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Measuring dissociation: Comparison of alternative forms of the dissociative experiences scale

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The dissociative experiences scale (DES), developed by Bernstein and Putnam (1986), is commonly used to measure dissociation in clinical populations. It is often used with nonclinical populations to assess how levels of dissociation covary with other psychometric measures. When it is used with nonclinical populations, problems arise because the resulting scores can show severe floor effects and often are highly skewed. To remedy these problems, we developed alternative ways of measuring self-reported dissociative experiences. A form of the DES in which people were required to rate how often they have each of 28 experiences compared with other people was superior in avoiding problems of floor effects and skewness. We discuss situations in which this alternative, which we call DES C, is preferred.

How often do you find that you are listening to someone talk and then suddenly realize that you did not hear part, or all, of what was said? How often do you find that you are accused of lying when you do not think you have lied? These kinds of questions have been posed to people as a means of determining the extent to which they have dissociative experiences. The formal definition of dissociation is an impairment or even complete failure to integrate memories, experiences, actions, and feelings into consciousness.

Measuring dissociation has been of interest to investigators in part because of an increase in the last two decades in the diagnosis of multiple personality/dissociative identity disorder (MPD/DID) and other dissociative disorders (Goff & Simms, 1993). There are several possible reasons for this increase: Dissociative disorders have become more accepted and more easily recognized, changes in society and therapeutic practice have led to a higher prevalence of dissociative disorders, and there has been a substantial increase in the number of misdiagnoses. All explanations might be partially correct. Whatever the explanation,
it is clear that many clinical cases display dissociative symptoms (Carlson, Putnam, Ross, Torem, Coons, Dill, Loewenstein, & Braun, 1993; Ross, 1997), but so do many nonclinical cases. Kihlstrom, Glisky, and Angiulo (1994; see Ray, 1996; Ross, Joshi, & Currie, 1990, 1991; Vanderlinden, Van Dyck, Vandereycken, & Vertommen, 1991; Vanderlinden, Varga, Peuskens, & Pieters, 1995, and others for supporting data) state that most people have at least a few dissociative experiences. Although they often are not problematic, people who score high within the normal range of dissociation may be particularly susceptible to dissociative disorders if encountering a particular trigger (e.g., trauma) or if placed within particular societal settings.

During the 1980s, it became evident that an easily administered, psychometrically reliable means of measuring dissociation in clinical populations was desirable. Several measures were developed. Bernstein and Putnam (1986) developed the dissociative experiences scale (DES). According to Ross (1997), this is the most widely used self-administered scale and has undergone the most methodological scrutiny. In several studies, the DES has been found to yield high internal reliabilities (above .90 on Cronbach’s alpha). It has 28 items (see the Appendix). These items were based mainly on experiences of people who have dissociative disorders and discussions with clinical experts in the field of dissociative disorders. This means that many of the scale items are most relevant for people with dissociative disorders. Some items constitute more everyday dissociative experiences that are likely to occur to many people (e.g., “they are listening to someone talk and they suddenly realize that they did not hear part or all of what was just said” [p. 733]). Bernstein and Putnam (1986, p. 727) stated that the DES offered “a means of reliably measuring dissociation in normal and clinical populations” but acknowledged that using the DES in normal populations “was not its intended purpose” (Carlson & Putnam, 1993, p. 16).

Respondents to the original DES are asked to place a tick on a 100-mm line to denote what percentage of the time they spend having each of the 28 experiences. One end of the line was labeled 0% and the other 100%. The responses are supposed to be recorded to the nearest 5 mm. They did this, rather than simply asking people whether they ever had the dissociative experience, as is done with Riley’s (1988) questionnaire of experiences of dissociation (QED), so that their scale “could reflect a wider range of dissociative symptomatology” (Carlson & Putnam, 1993, p. 16). Many researchers and practitioners found it time-consuming measuring responses to the nearest 5 mm. For this reason, Carlson and Putnam (1993) offered an alternative response set. The set for this DES II has 11 options, the percentages 0%, 10%, . . . , 100%. Respondents are asked to circle the appropriate response. Carlson and Putnam
wright and loftus (1993) and Elliason and colleagues (1994, as cited in Ross, 1997) compared this scale with the original DES and found similar scores. Given its relative ease, it is rapidly gaining in popularity.

