CLEVELAND SCALE FOR ACTIVITIES OF DAILY LIVING

(CSADL)

Manual

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Marian B. Patterson
and
James L. Mack

Table of Contents

Tables

Appendices

Cleveland Scale for Activities of Daily Living

(CSADL)

INTRODUCTION

The Cleveland Scale for Activities of Daily Living (CSADL: Patterson, Mack, et al., 1992; Patterson and Mack, 2001; Mack and Patterson, 2006a) is designed to evaluate dependency upon others to carry out activities of daily living (ADL). The scale focuses on aspects of behavior that are affected by cognitive as well as physical impairments. It is specifically intended to be used with elderly persons who have generalized cognitive impairments associated with dementia.

The CSADL is designed to be used only when it can be assumed that the person to be rated has an essentially normal developmental history and, prior to becoming demented, was functioning as a normal adult. It is not intended to be used with persons who have a history of mental retardation, developmental disorders, mental illness, or any other significant, life-long problems that might affect an individual's ability to function independently. The scale is designed to evaluate *present and enduring* behavior and may not be useful in evaluating individuals with transient problems such as a broken limb or an episode of high fever with confusion.

We have focused on what have been termed "instrumental" activities, such as shopping, financial management, and housekeeping. In comparison to physical activities, instrumental activities "...are more complex, in the sense of requiring greater skill, independence, judgment, and combinations of tasks." (Lawton, 1988). We include a relatively large proportion of such activities in the CSADL, since it is to be used with individuals who are often physically intact but have cognitive problems.

Some scale items are similar to those included in scales designed to measure physical activities of daily living. Because the CSADL is designed to focus on dependency occurring as a result of cognitive impairment, however, it includes fewer physical ADL items than do scales designed to provide a detailed evaluation of physically based dependency.

Many physical activities sampled by ADL scales, e.g., washing one's face or using utensils to eat, can be carried out at a relatively automatic level, i.e., with little cognitive effort. However, the extent to which cognitive impairment may affect physical *and* instrumental activities is not always clear. Therefore, we have tried to break down activities, both physical and instrumental, into specific elements, so that we can identify difficulties that seem primarily cognitively based. For example, with a relatively "physical" activity, grooming, we ask not only about washing hands and face and brushing teeth, but specifically about whether the individual initiates grooming. The CSADL includes items that involve not only specific areas of cognition, such as language comprehension,

visual perception, or memory, but those that are largely executive, i.e., the initiation, planning, and regulation of behavior (Lezak, 1989).

Some scale users may wish to identify dependent behavior associated with dementia; others may be interested in dependent behavior regardless of when it began. Researchers evaluating the effects of dementia, for example, may wish to evaluate only dependent behaviors that have emerged following dementia onset. Someone who wished to evaluate caregiver burden, however, may be interested in all present dependency, not just dependent behavior that is dementia-related. We have identified those items most likely to reflect dependent behavior prior to dementia onset and provided scoring procedures and normative information that enable one to evaluate present dependency or dementia-related dependency.

In order to ensure that we obtain a comprehensive picture of each person's behavior, the CSADL ratings are based on the report of an informant who has maintained frequent contact over an extended period of time with the person to be rated. For persons who are mildly demented and living at home, the informant will usually be a spouse or other family member or companion. For patients in the later stages of dementia, who are likely to be living in an institutionalized setting, the informant will frequently be a professional attendant who is familiar with the patient's behavior. Direct observation by a trained rater, either in the laboratory or the home, might provide ratings that are more reliable and valid that those obtained from an untrained informant, but it is unlikely that the rater would have the opportunity to observe the person's behavior to the same degree as would, for example, a spouse. We attempt to select the informant who is likely to possess the most information about the person to be rated. We then use trained examiners to administer the CSADL in order to make the informant's ratings as reliable and valid as possible. This manual is intended to provide examiners with directions that will aid them in ensuring that informants interpret and respond to the items in a standardized fashion.

