.11	<.05
35	.128	.241	.751	.302	-.035	2.71	1.61	1.69	1.09	<.001
36	-.190	-.101	.096	.609	.636	3.56	1.43	1.67	0.90	<.001
37	-.064	.142	.405	.413	.420	3.74	1.41	1.67	0.88	<.001
38	-.148	.043	-.001	-.182	.138	2.85	1.61	1.40	0.91	<.001
39	.485	.833	.317	-.178	-.310	2.77	1.63	1.25	0.56	<.001
40	-.171	-.068	.176	.652	.732	3.52	1.57	1.65	0.97	<.001
41	.102	.351	.105	-.071	.211	1.26	0.72	1.10	0.36	ns
42	-.252	-.348	-.105	.489	.764	3.51	1.64	1.81	1.19	<.001
43	-.106	-.289	-.025	.336	.568	1.97	1.31	1.3	0.76	<.005
44	-.017	-.274	-.144	.308	.687	3.38	1.48	1.65	1.05	<.001
45	-.123	-.140	.692	.291	.130	1.79	1.32	1.17	0.47	<.005
46	-.051	-.118	.033	.232	.502	3.10	1.54	1.33	0.71	<.001
47	.258	.297	.540	.450	.211	2.03	1.31	1.40	0.93	<.005
48	.184	.190	.324	.074	.046	3.51	1.43	1.62	0.99	<.001
49	-.049	-.259	.025	.337	.705	2.92	1.65	1.44	0.75	<.001
50	.612	.686	.468	.161	-.226	2.18	1.45	1.42	0.85	<.005
51	-.025	-.132	.144	.623	.570	3.15	1.57	1.48	0.98	<.001
52	.037	-.006	.279	.346	.399	2.55	1.59	1.38	0.75	<.001
53	-.145	-.141	.098	.009	.070	1.87	1.32	1.04	0.19	<.001
54	.895	.374	.094	-.073	-.244	2.69	1.69	1.33	0.79	<.001
55	.055	-.377	-.037	.373	.617	3.31	1.51	1.44	0.78	<.001

56	.081	.187	.380	.431	.241-	1.33	0.87	1.06	0.31	<.025
57	-.209	-.379	-.179	.341	.583	3.85	1.57	2.08	1.33	<.001
58	.794	.428	.347	.057	-.093	2.23	1.60	1.12	0.38	<.001
59	.382	.002	.221	.693	.296	3.10	1.64	1.33	0.96	<.001
60	.051	-.057	.427	.263	-.061	1.82	1.39	1.44	1.04	ns
61	-.493	-.202	-.184	-.232	.164	2.26	1.50	1.69	1.00	<.025
62	.804	.259	.101	-.086	-.203	2.26	1.55	1.17	0.58	<.001
63	-.095	-.217	.104	.612	.477	3.05	1.57	1.46	1.00	<.001
64	.004	.294	.605	.506	.186	2.71	1.71	1.63	1.01	<.001
65	.034	-.481	-.076	.405	.609	4.03	1.40	1.46	0.73	<.001
66	.898	.374	.097	.137	-.027	3.36	1.69	2.08	1.34	<.001
67	.183	0.001	.394	.772	.365	2.33	1.56	1.42	0.87	<.001
68	.381	.432	.604	.194	-.311	2.05	1.45	1.48	0.94	<.025
69	-.216	-.221	-.011	.360	.677	4.00	1.45	1.75	1.15	<.001
70	.858	.280	-.099	-.032	-.179	3.26	1.76	1.18	0.62	<.001
71	.195	-.105	.168	.720	.414	2.03	1.44	1.17	0.55	<.001
72	.359	.763	.365	.003	-.192	2.18	1.49	1.23	0.65	<.001
73	-.141	-.049	.128	.557	.617	3.13	1.61	1.77	1.15	<.001
74	.579	.059	-.027	.369	.351	3.08	1.62	1.29	0.82	<.001
75	.138	.138	.332	.778	.219	2.41	1.52	1.50	0.92	<.001
76	.065	.329	.153	.174	-.051	1.21	0.61	1.02	0.14	<.025
77	-.149	-.210	-.007	.406	.655	4.13	1.26	1.41	0.70	<.001
78	.796	.364	.110	.010	-.005	2.97	1.66	1.17	0.61	<.001
79	-.110	-.260	-.055	.272	.533	3.77	1.48	1.60	0.96	<.001
80	.098	-.044	.341	.171	.053	1.69	1.34	1.10	0.36	<.005
81	-.025	-.066	.044	.247	.600	3.26	1.50	2.21	1.13	<.001
82	.663	.429	.177	.049	-.221	2.36	1.72	1.13	0.40	<.001
83	-.080	.036	.052	.038	.220	1.51	0.88	1.40	0.96	ns
84	-.136	.188	.202	-.186	-.094	1.97	1.51	1.27	0.69	<.005
85	-.233	-.052	.224	.333	.487	2.64	1.55	1.44	0.78	<.001
86	.863	.300	.000	-.128	-.237	2.74	1.82	1.04	0.19	<.001
87	-.320	-.189	.239	.154	0.249	1.46	0.82	1.31	0.79	ns
88	.045	.248	.613	-.018	-.169	3.38	1.58	1.62	1.11	<.001
89	.127	-.209	-.202	.181	.629	3.38	1.55	1.31	0.85	<.001
90	.222	.720	.035	-.265	-.351	1.64	1.25	1.02	0.14	<.001
91	-.380	-.472	-.140	.415	.719	3.51	1.61	1.69	1.11	<.001
92	.060	.139	.475	.110	.079	3.74	1.53	1.67	1.04	<.001
93	-.116	-.369	-.045	.380	.772	3.79	1.52	1.50	0.85	<.001
94	.139	.689	.111	-.304	-.373	1.79	1.28	1.54	1.06	ns
95	-.359	-.526	.004	.312	.720	3.97	1.39	1.54	1.00	<.001
96	-.017	-.307	-.275	.227	.753	3.49	1.52	1.40	0.93	<.001
97	-.063	-.174	-.134	.036	.483	2.21	1.58	1.12	0.38	<.001
98	.230	.724	.370	-.176	.505	2.00	1.40	1.60	1.16	ns
99	.161	-.275	-.055	.271	.520	2.74	1.29	1.56	1.00	<.001
100	.107	-.218	.239	.218	.470	3.97	1.34	1.40	0.91	<.001
101	-.062	.377	.582	.075	-.049	2.08	1.50	1.38	0.91	<.005
102	-.272	-.498	.015	.336	.310	3.45	1.57	1.55	1.10	<.001
103	.247	.381	.685	.334	.011	2.54	1.43	1.48	0.96	<.001
104	-.117	.028	.258	.157	.574	2.63	1.70	1.25	0.56	<.001
105	.028	.360	.018	.013	-.238	1.18	0.56	1.04	0.28	ns
106	.889	.414	.100	.056	-.214	3.23	1.78	1.62	1.14	<.001
107	.736	.301	.001	-.014	.014	3.08	1.64	1.10	0.41	<.001
108	.162	.813	.320	-.100	-.362	2.33	1.54	1.42	0.92	<.001