Carlson, Putnam, Ross, Anderson, Clark, Torem, Coons, Bowman, Chu, Dill, Loewenstein, and Braun (1991) explored the internal structure of the DES with clinical and nonclinical samples and found three subscales: amnesiac dissociation, absorption, and depersonalization. These subscales also yield high internal reliability (Dubester & Braun, 1995). When looking just at nonclinical samples, a different factor structure seems to emerge (see Ross et al., 1991). Ray and colleagues (Ray & Faith, 1995; Ray, June, Turaj, & Lundy, 1992) explored the factor structure with university students. They found between four (Ray, 1996; Ray & Faith, 1995) and seven (Ray et al., 1992) factors for the DES. Ross et al. (1991) found three factors using a large general population sample of Winnipeg, Canada. However, Fischer and Elnitsky (1990) found only a single factor for the DES with a nonclinical population. There are disagreements about the best way to determine the number of factors. Some argue that all factors explaining more variance than the mean variance of the original items (i.e., with eigenvalues greater than 1) should be extracted. Others argue that researchers should use a more subjective method, such as a scree test, in which the proportion of variance accounted for by each factor is compared with the previous and the subsequent factors (see Cattell, 1988). Ultimately, the value of the scree test depends on how clear its representation is.

In most of the studies that used the DES with nonclinical adult samples, the data for individual questions, and for the overall scores, are highly skewed and clustered at the low end of the scale (Ross, 1997; Ross et al., 1991). Perhaps this is an inevitable consequence of Carlson and Putnam’s wish to differentiate among clinical populations and the fact that their questions were constructed from the clinical literature and experiences with clinical samples. After all, even the highest population estimates predict that only a few percent of the population will have dissociative disorders. It is necessary to distinguish this small percentage of people from other people who score high on the DES but are unlikely to have a dissociative disorder; there is no need to discriminate among the majority who score well below any threshold on the DES.

However, the resulting distributions are problematic for exploring how differences in dissociative tendencies are associated with other scales for nonclinical populations. For instance, Faith and Ray (1994) administered a hypnotizability scale and the DES scores to university students and found them essentially uncorrelated. However, it could be that the floor effects of the DES with university students are dampening this correlation. In fact, pooling across 10 studies, Van Ijzendoorn
and Schuengel (1996) found that these had a weak relationship (see also Kirsch & Lynn, 1998, for related discussion).

In another study, Hyman and Billings (1998) tried to get people to remember childhood events that never occurred. They found that the probability of a false memory was related to scores on the DES. People with higher scores were more likely to have a false memory. Several other studies have examined the relationship between DES scores and other measures with nonclinical populations. This research reflects the importance many researchers have placed on the effects of dissociative tendencies on many aspects of life. However, psychometric problems with the floor effects and skewness affect the analysis of data such as these. Again, if the DES is to be used as a screening device for dissociative disorders, these characteristics are not problems.

Often it is useful to transform skewed data so that they more closely approximate the normal distribution, an assumption of many statistical tests. The transformations would spread out the data at the low levels relative to data at high levels. This procedure does not overcome the problems of floor effects. With a variable such as reaction time, the researchers would be fairly confident that it is measured accurately and that the difference between two fairly quick times is still meaningful. However, for people who score near the floor on the DES, "small differences among these subjects may not be meaningful" (Carlson & Putnam, 1993, p. 16). Once the data are transformed, the difference between a total DES score of 5% and 10% is amplified. This difference, which Carlson and Putnam state may not be meaningful, may become far too influential in the statistical analyses. We demonstrate this problem later in this paper. Because of the problems identified using the DES with nonclinical populations, we examined alternative forms of the DES.

**Alternative response forms**

There are several instruments to measure dissociative tendencies. The most popular self-administered instrument, and one that has undergone the most methodological scrutiny (Ross, 1997), is the DES originally described in Bernstein and Putnam (1986). The original DES and DES II (Carlson & Putnam, 1993) required people to give a percentage for each of the 28 items. This instruction can cause some difficulties. Several of the people in the present study commented afterward that they were confused about how they were supposed to respond. Here is the basic problem. Suppose Mary is asked to provide the "percentage of time" that she thinks she is sometimes listening to someone talk and not hearing part or all of what was said. If she checks 10%, does this mean 10% of waking hours, 10% of the time she is in conversation with others, or 10% of some other period? If she thinks that this happens occa-
Our intent was to measure the same basic 28 experiences captured in the original DES, but to have better psychometric properties for nonclinical samples. In particular, we wanted to avoid the high levels of skewness and the floor effects of the DES and DES II for the reasons described by Carlson and Putnam (1993). Although we could have developed new questions specifically designed for a nonclinical sample, we wanted to keep the same question stems. This allows us to build on the extensive research conducted with the DES. Furthermore, because researchers have only in the last decade begun looking at dissociative tendencies in nonclinical populations, it would have been difficult to construct relevant items. Therefore, only the response format was altered. To allow comparisons with DES II, both of our alternatives had 11 options. For all three forms, respondents were asked to tick the appropriate box. For our version of DES II, each percentage (0%, 10%, . . . , 100%) was directly below a box (see Figure 1).