TEST MATERIALS

The CSADL consists of:

1) Manual
2) Test Instructions
3) Response Card (with two versions, depending on whether the person to be rated is a man or a woman), on which are listed the levels of dependency to be rated
4) Response Form, on which the examiner records ratings during the interview
5) Scoring Form, used to display items for scoring
6) Scoring templates, used to calculate individual scores

TEST ADMINISTRATION

The scale is to be administered by a trained examiner. Although the examiner need not be someone with an advanced professional degree, he or she must be thoroughly familiar with all the material in this manual before administering the scale. The scale is to be administered to an informant who knows the patient well. Since the informant must be aware of the extent of the patient's dependency, the ideal informant should be the patient's primary caregiver and should have had contact with the patient on a daily basis both before and since dementia onset. At a minimum the informant should have been in direct contact with the patient two or more days per week over the last three months.

Test Instructions. The examiner should begin by explaining to the informant the general nature of what will be asked. Introduce the test in the following fashion:

> **I'm going to ask you a series of questions about how much [S] is able to do things on [S's] own. I want you to decide if [S] can do things independently, or if [S] needs direction or help. If [S] does need some direction or help, then I would like you to try to decide just how much [S] needs. Here are some descriptions of how much direction or help [S] might need. I want you to choose from this list when you're answering each question.**

When reading these instructions, for every occurrence of the term [S] the examiner should substitute an appropriate noun, pronoun, or name (e.g., “Mr. Smith,” "she," "him," "your mother," etc.).

In Table 1 an example of the Response Card for Rating Men is presented. The examiner should place the sex-appropriate Response Card so that it is facing the informant. (It is convenient to use one card with wording for men and women printed on front and back, respectively.)The examiner should then read the response choices aloud and provide any further explanation necessary.

Table 1
Response Card for Rating Men

0	**Never Dependent**	He does this effectively, quite independently, without any direction or help.
1	**Sometimes Dependent**	He usually does this independently, but sometimes or in some situations he needs direction or help.
2	**Usually Dependent**	He usually requires some direction or help, but sometimes or in some situations he does it independently.
3	**Always Dependent**	He always requires direction or help. He never does it independently.

The individual scale items are not intended to be read aloud as written. The Response Form indicates the specific content of each item, but the examiner is responsible for explaining the items so that the informant understands what he or she is to decide. In beginning the scale it is a good idea to begin by introducing a set of items with a general statement. For example, with the first set of items, Bathing, the examiner might begin by saying, "I'd like to start by asking you how [S] handles bathing or showering. To begin with, does [S] get started in taking a bath or shower on [S's] own, or do you have to remind [S] or make a suggestion?" At this point the examiner should let the informant talk a bit about his or her understanding of the item. It may be necessary to explain that you are not referring to the physical act, for example, of actually stepping into the bath but only to making a clear effort to begin the bathing process. The person who is physically unable to bathe independently might show initiative by asking for help, while the person who can bathe independently would actually start bathing. Many informants quickly come to understand the general approach you are using, so that you may soon introduce items in a brief fashion, e.g., "Now let's talk about shopping.... Does [S] do any grocery shopping on [S's] own?"

The examiner should ensure that the informant has thoughtfully considered each response. Informants sometimes quickly and firmly assert that the person being rated never carries out a particular activity. A wife might say, "No, I do all the grocery shopping. He never buys anything himself." In such a case the examiner should check the response by asking something like, "...Not even something like an occasional carton of milk or container of ice cream?" If the informant acknowledged that the person did occasionally purchase some small food item independently, then the person would receive a rating of 2, not 3.

Please note. It can be difficult for the informant to understand and remember the specific definitions of the three dependency ratings. The CSADL is focused on whether direction or help is needed to carry out an activity. If a person requires only a small amount of direction or help but requires that small amount *every time and in every situation* in which the activity is carried out, that person would be rated as *always dependent* (3). Ratings of partial dependency are based on the observation that the person being rated is independent sometimes or in some situations. If the person being rated is independent at most times or in most situations, the person would receive a rating of 1. If the person is independent only a minority of the time or in a minority of situations, the person would receive a rating of 2 (e.g., the person who couldn't shop for groceries but could buy a carton of milk.)

