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dissociation within the
framework of G-theory



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Examining the Construct of Dissociation within the Framework of G-theory

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Introduction

The main purpose of this article is to outline in which manner the psychological construct “dissociation” may be examined within the framework of generalizability theory. In DSM-IV (American Psychiatric Association, 1994), dissociation is defined as a disruption in the usually integrated functions of consciousness, memory, identity, and perception of the environment. Dissociative symptoms range from common experiences such as daydreaming and lapses of attention, to a pathological failure to integrate thoughts, feelings and actions. Dissociative identity disorder, or DID, is regarded the most complex of the dissociative disorders and may be defined according to the following criteria of inclusion: (1) the presence of two or more distinct identities or personality states each with its own relatively enduring pattern of perceiving, relating to, and thinking about the environment and self, (2) at least two of these identities or personality states recurrently take control of the person’s behaviour, (3) inability to recall important personal information that is too extensive to be explained by ordinary forgetfulness, and (4) the disturbance is not due to the direct physiological effects of a substance (American Psychiatric Association, 1994) .

Generalizability theory

Generalizability theory (G-theory) is a framework for studying psychometric properties of instruments such as tests, observational measures, and clinical ratings (Hagtvet, 1997). It was originally introduced by Cronbach and colleagues (1963, 1972) in response to limitations of the still popular true-score-model of classical reliability theory (Spearman, 1904). In classical test theory, we have true scores and a single error. The use of G-theory is advantageous compared to classical theory because it allows us to assess multiple sources of error in a specific measurement situation. G-theory assumes that for every construct, there exists a *universe of admissible observations*. This universe consists of observations which the decision maker considers interchangeable. A person's universe, or true, score is considered his/her score on all admissible observations.

Measurement in G-theory is the process of estimating a person's true score using only a sample of admissible observations. The extent to which the sample of admissible observations permits the estimate of the true score, determines the *generalizability* of the measurement. Many sources of error (i.e., raters, items, occasions, locations, etc) can prevent measurement from generalizing to the true score and G-theory concentrates on identifying and estimating the impact of these errors on measurement. In order to obtain a generalizability estimation, generalization studies (G-studies) and decision studies (D-studies) are carried out. The G-study addresses questions of how well measures taken in one context generalize to another. Thus, the purpose of a G-study, "... is to obtain estimates of variance components associated with a universe of admissible observations. These estimates can be used to design efficient measurement procedures for operational use and to provide information for making substantive decisions about objects of measurement (usually persons) in various D (Decision) studies.

Broadly speaking, D-studies emphasize the estimation, use, and interpretation of variance components for decision-making with well-specified measurement procedures (Brennan, 1992).

The universe of admissible observations is defined by a set of facets and how these facets are organized. Facets represent the conditions under which the observations are made and include such things as forms, items and the like. A facet is a set of measurement conditions. It is conceptually similar to a variable in ANOVA, that is, a categorical variable. Universes can be simple or complex, homogenous or heterogeneous, and small or large depending on the construct of interest and the decision maker's interest in investigating different aspects or facets of generalizability.

In G-Theory, we ask to which degree the facet affects the measure: Is there a main effect of the facet on the target (thing to be measured)? Is there an interaction between facets? Facets may be considered *fixed* or *random*. If they are fixed, the specified conditions are the only conditions of interest. You then generalize only to them. If they are random, you wish to generalize to a population which has been sampled. In that case, the levels of the facet included in the G-study must be representative of the population (universe). The determination of fixed versus random facets, almost always is determined by whether the targets (things to be measured) are crossed or nested within facets. In general, crossed targets imply fixed facets, while nested targets imply random facets.