In the second version, respondents were asked how often each experience happens to them, but instead of using the percentages, five verbal quantifiers (e.g., “never,” “occasionally,” “always”) were placed below the response options (Figure 1). We call this DES VQ. Verbal quantifiers, sometimes called vague quantifiers, are often used in surveys and questionnaires for estimating behavioral frequency when it would be difficult for the respondent to calculate the frequency of the behavior or where the behavior is not well defined (Wright, Gaskell &

![Figure 1. Response formats for the three DES versions](image-url)
measuring dissociation

O’Muircheartaigh, 1994). Given the difficulty in defining some of the experiences in the DES, it is worth exploring this option. Ray et al. (1992) used a form of the DES with only five scale points and the endpoints labeled “not at all” and “all the time.” These verbal phrases, without the numerical percentages, are similar to our alternative, although we used “never” and “always” to label the endpoints, as is done with the DES and DES II. Ray et al. found a less skewed distribution than is usually found with nonclinical populations, so we felt that this alteration might lessen skewness, although changing the number of scale points is also likely to have an effect. They called their scale RDES (research DES) but stated that “no empirical research” (p. 418) existed to suggest that their alterations affected results.

Our third version asks people how often they have these experiences compared with other people (Figure 1). For example, people are told “some people have the experience of finding themselves dressed in clothes that they don’t remember putting on” and asked to “place a cross to show how much of the time this happens to you.” One end of scale has the label “much less than others,” the other end “much more than others,” and the midpoint of the scale “about the same as others.” This format requires people to have or to construct some notion of how often other people have dissociative experiences. We address this requirement further in the discussion.

EXPERIMENT

METHODS

Seventy-five first-year students participated in the first phase of this study, which took place at the beginning of a psychology lecture at University of Bristol. Each was given a four-page questionnaire. The first page had the word CONDITION and a number between 1 and 6 on it, which they were told to remember. The next three pages were one of the DES forms. Based on the condition numbers on the front of their questionnaire, one third of the people received DES II, one third DES VQ, and one third DES C.

Two days later, the same students participated in the second phase of the study. This phase was conducted at the start of a regularly scheduled laboratory session. Participants were asked the condition number that was on the front page of the questionnaire they had filled out 2 days before and were handed the appropriate form by one of the laboratory assistants. Half of the people given DES II in the first phase were given DES VQ and half DES C. For those initially given DES VQ and DES C, half were given DES II and half the alternative form of the DES that they had not initially had. The students then took part in their laboratory session, which covered aspects of sampling and survey
design. At the end of the laboratory session, they participated in the third phase of the study. They were given the form that they had not filled out during the first two phases. The six conditions refer to the six possible orders for filling out the three DES forms.

This particular schedule was chosen to try to minimize the effects of people talking with each other while still assuring that the participants were unlikely to remember their responses to individual questions. The data from some participants were eliminated for various reasons. Five students from the first phase were not present at the laboratory session. Two wrongly recalled their condition numbers. The questionnaires were four pages long, including the cover page. Six respondents failed to answer questions on one of the pages for one of the three questionnaires. These 13 cases were excluded, leaving a sample of 62. Of these, 63% said they were female, 36% said they were male, and one person did not indicate his or her gender.

The questionnaires were constructed so that responses could be coded with a computer system and scanner, thus reducing the chance of human coding errors. The questionnaire appearance was designed to match as closely as possible that of DES II (Carlson & Putnam, 1993). However, there were a few differences. Participants responded by placing a tick in the box above the response rather than circling the response. Also, the phrasing was altered to be consistent with the response options of the different forms. For DES II they were asked to “place a cross to show what percentage of the time this happens to you.” For DES VQ the wording was “place a cross to show how often this happens to you.” For DES C they were told to “place a cross to show how much of the time this happens to you.” Participants were asked their gender and to write either their name or some sequence of characters that they could remember. They were told this information would be confidential, but was necessary for matching the questionnaires from each phase. Almost all wrote their names.

RESULTS

Before exploring differences among the DES forms, we checked to see whether there were systematic differences in responses for the different conditions. No statistically significant differences were found. There were also no differences found between males and females.