Basing Ratings on the Informant's Judgment. When ratings call for assessment of "appropriateness," the rater is to use the *informant's* judgment. Standards of propriety may vary widely from one family or social setting to the next, and only the informant is in a position to determine if the behavior is appropriate in the context in which the subject lives. The rater must not impose his or her standards to determine the appropriateness of the behavior in question.

Similarly, the examiner must not influence the informant's judgment in deciding which of the four levels of dependency is selected. If the informant is uncertain about whether to rate the subject as dependent and cannot decide on any response, then the item should be rated as 9, "cannot rate." If the informant is unable to decide between two adjacent levels of dependency (e.g., "sometimes

dependent" vs "usually dependent") and cannot be persuaded to make a choice, then the examiner should read aloud the description of the *more independent* of the two alternatives ("sometimes dependent," in this example) and suggest to the informant that the item be rated at that level. This procedure provides the informant an opportunity to disagree, in which case, the informant may choose the response he or she prefers. If the informant continues to avoid a choice, then rate the item at the more independent level of the alternatives. When a particular item is difficult to rate, it's a good idea to make notes describing the details of the behavior being rated, so that the basis of the rating is recorded in case it is later questioned.

Rating Fluctuating Levels of Dependency. Some persons show varying degrees of dependency for a particular activity in different situations or at different times. Fluctuating but recurrent dependent behaviors are to be considered enduring and therefore are to be rated. Dependent behaviors that occur infrequently should be rated 1, "sometimes dependent," and those that occur frequently (i.e., in the majority of occasions when the behavior is called for) are to be rated 2, "usually dependent." The judgment of whether a behavior occurs "usually" or "sometimes" is to be made by the informant, not the rater.

Rating Activities that are Seldom or Never Carried out Independently. If a person seldom carries out an activity but, when he or she carries it out, does so in a fully independent manner, that person should be rated as independent (rating of 0). For example, a person who drives or cooks quite competently but usually chooses to allow someone else to drive or cook, would not be rated as dependent. When a person is not carrying out an activity at all, however, the following rule applies:

> *If a person is not carrying out an activity at all, regardless of the reason, he or she is to be rated as 3, always dependent.*

The fact that a person receives a rating of 3 because of not carrying out an activity at all does not necessarily mean that he or she could not carry out the activity, at least with some assistance, if given the opportunity. There are several reasons why a person might not carry out an activity though physically and cognitively able to do so. Sometimes people live in situations that make it impractical or impossible for them to carry out certain activities independently. Both the person who lives in a high-rise apartment in a large city and the person who has never been able to afford a car may never drive. A person who lives in a nursing home may not be allowed to prepare meals though still capable of doing so. A person who is temporarily placed in a hospital aftercare program for intermediate term treatment of a broken hip might not have the opportunity to answer a telephone. Sometimes a person might be able to carry out an activity if he or she were provided help, but, because no help is available, the activity is not carried out at all. In all such cases, the person should be rated as a 3. If the informant makes a comment suggesting that the subject could probably carry out an activity with at least some independence, were the opportunity or help available, the examiner should make a note of the comment, even though it does not affect the actual rating. Such notes will help those using the scale in clinical settings keep in mind the possibility that a dependent rating on a given item might not represent dependent behavior that is the result of physical or cognitive impairment.

It may seem unfair to rate persons as dependent when, given the opportunity, they might be able to carry out an activity in a fully independent fashion. There is, however, a very important reason to do so. As people become more cognitively impaired, they are quite likely to be given less opportunity to carry out activities independently. In particular, severely impaired persons will probably live in settings where they have minimal opportunity to carry out many behaviors on their own. If we do not rate people as dependent when they are not carrying out an activity, then the most impaired persons will be considered unratable on a significant proportion of items. In other words, the most severely demented individuals would receive a smaller total number of dependent ratings than would less impaired individuals, who have more opportunity to demonstrate their dependency.

There is *one exception to the rule* that an activity should be rated as dependent if it is not being carried out. If a person has taken no medications of any sort (including over-the-counter products such as aspirin or vitamins) during the year prior to the administration of the scale, then item 23 should be rated as a 9, cannot rate.