G-theory studies on the construct of dissociation

Dissociation is conceptually and clinically linked to hypnotisability, fantasy proneness and absorption. Separate measures of these phenomena are also moderately to strongly correlated (Putnam and Carlson, 1998). In addition, assessment tools specifically designed to detect dissociation, like two of the most frequently used assessment tools in this area – the *Dissociative Experience Scale (DES)*, a 28 item self report instrument (Bernstein & Putnam, 1986), and the 200 item large *Structured Clinical Interview for DSM -IV (SCID-D; Steinberg, 1995)*, both reflect the complexity of the dissociation construct. Hence, the construct of Dissociation has overlapping qualities towards these related constructs, both on a conceptual and

psychometric level. In terms of G-theory, this implies that a universe of admissible observations concerning dissociation also contains observations concerning absorption, hypnotisability and fantasy proneness. Performing a G-study and a series of D-studies on items drawn from all these measures, would allow us to estimate, within each test, how many items would be needed to suggest an optimal measure of dissociation. In such an analysis, we would wish to explore how the data varies. In terms of an ANOVA approach, all potential sources of variance can be regarded as independent variables and the data itself, can be regarded the dependent variable.

The variance components, together, will explain 100% variance, or as Brennan (1992) explains “only error exists.” Our quest is therefore to decide which of the variance components should be included in order to explain the data, and furthermore, which items should be regarded as error. Different designs (crossed and/or nested) will produce variance components of different sizes. Our task is to decide what constitutes the universe to which our observations are generalized – that is, which facets are included in the understanding of the data and which of these are to be regarded as fixed facets and which are to be regarded as random. More random facets and fewer constrictions will produce a wider and larger universe.

Furthermore, a series of D-studies - where the independent variables are manipulated in different designs (fixed/random/number of items and so on) - will generate different generalization components. These components will vary, and our objective will be to assess what is sufficient in terms of size, that is – under which circumstances is it evident that the data are explainable, and how stable can we assume that these measurements will be. Through this procedure, we might end up with a set of items that re-composes the original material – in other words, we might construct a new “test” – e.g. “Dale’s Test of Dissociation” or DTD. A critical analysis of which items comprise this test will be needed in order to ascertain to which degree each item really represents the construct dissociation, and to which degree the test itself, as a whole, also represents dissociation. The test can form the basis of further research on dissociation.

Method

Subjects

Data for the G-theory study can be drawn from a study already performed in Tromsø on DID including a total of 38 women (Dale, Berg, Elden, Ødegård and Holte, 2008). Participants were assigned to either of three groups: The DID group (14 persons, mean age 34.1, age range 21 – 46) consisted of participants diagnosed with DID. The participants ranged in age from 21 to 51 years, with a mean age of 38 years. All of them had at one time or another been hospitalized due to their psychiatric illness, but only three were currently in treatment at a psychiatric ward. Half of the group was chronically disabled and received welfare and the other half were either working or studying at college or university level. The DD group (10 persons, mean age 33.7, age range 19 – 45) consisted of participants diagnosed with different dissociative diagnoses (other than DID). Three participants in this group were chronically disabled, two were in a rehabilitation program, two were university students, and one participant was working full time. All Participants in this group had been hospitalized due to their psychiatric illness, and one was currently receiving treatment at a ward, the rest received treatment at outpatient facilities. The NODD group (14 persons, mean age 29.3, age range 20 – 41) consisted of persons with no dissociative diagnosis. Eleven of these were university students, three worked part-time and one participant worked full time. Two were in a rehabilitation program. None were currently in treatment at a psychiatric ward.

Participants in the DID group came from all over Norway and were recruited via a nationwide search including 46 psychiatric institutions, both outpatient clinics and wards. Participants in the DD and the NODD group were recruited through newspaper advertisement, by contacting nearby psychiatric institutions, and finally, through an e-mail based recruitment campaign at the University of Tromsø.

Sample of items and subcategories

Our database can include four subcategories, all related, either directly or indirectly, to the concept of dissociation.