Comparing DES distributions

Based on previous research (e.g., Ross et al., 1991), we had predicted that DES II would produce a positively skewed distribution. All distributions of individual questions of DES II were positively skewed (minimum skewness 1.10, SE = .30; see the Appendix for the means and skewness for all the individual items). Their means were near the lower limit, ranging from a low of 1.8% for question 4, which describes being dressed in clothes that you do not remember putting on, to a high of 28.4% for
question 17, which describes becoming so absorbed in the television or a movie that you are unaware of other events. This indicates probable floor effects.

The mean for the total DES II score was 12.73% ± 2.39% (median = 9.29%; range 2.1% to 55.4%; the interval is a 95% confidence interval on the raw data), which is approximately what has been found with other university samples (e.g., Bernstein & Putnam, 1986). The distribution (Figure 2a) is highly skewed (skewness = 2.08, SE = .30). Taking the natural logarithm resulted in essentially an unskewed distribution (skewness = 0.11, SE = .30).2 The transformed score will be used in statistical comparisons.

Although we use different response alternatives for DES VQ and DES C, for ease of comparison we report the data from each of our forms as if it were on a 0%–100% scale. Ticking the first box corresponds to 0%, the last box to 100%, and each box between at 10% increments. This allows direct comparisons among the three forms. We first examine the alternative that used verbal (vague) quantifiers. Ray et al.’s (1992) form of the DES used verbal quantifiers but had only five response options. Therefore, we had no clear predictions for skewness. Our form using verbal quantifiers, DES VQ, was skewed. Responses to all the individual items were positively skewed and at least twice their standard errors (minimum skewness = 0.62, SE = .30; see the Appendix). The means for the individual questions ranged from 2.6% (being dressed in clothes you do not remember putting on) to 38.4% (driving in a car/ bus/ subway and not remembering all or part of the journey). The skewness for the total DES VQ score was 1.54 (SE = .30). The natural logarithm transformation reduced skewness to 0.06 (SE = .30). The mean for the total score was 16.94% ± 2.35% (median = 15.00%), which is significantly higher than that of DES II t(61) = 5.80, p < .001, but is not a large difference in substantive terms (less than half the distance between adjacent boxes on the response scale). Floor effects may still be present, but to a lesser degree. The lowest total score for an individual person was 6.1% for the VQ in this sample, compared with 2.1% for DES II.

The comparison form, DES C, fared better with respect to both skewness and floor effects. Only nine individual questions had skewness values twice their standard error (see the Appendix). The highest was only 1.08 (SE = .30), which is lower than any of those for the DES II and lower than most of the DES VQ items. The overall DES C was essentially unskewed (skewness = −0.12, SE = .30). Floor effects were avoided for the most part. The means of the items ranged from 14.4% for question 4 (dressed in clothes you do not remember putting on) to 52.9% for question 2 (listening to someone talk but suddenly realizing that you did not hear what was said). The mean total DES C score was 33.26% ± 3.47%
Figures 2a–2c. Distributions for DES II, DES VQ, and DES C
(median = 33.39%; range 5.7% to 57.1%). It is worth noting that this is lower than 50% that would be expected if the sample thought that they were “about the same as others.” However, the wording of the questions presents a slight bias. Each question reports that “some people” have the experience and this might have made our participants believe that the experiences were more common than if less biasing phrasing was used. It is difficult to see how this can be avoided because people will assume that these behaviors are relevant to at least some people; otherwise the questions would not be asked (see Schwarz, 1995, for further discussion of communication norms in surveys and questionnaires).

**Internal structure**

As mentioned earlier, there is some dispute about the factor structure of the DES for clinical and nonclinical samples. Following Wilkinson (1990), principal component analyses were used to explore the internal structure of these forms. The first principal component accounted for 39.2%, 34.0%, and 35.7% of the variation in DES II, DES VQ, and DES C, respectively. Their second components accounted for 8.9%, 9.4%, and 9.3%. The remaining components gradually declined from these values. Inspection of the scree plots (Figure 3a) clearly shows that a single-factor model is optimal for all of these. The coefficients for all items of all three forms were positive.

Some researchers extract all factors with eigenvalues greater than 1. Here this corresponds to about 4% of the total variation. This rule has a couple of disadvantages. It differentiates between factors accounting for similar levels of variation where one has an eigenvalue slightly higher than 1 and the other slightly lower than 1. The criterion also means that as the number of questions goes up, the number of factors is likely to increase even if the same questions are repeated. The main disadvantage of using scree plots is that sometimes they are not informative. Here they are informative and it is clear that there is one factor accounting for much more variation than subsequent factors and there are no striking differences between contiguous pairs of factors.