Time Period over Which the Informant Is to Evaluate a Person's Behavior. Normally when an informant selects a rating for a particular activity, the question of the precise time period he or she is considering never comes up, although, of course, the examiner will have emphasized the fact that the rating is to be based on stable, enduring behavior. In some instances, however, the informant may have difficulty selecting a rating because the activity in question has occurred infrequently. Such activities as toileting and eating, for example, occur on a daily basis, but activities such as shopping occur less frequently. The general rule for rating an item is that if a person does not carry out an activity at all, regardless of the reason, he or she is to be rated as always dependent. So a person who does not now shop for clothes would receive a rating of 3 for item 25. But suppose a person has not shopped for clothes recently but did so quite independently at some time in the past? If the activity in question has not occurred within the past three to six months (selecting the interval most appropriate for the activity in question), then the person should be rated as a 3, always dependent. If, however, the activity *has* occurred within the selected time interval, then the informant should be urged to make a judgment about the person's dependency level. If the informant cannot make a judgment, of course, the item will be rated as a 9, cannot rate (c.f. p. 4, Basing Ratings on the Informant's Judgment).

Items Requiring a Special Question. As previously explained, the scale is not designed to be used with persons who have life-long patterns of dependency. However, during the development of the scale we investigated the possibility that normal individuals might show dependent behavior on some CSADL items. Informants were asked on each item if the person being rated had been dependent throughout his or her adult life. For most items, essentially everyone was thought to have been fully independent prior to dementia onset. For 12 items (c.f. Table 2 on next page), however, the frequency of dependency prior to the onset of dementia was sufficiently high that we could not make the assumption that people in general are fully independent with respect to those items. Therefore, for these 12 items a special question is required. The purpose of the special question is to ensure that if a person with dementia is showing dependent behavior, the dependency is dementia-related, not simply a pre-existing pattern of behavior.

Table 2

Items Requiring a Special Question

20	Prepares own meals.
23	Takes medications as scheduled.
24	Shops for groceries
25	Shops for clothes
29	Drives motor vehicle.
30	Initiates activities of personal interest.
31	Carries out activities of personal interest.
32	Does subject work for pay?
33	Initiates work around the house.
34	Carries out work effectively.
39	Pays for purchases.
40	Manages [other] finances.

For these 12 items, if the item has been rated as 0 or 9, no special question is necessary. But if the item has been rated 1, 2, or 3, then ask the following question:

> **Before [S's] dementia began, was [S] more independent in** [carrying out the behavior in question]**?**

If the answer is **yes**, use the dependency rating obtained and go on to the next item. Please note, we do not consider how much more independent the person was prior to dementia. Even if the person was dependent prior to dementia, so long as the dependency increased with the onset of dementia, the present rating of dependency is used as the subject's score.

If the answer is **no**, rate the item with the following double numbers, i.e., 11, 22, or 33. That is, use the dependency rating as the first number and duplicate that number as a second number to show that the subject, though dependent, has not become more dependent following the onset of dementia.

If the answer is, **don't know**, carefully question the informant to see if he or she might have some basis for inferring the person's previous level of dependency. An attendant in a nursing home, for example, might have heard from the patient's family that he had been a truck driver but had stopped work when he began to show symptoms of dementia. If the informant has no reasonable basis for inferring that the person became more dependent following the onset of dementia, then rate the item with one of the following two digit numbers: 19, 29, or 39. That is, use the dependency rating as the first number and use a 9 as the second number to show that no information was available regarding the subject's behavior prior to dementia.

By using the special question and a specific coding system for these twelve items, we can distinguish dementia-related dependent behavior from dependent behavior that has been unchanged by the onset of dementia. Such a distinction may not be particularly relevant for clinicians but is likely to be important for those doing research on the relationship between dementia and daily functioning.

Rating Persons who are Physically Impaired. The CSADL was designed to be sensitive to dependency occurring as a consequence of cognitive impairment. Physical impairments, however, may also produce dependency. A person who is able to function quite independently with the aid of a common physical device such as a cane might well receive a rating of 0, never dependent, on many items that require moving about in the environment. However, a person who requires more extensive physical support, such as a motorized wheel chair, might be able to carry out a particular behavior, e.g., grocery shopping, only in places where the wheel chair could be used and everything could be reached from the chair. That person would receive a dependency rating of 1 or 2.