- *Hypnotisability* - measured by the Harvard Group Scale of Hypnotic Susceptibility (Shor, & Orne, 1962), which is a 12-item scale that has a reliability measure of .83.
- *Absorption* - measured with The Tellegen and Atkinson Absorption Scale (Tellegen, & Atkinson, 1974). This is a 34 item (true-false) scale.
- *Everyday dissociative symptoms* - measured with The Dissociative Experience Scale (DES, Bernstein & Putnam, 1986), The DES is a 28-item self-report questionnaire that has been reported to be reliable, internally consistent, and temporally stable (Dubester & Braun, 1995). It is not a diagnostic tool but serves as a screening device for dissociative disorders. Subjects are required to circle the percentage of time (given in increments of 10% ranging from 0 - 100) that they have the kind of experience described within each item. A total score is computed as the mean of the responses to the 28 items. High dissociators will usually be identified among those with mean scores of 30 or above. The results of factor analytic studies of this questionnaire are frequently taken to indicate that the DES comprises three factors: depersonalization/derealization (detachment), amnesia and absorption (Ross, Ellason, & Anderson, 1995).
- *Magnitude of dissociative symptomatology* - determined through the SCID-D (Steinberg, 1995). The SCID-D is a 200 item structured clinical interview used in order to make DSM -IV dissociative disorder diagnosis. The SCID-D also includes registration of demographic data, work history, treatment history, somatic disease, substance abuse and family history. The schedule has an overall interrater reliability of 0.68 (Kappa), a sensitivity of 90%, and a specificity of 100% for the diagnosis of DID. A SCID-D interview usually takes about one and a half hour (Steinberg, 1995).

Design

Our data can be organized in a multifaceted design, as shown in Table 1.

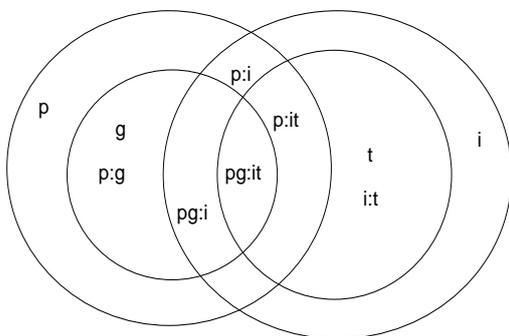
Table 1 Design

		TESTS			
		HYPNOSIS	ABSORPTION	DES	SCID-D
GROUPS	PERSONS	ITEMS 1 - 12	ITEMS 1 - 34	ITEMS 1- 28	ITEMS 1 - 200
NODD	P1 : P14				
DD	P1 : P10				
DID	P1 : P14				

NODD = No dissociative diagnosis, DD = Dissociative diagnosis, DID = Dissociative identity disorder.

This design - $(p:g) \times (i:t)$ - where p = persons, g = groups, i = items and t = tests, generates the following variance components, as illustrated in Figure 1.

Figure 1 Variance components



Data Analysis

As shown in the description of the subcategories, items in the different tests are not similarly rated, e.g. in the DES each item is rated on a ten point scale and in the Tellegen and Atkinson Absorption Scale, items are rated either true or false on a two point scale. GENOVA analysis can only be performed on balanced designs, where all items are rated similarly. This design, due to the differences in rating among the test, is unbalanced, and must be analysed with urGenova. urGenova is an ANSI C computer program for estimating random effects variance components for both balanced and unbalanced designs that are complete in the sense that all interactions are included (Brennan, 2001).

Summary - suggestions for future research

A procedure is described with which we might construct a new measure of dissociation – e.g. “Dale’s Test of Dissociation” or DTD. The DTD might form the basis for future research on dissociation in many directions. Firstly, it could be compared to other measures of dissociation. We would here determine to which degree it correlates with these measures, which again would give us estimates of the DTD’s concurrent validity. Secondly, we could examine the tests qualities as a differential diagnostic tool, that is, to which degree does the test predict different types and degrees of dissociation. Does it differentiate between normal and more pathogenic dissociation? Does it clearly differentiate persons with DID from persons with other dissociative diagnoses?

Due to such qualities, the test could prove to be very useful, both as a screening device in prevalence studies, and as a first-step assessment tool in clinical practice. Optimally it would prove to be as precise as a full SCID-D interview, but significantly less time consuming. A test like the DTD might also be sensitive towards a set of subcategories of dissociative conditions that have not, hitherto, been detected through existing instruments. Such a discovery would both shed new light on the

phenomenon of dissociation and it would have serious clinical implications. For instance, it might be established, through further clinical research, that some of these subcategories are treatment resistant within the framework of traditional psychotherapeutic techniques, and that specially designed hypnotherapeutic approaches would be needed in order to gain progress.

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