Because of the skewness for the individual items in DES II and DES VQ, it was felt that principal component analyses designed for ordinal data should also be examined. A procedure called PRINCALS (principal component analysis and alternating least squares) was used (see Van de Geer, 1993). The first components accounted for 39.2%, 30.4%, and 35.7% of the variation in DES II, DES VQ, and DES C, respectively. The second for each of these was considerably lower (8.9%, 9.6%, and 9.4%, respectively). These values, and the scree plots shown in Figure 3b, are very similar to those found with classic principal component analyses and all clearly suggest single-factor solutions.
Using a technique related to principal component analysis (Waller & Meehl, 1998), Waller and colleagues (Waller, Putnam, & Carlson, 1996; Waller & Ross, 1997) recently used taxometric analysis to explore whether the amount of dissociative experiences people have lies on a continuum from people who dissociate extremely infrequently to those who dissociate frequently or whether there are distinct groups, or taxa. They observed distinct taxa with both clinical (Waller et al., 1996) and nonclinical groups (Waller & Ross, 1997). Furthermore, they identified a subset of DES items that are particularly good at differentiating people with DID and those without (Waller et al., 1996). Because the observed percentage of people from the general population in the high dissociation tax-
on is only about 3% (Waller & Ross, 1997), even in our sample of 260 (see below) it is unwise to run such procedures (see Waller & Meehl, 1998, for a thorough explanation of taxometric procedures and their limitations).

**Internal consistency**

The validity and reliability of a questionnaire are critical for its psychometric value. Carlson et al. (1993) demonstrated the validity of the DES for differentiating various client groups. The internal reliability refers to how well the items, as a group, correlate. Cronbach's alpha is the most reported measure of reliability, and it is usually found to be about .90 or above for the DES.

For the forms tested in this study, Cronbach's alpha was .93 for DES II, .91 for DES VQ, and .93 for DES C. This was expected given the good fit of a single principal component. For DES II, the correlation of the item with the others ranged from .28 to .77. For DES VQ they ranged from .15 to .69, and for DES C from .18 to .80. Some of these scores are fairly low, indicating that if the DES was going to be used solely with nonclinical populations, then some items might be excluded. Because no subscales were identified with the principal component analyses, no reliability measures on subscales were made.

**Relationships among the alternative forms**

Because all the forms tested used the same questions with different response alternatives, we are assured that at some level they address the same set of experiences. Therefore, we would expect the forms to be correlated. Dubester and Braun (1995) found that the correlation between taking the original DES (marking a line) on two occasions was .93 for three different clinical groups. This study provides a rough guide for the maximum possible correlation between our test forms. It is likely that the test-retest correlations would be lower with nonclinical groups because certain clinical groups (those with DID, for example) tend to have much higher scores than others. Therefore, they would constitute highly influential, or leverage, points. The observed correlations, after transforming DES II and DES VQ scores with the natural logarithm, were .75 between DES II and DES VQ ($p < .001$), .25 between DES II and DES C ($p = .05$), and .43 between DES VQ and DES C ($p = .001$).

Figure 4 shows the scattergrams comparing these measures (using the untransformed measures to maintain the original scale). Clearly, DES II and DES VQ are highly correlated. Of more interest here is what additional discrimination is attained with DES C. Both DES II and DES VQ have most of the sample clustered at the low end (Figures 2a and 2b). Examining Figures 4b and 4c, it is clear that many of these people, when
Figures 4a–4c. The scattergrams of (a) DES II with DES VQ, (b) DES II with DES C, and (c) DES VQ with DES C
measuring dissociation

asked how often they have these experiences compared with others, score much higher. The people who score high on DES II and DES VQ still score high on DES C, but DES C discriminates more finely among those who score low on DES II and DES VQ. If DES C were used as a screening instrument and the same threshold were used as is often recommended for DES II (scores above 30%), then this would mean many more people would be advised to have a diagnostic evaluation. However, DES C is not a screening instrument and should not be used as such.

From a psychological standpoint, it is worth delving deeper into the relationships among the different DES forms. The correlation between DES II and DES C, when partialing out DES VQ, is \(-0.10\) (\(p = .42\)). This lack of a partial correlation was expected because although all three measures overlap on the experiences being referred to, DES II and DES VQ both refer to the proportion of time having the experience, and DES VQ and DES C both require interpretation of verbal phrases. The only similarity between DES II and DES C, the actual experiences, is also shared by DES VQ.