The effect of physical impairment varies according to the content of the item. Some items, e.g., 13 (initiates dressing) and 14 (selects clothes), are not likely to be affected by physical impairments. Other items, e.g. 15 (puts on clothes) and 16 (fastens clothing), could certainly be affected by physical impairments, although they might also be rated as dependent because of cognitive impairments. The rating itself does not indicate whether dependent behavior is the result of physical or cognitive impairment. When an item is likely to be affected by both and the results of the CSADL are to be used for clinical purposes, the examiner should follow up dependent ratings with questions that will help in specifying the likely basis for the dependency. To provide some guidelines for the possible effects of physical impairments, we have included information regarding frequency distributions of ratings on individual items (Appendix B) and number of items dependent (Tables 8a through 8c) for a small group of elderly physically impaired individuals (c.f. p. 15).

Administering the CSADL by Telephone. Ideally the CSADL should be administered in a face-to-face interview. Sometimes, however, it may be necessary to use informants who cannot be physically present for an interview. While the CSADL was not designed to be self-administered by the informant, it may be administered via a telephone interview. Something is always lost in a telephone interview, since facial expression, gestures, etc., may be critical cues to the examiner that the informant is not comprehending a particular item. Nevertheless, much information can be obtained through a properly conducted telephone interview.

When telephone interviews are necessary, it is preferable that they be carried out with an informant who is already known to the examiner, as when it is used as a follow-up with someone who was previously interviewed on the scale. When a telephone interview is to be used, we recommend that the examiner schedule a specific telephone "appointment," so that informants will be sure to give the interview their undivided attention. Telephone interviews may take longer than a person-to-person interview, since the examiner may need to make an extra effort to ensure that the informant is giving valid responses. Because the definitions of dependency levels are detailed and difficult to remember, it is important that the informant has a copy of the Response Card during the interview. If the card cannot be provided in advance, then at the beginning of the interview the examiner should

have the informant write down the exact wording for each rating level, e.g., "2 - He usually requires some direction or help, but sometimes or in some situations he does it independently."

Instructions for Quality of Interview Rating. The examiner should always complete the Quality of Interview rating. Although in most cases the examiner will be rating the interview as valid, this rating is the only means of raising a question about possible problems concerning the data collected during the interview. Whenever the examiner has any doubts about the validity of the informant's responses, the interview quality should be rated as 1 or 2 and the basis of the rating written on the form. When such ratings occur, the examiner must then decide whether results for individual items or for the scale as a whole can be used. The written explanation can be used to determine if the ratings will be accepted as valid.

Completing The Identifying Information. Be sure to fill out all the identifying information. In completing the contact with subject rating, be sure that the informant understands that "contact" refers to being physically in the presence of the subject. A telephone conversation does not constitute "contact" for the purpose of this question. With regard to the question concerning the relationship of the informant to the subject, the rating categories refer to the informant. For example, "2 - Child" means that the informant is a child of the subject. "Professional" refers to any health-care worker, e.g., physician, social worker, nurse's aide, day-care workers, etc. It would not include non-health care workers such as housekeepers, lawyers, etc. If you are in doubt about how to categorize the informant's relationship, use the "other" classification and describe the relationship fully. In describing the nature of the "professional" or "other" be sure to give an adequate description.

SCORING

CSADL Scores. There are seven CSADL scores. Three scores are generally used: "Total" (with 46 items) and two sub-scale scores, "Bas" (Basic, with 21 items) and "Ins" (Instrumental, with 19 items). In addition there are three equivalent "dementia-related" scores, Total-DR, Bas-DR, Ins-DR and one score, Total ID (Total Items Dependent), that is simply a count of all the items that are rated dependent (1, 2, or 3)

The three total scores (Total, Total ID, and Total-DR) are based on 46 CSADL items. Two sub-scale scores, Bas and Ins, are based on 21 and 19 items respectively, selected on the basis of a series of factor analyses carried out to determine the factor structure of the CSADL (Mack and Patterson, 2006a). Bas-DR and Ins-DR are based on those same 21 and 19 items. Two items are not used to calculate any of these seven scores: item 32 (works for pay), which is left unrated so frequently it is not included in scoring, and item 48, which does not pertain to a single behavior. A list of all items, including the subscale on which they are loaded, can be found in Appendix A.