Bold print of the loading indicates that the items belongs to that cluster.

Bold print of the item number indicates that the item was rejected because of a low M and/or SD, or was rejected because of a problematic formulation (italic).

Italic (non-bold, different font) print of the item number indicates that the item became non-clustered at the end of the analyses.

Group-wise T-test for independent samples: $df = 39 + 52 - 2 = 89$; two-tailed testing. ns = non-significant.

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Questionnaire

1. I often have the feeling that I have contaminated others, and things around me, with something dangerous or something dirty.
2. I can't bear the mess made by my partner; I *have* to get rid of it.
3. I worry a great deal about death or serious illnesses.
4. I often consider the pros and cons of certain choices so long, that I get totally entangled in them and in the end have no idea anymore what to do.
5. Being close to something dirty, the idea occurs to me that it has contaminated me or will contaminate me without my noticing it.
6. Unexpected events or visits can confuse me for an hour or longer.
7. More than once the *thought* occurs to me, that I may very seriously harm a person who is important to me (for example: my partner, child, mother, father).
8. These days I sometimes hesitate about really rather minor choices, such as: which socks shall I wear, or: which shoes shall I put on first, my right or my left one?
9. When I look at something dirty, I get the feeling that it makes my face dirty.
10. Rubbish around me oppresses me; it makes me tense.
11. More than once I feel a strong impulse (inclination) to attack, hurt (or even worse) a person important to me.
12. I am often afraid that what I've done or said was insufficiently sincere or insufficiently frank (e.g. a promise or confession), or insufficiently cordial.
13. After experiencing events that bother me a great deal, I feel dirty and will wash myself thoroughly.
14. I often feel that my performance of odd jobs at home/household duties/professional tasks hasn't been good enough. I can't find myself at peace with it, no matter how much I have done about it.
15. I often get *images* in my head about bad things which could happen to others, e.g. being hit by a falling object, by pebbles or mud splashed up by a moving car, being knocked down by a car, etc.
16. I feel guilty easily about the things I have done, even though I often don't know what could have been wrong about my behavior.
17. I often feel I carry fire with me, or something else which is dangerous, in consequence of which I may cause fire or other disasters at certain places.
18. I can't sit still for even a -minute. All the time I see something which needs to be done.
19. More than once the idea occurs to me that the gas-supply in the room of a house-mate has not been shut off completely, or that the stove is in no good condition so that this house-mate may be killed.
20. When I am busy with my jobs in such a precise and forced way, it feels as though it is another person acting in me, and that it is not me.
21. I am often afraid that I haven't quite extinguished the matches or cigarette-stubs which I have left somewhere, so that things may catch fire.
22. When I have to wait before I can go on with a job on which I was working, I am not able to do anything else in the meantime.
23. Sometimes the idea occurs to me that I may have left pins, thumbtacks, splinters and similar things at somebody's place.
24. In my activities I often get so much entangled in details that I lose sight of the purpose and can't continue them.
25. Many of the things I do give me the feeling that I may have done something quite stupid, without noticing it and as a result of which everything will go totally wrong.
26. I am often afraid that somebody else may have an accident with the things I handled last. That is why I try to make sure that I'll leave these things free from danger and take pains to get them that way.