**Increasing sample size for DES C**

DES C appears to have the best psychometric characteristics of the three forms for the population tested. Although that sample size is satisfactory for many comparisons, we thought it would be worthwhile to administer DES C to several additional participants. This allows us to be more confident with our recommendations. The additional participants were sampled from a different group of first-year laboratory students (\(n = 75\)) and as part of a study on memory to other students (\(n = 121\)). Combining these data with the other set yields a sample size of 260.

Combining all three samples produced an overall DES C distribution that was essentially unskewed (skewness = \(-0.12\), SE = 0.15) and is not significantly different from zero (i.e., symmetrical) even with this larger sample size. The mean score was 36.38 ± 1.65. There still appears to be only a single factor when a principal component analysis is performed on each of the three samples or when they are combined into one larger sample. With the combined sample, the percentages of variance accounted for by the first few principal components are 32.7%, 7.2%, 6.5%, 4.5%, 4.4%, and 3.8%. Although each of these corresponds to an eigenvalue greater than 1, graphing these values on a scree plot clearly suggests a single latent variable.

**DISCUSSION**

In the 1980s there was a clear need for a reliable way to measure the extent of dissociative experiences in clinical samples. Several instru-
ments were created to serve this role. The DES is the most frequently used (Ross, 1997). It is often used as a screening device to see whether more extensive diagnostic instruments should be administered. In the 1990s there was an increased interest in studying dissociative experiences in nonclinical samples. This has been done for two main purposes. The first is to estimate the proportion of people in the population above some cutoff point. Depending on the cutoff point chosen, usually only a few percent of the population would score above this point. Information on the more than 90% of people who are not near this cutoff is not of concern. The DES, which was designed to differentiate among people and groups who dissociate frequently, has been used for this purpose in many surveys.

The second purpose is to examine whether the tendency to have dissociative experiences predicts other measures. For these analyses, researchers are interested in scores throughout the whole range. The DES was not designed for this. The resulting distributions are highly skewed and liable to floor effects, thereby limiting its usefulness with nonclinical samples for this purpose. As Carlson and Putnam (1993, p. 16) pointed out, differences at the low end of the DES scale “may not be meaningful.” When the response format was changed so that participants were asked how often they had these experiences compared with most other people, the observed distribution was unskewed and avoided floor effects. These are important psychometric properties to consider when choosing a particular scale.

This alternative format, called DES C, was compared with Carlson and Putnam’s (1993) DES II. People who scored high on DES II also scored high on DES C, so it does not appear likely that the DES C could fail to detect people who, according to the DES II, dissociate frequently. Of course, exploration with clinical samples is necessary before claims are made about how it will perform with these samples, and as we stressed before, DES C is not intended as a screening device for any clinical disorder. Where DES C differs from DES II is that large numbers of people who scored near the lower limit on DES II were differentiated with DES C. Many people reported that they did not spend much time dissociating with the DES II, but did feel that their level of dissociating was comparable with that of others, as measured with DES C.

The question of validity is difficult for any scale in a new area (dissociative tendencies with nonclinical samples). Further investigations are necessary to determine how these people perform on related tasks and whether these relationships are congruent with theories of dissociation. Some studies have been conducted using DES C. For example, Heaps and Nash (1997) explored whether imagination inflation (Garry, Manning, Loftus, & Sherman, 1996), in which imagining events makes peo-
people think that the events are more likely to have occurred, was related to dissociation as measured with DES C. They found that it was \( r = .40, p < .005 \). This result is expected because most theories of dissociation suggest that people who dissociate may have problems differentiating a memory for a real event and one that was just imagined.

We also examined a version of the DES in which the response alternatives were verbal quantifiers. Because Ray et al. (1992) found less skewed distributions when using a five-point scale with verbal quantifiers, we thought that this format might improve these psychometric characteristics. We observed a slightly lower degree of skewness compared with that of DES II. However, this difference was not large enough to justify using DES VQ in lieu of DES II on psychometric grounds.

Other properties are important in choosing a measure. All three forms of the DES that we examined showed high internal consistency, above \( \alpha = .90 \). Principal component analyses were run on all three forms, with both interval and ordinal methods. Scree plots (Figures 3a and 3b) suggested that there was a single underlying trait. Examining these plots, it was difficult to justify additional components. This finding counters some research that has uncovered multiple subscales of the DES. If we had decided to include all components accounting for 1/28 or more of the total variance, more components would have been included. Of course, there may be good theoretical reasons to cluster some of the items. Although the principal component analysis gives no reason to postulate additional factors, the individual items appear distinct enough that researchers should be encouraged to explore whether any groups of items are highly predictive of other measures.