Completing the Scoring Form. Begin scoring the CSADL by transferring all of the ratings from the Response Form to the Scoring Form. The Scoring Form is organized as follows:

Item	Ratings of Items						PD NR	PD Dep
1	0	1	2	3		9		
20	0	1	2	3		9	NR	Dep

In transferring the ratings from the Response Form to the Scoring Form, first find the rating for each item on the response form and then circle that rating for that item on the Scoring Form under the columns, Ratings of Items.

For 35 items the rating will be a single-digit rating: 0, 1, 2, 3, or 9 (not rated). For the 12 items requiring special questioning, however, the item may have a double-digit rating (19, 29, 39, 11, 22, or 33). For these 12 items there are two additional columns on the Scoring Form, "PD NR" (Pre-Dementia Dependency Not Rated) and "PD Dep" (Pre-Dementia Dependency Equal to Present Dependency).

If an item has a double-digit rating with 9 as the second digit (19, 29, or 39), then circle the first digit, 1, 2, or 3, in the Ratings of Items columns; *and* circle "NR" in the column PD NR as well. If the double-digit rating is a repeated rating (11, 22, or 33) circle the first digit, 1, 2, or 3, in the Ratings of Items columns; *and* circle the "Dep" in the PD Dep column as well. Thus, whenever an item has a double-digit rating, entries in two columns will be circled.

N.B. If an item was has no rating at all, simply circle 9, not rated.

Calculating the Scores. Once the ratings have been transferred to the Scoring Form, the actual scoring procedure begins. Before calculating each of the seven scores one must check to see that each score is based on a sufficient number of rated items (i.e., rated 0, 1, 2, or 3). If an item has an entry of 9, it has not been rated and is not counted.

Total must be based at least 41 rated items, Bas on at least 19, and Ins on at least 17.[1] Note that although the CSADL Scoring Form has 47 items, only 46 are used in scoring. Item 32 is "grayed out" on the Scoring Form to make sure it is not mistakenly added into any of the scores.

Scoring Total. Total must be based on at least 41 rated items. Count each item rated 0, 1, 2, or 3 and enter the count in Items Rated table at the bottom left of the Scoring Form in row "Total," column "D." To ensure that scores from the Response Form have been correctly transferred to the Scoring Form, make sure that the count you have entered (the total number of items rated) plus the number of 9s (i.e., the total number of items not rated) add up to 46. (Remember not to count item 32, which is grayed out to be sure it is not counted). If the total items rated plus the total number of items not rated do not add up to 46, check your scoring and addition. When you have corrected the error/s and the items rated plus items not rated equal 46, proceed to the next step.

If the total number of items rated is less than 41, do not calculate a Total score. If the total number of items rated is 41 or more, Total is calculated by summing the values (0, 1, 2, and 3) of all items rated and entering this sum in the Scores table in the appropriate cell (row "Total," column "Score"). The maximum Total score is 138 (46 items rated 3).

Subscale scoring is simplified by using templates which indicate the items to be used for each particular score. When properly aligned, the template grays out those items that are not included on a particularly subscale. One should score only those items that are not grayed out.

Scoring Bas and Ins. Templates 1 and 2 are used to score Bas and Ins respectively. Place each transparent template directly over the Scoring Form so that the item numbers and dividing lines in template and form are precisely aligned. Count each item rated 0, 1, 2, or 3 (don't count 9's or item 32) and enter the count in the Items Rated table in the appropriate cell (row "Bas" or "Ins," column "D"). Check the accuracy of the count (as described under *Scoring Total*). Make sure the number of Bas items rated plus the number Bas items with 9's equals 21. The equivalent sum for Ins should be 19. If sum is not as it should be, correct any errors you may have made. Then proceed to the next step.

If the number of Bas items rated is less than 19, Bas is not calculated. If Bas Items Rated is 19 or more, Bas is calculated by summing the values (0, 1, 2, and 3) of all Bas items rated and entering this sum in the Scores table in the appropriate cell (row "Bas," column "Score"). The maximum Bas score is 63 (21 items rated 3).