27. When I see a knife or scissors I get a feeling of discomfort or fear.
28. Once I have started something I can hardly stop; again and again I find something else which needs to be finished as well.
29. I cannot help feeling that someone may stumble over a stone, or something like that, - if I was the last one who touched this stone.
30. The idea often occurs to me that the police might arrest me for something I've not done. Therefore I give much thought to the way in which I can prevent it (e.g. to invent alibis).
31. The idea often occurs to me that I have soiled the toilet walls with excrements at a certain person's house or at my own.
32. I can become quite tense during simple jobs, which has as a consequence that I am hardly able to continue.
33. When I have a malicious thought I am often afraid it will actually come true.
34. The idea often occurs to me that I might damage valuable properties of others. Therefore I always pay close attention that this will not happen.
35. I worry a great deal about death and serious illnesses. (Item 3 is erroneously repeated here.)
36. While performing certain jobs I often feel I have forgotten or skipped something.
37. At certain moments (e.g. before going to bed or going out) I cannot help thinking that things are wrong and may cause accidents. In such cases I have to check everything carefully.
38. I have great difficulty in mailing a letter, delivering something, or doing something else that is irrevocable.
39. The idea often occurs to me that indirectly I may be the cause of some harm happening to someone else.
40. I often feel my activities are not yet completed, are still insufficient, though reason tells me they are sufficiently completed.
41. The idea often occurs to me that unawares I took something valuable that wasn't mine.
42. I am not quite able to terminate my activities, I will stick to them.
43. I feel inwardly compelled to name things around me.
44. Even during simple, ordinary, activities I am easily distracted by noises, other people, etc. I get very disturbed by it.
45. The idea often occurs to me that I may want to harm myself (e.g. suicide); this frightens me.
46. Small events and things which have quite an ordinary meaning to everyone, but which have a strong meaning to me, will have as a consequence that I can't go on with a particular job or that I have to abandon it.
47. More than once strong impulses arise in me to do things that other people and I would find inadmissible.
48. I often feel that I find myself in a chaos that grows worse and worse.
49. I often feel that two successive activities stick together, flow into each other, are insufficiently separated. That is why I take special measures (e.g. checking; a ceremony) in order to accentuate their separateness.
50. I am very much aware of the risk of contaminating other people with germs. That's why I wash myself that much and disinfect that much.
51. I spend so much time on arranging or straightening things, that it is at the expense of other things.
52. I often check the things I have written on revelations about myself which may have slipped out by accident.
53. I am hoarding nearly all my money, but when I think about it well it would not be necessary for me to be (so) thrifty.
54. I don't dare to touch many things and people because I am afraid to get contaminated with something dirty or intolerable.
55. I sharply attend to it that I perform my activities in a fixed manner. I grow very tense and, more than once, start all over again when I suspect that I have deviated from my fixed manner.