It is worth considering the cognitive processes involved in answering the three forms of the DES that we examined. We have already alluded to some of the problems that are likely to occur trying to figure out what percentage of the time you are having a particular dissociative experience. Clearly, people are not treating this as an absolute percentage of waking hours. Otherwise, several of the experiences could be added together to get a measure of the overall percentage of time dissociating. If we assume that people can have only one of the 28 dissociative experiences at any given time, then anyone with a total DES II score of 4% or more is dissociating constantly. About 95% of our sample scored above 4%. Clearly this is not occurring, so people are not responding to DES II with absolute percentages.

When filling out DES II, people do not appear to be interpreting the response alternatives as percentages. The processes involved may be very similar to those used when completing DES VQ. This notion is supported by the strong consistency between the scores on these two forms. When responding to questions with verbal quantifiers, people use in-
formation about how they think most people behave (Wright et al., 1994). Because people have different beliefs about the behavior of others, this may introduce some artifactual group differences. These different beliefs are known to create problems comparing across groups (see Schaeffer, 1991, for discussion).

DES C explicitly asks people to make comparisons between themselves and others. Therefore, if people differ in how often they think people dissociate, this may affect responses. Clearly, knowledge about others is based in part on prevalence of dissociation within a given society. For example, the diagnosis of dissociative disorders is more common in the United States and Canada than in the United Kingdom. Also, there is more discussion in the media about dissociative disorders in the United States and Canada. This means that care must be taken in comparing the results across cultures. However, as mentioned earlier, knowledge of other people’s behavior is likely to influence responses on DES II and DES C. There is the additional problem that people might not know how much other people dissociate. It is important in the preamble of the questionnaire to stress that it is asking how much participants think that other people dissociate and that participants should make informed guesses if unsure. In conclusion, we encourage further research examining how people respond to these dissociation questionnaires in order to improve their value for different research and diagnostic purposes.

Appendix

The means and skewness values for all items for the different forms of the DES. All questions ended with “Place a cross to show how much of the time this happens to you.” All these questions are taken from Carlson and Putnam (1993). The standard error of skewness approximately 0.30.

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<tr>
<th>Questions</th>
<th>DES II</th>
<th>DES VQ</th>
<th>DES C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some people have the experience of driving or riding in a car or bus or subway and suddenly realizing that they don’t remember what has happened during all or part of the trip.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>1.4</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>37</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was said.