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[1] The method by which the required number of items to produce a valid score was developed is described in Mack and Patterson (2006b).

If the number of Ins items rated is less than 17, Ins is not calculated. If Ins Items Rated is 17 or more, Ins is calculated by summing the values (0, 1, 2, and 3) of all Ins items rated and entering this sum in the Score table in the appropriate cell (row "Ins," column "Score"). The maximum Ins score is 57 (19 items rated 3).

There is one further set of three scores that may be used, scores that reflect dementia-related dependency, Total-DR, Bas-DR, and Ins-DR. These scores are based on dependent behavior which began or worsened following dementia onset. They differ from the three scores that are used to reflect present dependency in that the twelve items that require special questioning (items 20, 23-25, 29-34, 39, and 40) are used in scoring only if they have been rated as showing an increase in dependent behavior following the onset of dementia.

Scoring DR Items. To calculate "DR" (dementia-related) scores, one must first look at the Scoring Form to see if any of the 12 special question items(other than item 32, which is grayed out) had"NR" or "Dep" circled. If not, the Total, Bas, and Ins scores already calculated should simply be copied into the Scores table in the appropriate cells (i.e., rows "Total-DR," "Bas-DR," and "Ins-DR," column "D DR").

If any item (other than item 32) has NR or Dep circled, then the scorer must go to each of those items on the Scoring Form to see if the item was rated 1, 2, or 3. If the item was rated 1, 2, or 3, the rating should be cancelled out by drawing a diagonal line through that cell (Don't obscure the actual rating, since it may be needed for any non-DR scores you may wish to calculate). Essentially each of the 12 special question items that was rated as NR or Dep will now be counted as if they had been unrated.

Scoring Total-DR. Count each item that has not been crossed out and is rated 0, 1, 2, or 3. Enter that count in Items Rated table (row "Total." column "D DR"). Check the accuracy of the count by making sure the number of items rated for Total for D DR, plus the number of items with 9's (not counting item 32, which is grayed out), plus the number of ratings crossed out equals 46. If not, correct any errors and proceed.

If the Total-DR Items Rated is 41 or more, the Total-DR score is calculated by summing the values (0, 1, 2, and 3) of all Total-DR items rated (i.e., those that were not crossed out) and entering the sum in the DR Scores table in the appropriate cell (column "Score," row "Total-DR").

Scoring Bas-DR and Ins-DR. The Bas-DR score need not be re-calculated, since there are no special question items included in the Bas subscale. The Bas score can simply be copied into the DR Scores table in the appropriate cell (column "Score," cell "Bas-DR"). If Bas was not previously calculated, use the procedure described above for calculating the Bas score and enter that score in the cell for Bas-DR.

The Ins-DR score is calculated by using Template 3. Count the Ins-DR items rated, being careful not to count those "rated" items that are cancelled out and enter the count in the Items Rated table in the

appropriate cell (column "D DR," row "Ins"). Check the accuracy of your count by making sure that the Ins-DR items rated plus all the 9's (not counting item 32), plus all the ratings crossed out equal 19. If not, correct any errors and proceed.

If the Ins-DR items rated is 17 or more, the Ins-DR score is calculated by summing the values (0, 1, 2, and 3) of all Ins-DR scores rated (i.e., those that were not crossed out) and entering the sum in the DR Scores table in the appropriate cell (column "Score," row "Ins-DR").

N.B. Keep in mind that the items crossed out to complete DR scoring must be counted for the remaining scale scores.

Scoring Total ID. Total ID must be based on at least 41 rated items. If "Total" has already been counted and found to have 41 rated items, then Total ID can be calculated. If "Total" has not been counted, then follow the directions for counting the number of rated items for "Total" (p. 12).

If the total number of items rated is less than 41, do not calculate a Total ID score. If the total number of items rated is 41 or more, count the number of items with a rating of 1, 2, or 3 (*not* 0), and enter the result in the Total ID table in the Score column. As a check, Total ID, plus the total number of items rated 0, plus the total number of 9's should equal 46 (again, item 32 is not counted).