56. I check things that I have written and places where I have been to see if there are dirty or suspect words, which I might have written in a fit of inattention.
57. I always check, very concentrated or many times in succession doors, windows, taps, the heating, my costume and so on - not because disasters may happen if I didn't, but in order to get the feeling that I leave things in good order, that everything has been finished, that I'm ready for what is coming.
58. I don't dare to touch many things and people, because I am afraid that they will contaminate me with something dangerous.
59. I spend much time on cleaning and brushing certain parts of my house or workroom, at the expense of other things that are important as well.
60. I often check if I have soiled the walls or floors of somebody else's lavatory or bathroom with excrements.
61. My house has become a mess at certain places, because I have great difficulty in throwing things away.
62. When I have touched things belonging to a certain person (e.g. father, partner, boss), I have a strong urge to wash my hands.
63. I often check attentively if my things have been moved, soiled or damaged: I can hardly stand this.
64. I have to check very often if everything is all-right with one or more of my children, my parents, or my partner.
65. Certain parts of daily jobs I perform so precisely and concentrated that it is at the expense of other things.
66. I mostly wash my hands after touching things.
67. It often drives me crazy to see dust whirling on my things all day; I am often busy removing it.
68. I spend lots of energy and time in carefully putting away knives, scissors and other sharp objects.
69. I keep my attention fixed quite concentrated on simple activities (while performing them) such as undressing, dressing, brushing my teeth, shaving, odd jobs, writing out checks etc., because otherwise I am afraid that I'll do something wrong.
70. Most people would think that I wash my hands much too often or much too long.
71. I spend hours a week to remove bits of fluff, hairs etc. from my clothes.
72. At home, with one of my inmates, I feel an urge to check the fire, the gas (tap), the sockets, or whatever might be dangerous, to make sure that this person will not be harmed.
73. When I have finished a job, I always have to check the result.
74. I wash my hands in a fixed, peculiar way, otherwise I am not sure if I'm clean enough already.
75. When something has been used, I can't leave it for another minute. *It has to be removed and cleaned or cleared away.* (Sometimes at the annoyance of others).
76. I rather often check the papers or the news, to find out whether, unintentionally, I may have caused accidents or fires somewhere.
77. I repeat many of my actions still one or more times, otherwise I feel that it hasn't been enough yet.
78. I feel an urge to wash my hands a fixed number of times successively, otherwise I am not sure if I am already clean enough.
79. At home I have to lock my front-door or the door of my workshop) with concentrated attention, and even then I have to check more than once, or prolonged, whether it has really been locked.
80. I often perform special actions in order to prevent that I will lose consciousness, or go crazy, or die. Another person would not believe these actions may remedy this.
81. I often postpone certain odd jobs without abandoning my intention to perform them.
82. I often clean the door-handles, the banisters, etc., because many people touch them.

83. I often feel an urge to check my safe, cash-box, or bank-account.
84. I often perform a certain action in order to prevent that another person (e.g. my partner or child) may be harmed. Another person would not believe that this action may be able to remedy this.
85. When I finally have started a job, I have to force myself, again and again, to continue.
86. I avoid a lot of areas and activities in order to run no risk of being contaminated and having to wash my hands prolonged.
87. I often check my money (whether nothing is missing; whether I'll have enough for the future); but it is difficult for me to feel reassured about it.
88. I often have to fight against intrusive thoughts that I don't want.
89. I make quite a ceremony of very ordinary activities.
90. In the street I often look behind me to check if I have caused accidents without noticing it.
91. When I have to undertake a prolonged, intricate job, I can't help spending much time and attention to less important parts of it; in these I am very precise.
92. I often feel I can't control my thoughts.
93. I often do something special (such as: counting, touching something, making a noise saying "this is all-right", etc. to be able to turn to the next one.
94. I look out for dangerous objects in the street because I have to remove these to protect my fellow-man.
95. Certain activities I have to repeat several times, or do them in a very special, regulated way, in order to feel that it has been done all-right.
96. I need quite some time for really rather simple activities such as: dressing, shaving, brushing my teeth, making the beds, laying, setting the table, writing out checks, small repairs, etc.
97. I feel an urge to count my steps or objects around me, or to perform other intensive things, when I walk to some destination.
98. I push aside glass and pebbles in the street, because, otherwise, they might hurt other people, which would be partly my fault.
99. I oppose almost each change in my domain.
100. Nowadays my life is almost totally determined by my rules and habits. Without these I would not know what to do.
101. When I have done or thought something bad (sinful), I feel compelled to execute a certain action or to say a special thing, in order to "wipe out" this bad thing.
102. I am troubled very much by a compulsive, meticulous way of handling really quite ordinary things, but it strikes me that this holds for only certain places (e.g. at home) or for only certain activities. Elsewhere, or with regard to other activities I am not bothered a great deal.
103. I often worry about dangers besetting me, but if I think about them soberly I must admit: these dangers are, in fact, very unlikely.
104. In order to feel assured that a certain event, a certain activity, will pass off well, I feel an urge to make a particular gesture or to perform particular actions.
105. When I read in the paper or hear on the news that accidents or fires have occurred, I often start worrying whether I might have done it.
106. To remove the contamination of my hands, I wash them prolonged or very often.,
107. When washing my hands I often act in the following way: I do it a specified number of times in succession, or I count at the same time until I've reached a specified number, otherwise I will have trouble in stopping.
108. When I see a stone or something like that lying in the street, I often get the feeling somebody else may stumble over it and that it would my fault.