<table>
<thead>
<tr>
<th>Questions</th>
<th>DES II Mean</th>
<th>Skewness</th>
<th>DES VQ Mean</th>
<th>Skewness</th>
<th>DES C Mean</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some people have the experience of finding themselves in a place and having no idea how they got there.</td>
<td>26</td>
<td>1.1</td>
<td>38</td>
<td>0.6</td>
<td>53</td>
<td>-0.7</td>
</tr>
<tr>
<td>Some people have the experience of finding themselves dressed in clothes that they don’t remember putting on.</td>
<td>5</td>
<td>4.0</td>
<td>7</td>
<td>2.7</td>
<td>21</td>
<td>0.5</td>
</tr>
<tr>
<td>Some people have the experience of finding new things among their belongings that they do not remember buying.</td>
<td>2</td>
<td>3.6</td>
<td>3</td>
<td>2.0</td>
<td>14</td>
<td>1.1</td>
</tr>
<tr>
<td>Some people sometimes find that they are approached by people who they do not know who call them by another name or insist that they have met them before.</td>
<td>4</td>
<td>4.3</td>
<td>6</td>
<td>4.0</td>
<td>20</td>
<td>0.6</td>
</tr>
<tr>
<td>Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and they actually see themselves as if they were looking at another person.</td>
<td>11</td>
<td>1.9</td>
<td>14</td>
<td>1.7</td>
<td>32</td>
<td>0.2</td>
</tr>
<tr>
<td>Some people are told that they sometimes do not recognize friends or family members.</td>
<td>7</td>
<td>2.2</td>
<td>9</td>
<td>2.3</td>
<td>30</td>
<td>0.6</td>
</tr>
<tr>
<td>Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation).</td>
<td>8</td>
<td>1.1</td>
<td>9</td>
<td>0.8</td>
<td>25</td>
<td>0.4</td>
</tr>
<tr>
<td>Questions</td>
<td>DES II</td>
<td>DES VQ</td>
<td>DES C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>--------</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of being accused of lying when they do not think that they have lied.</td>
<td>8</td>
<td>1.5</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of looking in a mirror and not recognizing themselves.</td>
<td>6</td>
<td>2.3</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of feeling that other people, objects, and the world around them are not real.</td>
<td>9</td>
<td>3.3</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of feeling that their body does not seem to belong to them.</td>
<td>5</td>
<td>2.3</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event.</td>
<td>15</td>
<td>1.4</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them.</td>
<td>21</td>
<td>1.5</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people have the experience of being in a familiar place but finding it strange and unfamiliar.</td>
<td>9</td>
<td>1.9</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them.</td>
<td>28</td>
<td>1.1</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them.</td>
<td>22</td>
<td>1.2</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions</td>
<td>DES II</td>
<td></td>
<td>DES VQ</td>
<td></td>
<td>DES C</td>
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<td>----------</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Skewness</td>
<td>Mean</td>
<td>Skewness</td>
<td>Mean</td>
<td>Skewness</td>
</tr>
<tr>
<td>Some people find that they sometimes are able to ignore pain.</td>
<td>20</td>
<td>1.3</td>
<td>23</td>
<td>1.2</td>
<td>44</td>
<td>−0.2</td>
</tr>
<tr>
<td>Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time.</td>
<td>24</td>
<td>1.6</td>
<td>36</td>
<td>0.4</td>
<td>52</td>
<td>−0.3</td>
</tr>
<tr>
<td>Some people sometimes find that when they are alone they talk out loud to themselves.</td>
<td>22</td>
<td>1.2</td>
<td>29</td>
<td>0.9</td>
<td>41</td>
<td>0.2</td>
</tr>
<tr>
<td>Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people.</td>
<td>19</td>
<td>1.1</td>
<td>25</td>
<td>0.6</td>
<td>41</td>
<td>0.0</td>
</tr>
<tr>
<td>Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would usually be difficult for them (for example, sports, work, social situations, etc.).</td>
<td>18</td>
<td>1.5</td>
<td>23</td>
<td>1.1</td>
<td>40</td>
<td>−0.1</td>
</tr>
<tr>
<td>Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they mailed a letter or have just thought about mailing it).</td>
<td>17</td>
<td>1.5</td>
<td>22</td>
<td>0.9</td>
<td>42</td>
<td>−0.3</td>
</tr>
<tr>
<td>Some people find evidence that they have done things that they do not remember doing.</td>
<td>9</td>
<td>2.8</td>
<td>11</td>
<td>2.4</td>
<td>29</td>
<td>0.3</td>
</tr>
<tr>
<td>Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing.</td>
<td>7</td>
<td>3.1</td>
<td>9</td>
<td>2.8</td>
<td>28</td>
<td>0.6</td>
</tr>
<tr>
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<td>--------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing.</td>
<td>5</td>
<td>3.9</td>
<td>8</td>
<td>3.0</td>
<td>22</td>
<td>1.0</td>
</tr>
<tr>
<td>Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear.</td>
<td>7</td>
<td>3.8</td>
<td>7</td>
<td>3.4</td>
<td>23</td>
<td>1.0</td>
</tr>
<tr>
<td>Total DES scores</td>
<td>12.7</td>
<td>2.08</td>
<td>16.9</td>
<td>1.54</td>
<td>33.3</td>
<td>−0.12</td>
</tr>
</tbody>
</table>

**Notes**

We are very grateful to Stephen Anderson for helping to design and process the questionnaires, to Ira Hyman, William Ray, and an anonymous reviewer for useful comments, and to Frank Putnam for sending us much material on the DES. Correspondence should be sent either to Daniel B. Wright, Department of Experimental Psychology, University of Bristol, Bristol, BS8 1TN, United Kingdom (e-mail: d.b.wright@bristol.ac.uk) or to Elizabeth F. Loftus, Psychology Department, P.O. Box 351525, University of Washington, Seattle, WA 98195-1525 (e-mail: eloftus@u.washington.edu). Received for publication September 30, 1997; revision received April 6, 1998.

1. There have been a couple of exceptions. For example, Faith and Ray (1994) administered a slightly modified DES to undergraduates along with the QED and a measure of hypnotizability. Although they do not report the skewness, their data are reproduced in Ray (1996, Figure 1) and do not appear to be highly skewed.

2. To illustrate how this transformation gives much importance to small differences at the low end of the scale, the difference between 5% and 10% has the same impact as the difference between 25% and 50% and that between 50% and 100%.

**References**