Percentile Equivalents of Scores. Once raw scores have been recorded, the examiner should turn to the percentile tables (Appendices D.1 through D.7, pp. 42-48) and determine the percentile value for each of the scores. The percentile scores should be recorded in the appropriate cells in the Scores table (column "%ile," rows "Total," "Bas," and "Ins"); the DR Scores table (column "%ile," rows "Total-DR," "Bas-DR," and "Ins-DR"); and the Total ID table (column "%ile," row "Total ID").

Deciding Which Score to Use. The principal scores used in the CSADL are Total, Bas, and Ins. These three scores provide the best measures of gross dependency, since they are weighted with the actual dependency rating for each item. In special circumstances, however, one may wish to use either unweighted or dementia-related scores. If one is interested in the diversity of dependent behaviors, Total ID is most appropriate, as it is not influenced by the degree of dependency of individual items. Finally, if one wishes to evaluate *dementia-related dependency*, dependent behavior which began or worsened following dementia onset, the three DR scores should be used.

Participants and Procedure for Normative Study

Participants. Normative data are based on the results of two groups of participants: 543 healthy elderly participants and 889 individuals with dementia. In addition we include some data for 26 physically impaired elderly individuals. All dementia and healthy elderly participants with a completed CSADL were drawn from the roles of the research registry of University Hospitals of Cleveland/Case Western Reserve University Alzheimer Disease Research Center (ADRC). Each participant from the registry had been evaluated by a neurologist and a neuropsychologist using the procedures of the Consortium to Establish a Registry in Alzheimer Disease (CERAD, Morris, *et al*, 1988) supplemented by additional neuropsychological tests. The 889 dementia participants were diagnosed according to criteria of the task force of NINCDS-ADRDA (McKhann, *et al*., 1984) and CERAD (Morris, *et al*., 1988) as follows: probable Alzheimer's disease (AD), N= 489; possible AD, N= 311; or other dementia, N= 89.

Dementia participants were divided into three groups using scores on the Mini-Mental State exam (MMSE: Folstein, Folstein, and McHugh, 1975). Participants were classified as mild dementia if they had an MMSE greater than 19; moderate dementia, MMSE from 11 to 19; and severe dementia, MMSE below 11. For 146 participants missing MMSE's, Clinical Dementia Ratings (CDR: Berg, 1988) were used for 145, with CDR's of 1 or less classified as mild, 2 as moderate, and 3 or greater as severe. One participant could not be classified with respect to severity. Among the remaining 888 dementia participants 353 were classified as mild, 325 as moderate, and 210 as severe.

The physically impaired elderly participants were under the care of a specialist for the treatment of osteo-arthritis/degenerative joint disease. That physician provided us with names of patients, aged 60 and over, whom he judged to be cognitively normal, and 26 (3 men and 23 women) of those agreed to participate. We have no further demographic data with regard to these participants. Because of the relatively small number of physically impaired participants, that group is not represented in most tables dealing with group results. The results of physically impaired participants are included only in Table 8, Number of Participants by Group with Specific Numbers of Total Items Dependent, Appendix B, Frequency Distributions of Dependency Ratings for CSADL Items by Group, and in Appendix C, Significance of Differences between Groups by CSADL Item. Physically impaired participants were included to evaluate the relative sensitivity of the scale to cognitive as opposed to more physical types of disability. The expectation was that participants with dementia would show more dependency on the CSADL than would those with only physical impairments.

Basic demographic data for healthy elderly and dementia participants at three levels of severity, as well as for dementia participants as a whole, are presented in Table 3 (p. 16). In evaluating whether the participants differed with respect to the variables in Table 3, the four groups (i.e., healthy elderly, mild dementia, moderate dementia, and severe dementia) were examined for an overall contrast effect by an analysis of variance or χ^2 test, followed up by two-way contrasts, as appropriate. The groups differed with respect to age ($F = 13.70$, df = 3, $p < .001$). Post-hoc analyses (by Tukey's HSD) revealed the healthy elderly group was significantly younger than each dementia group ($p < .04$ for the contrast with the mild group and $p < .001$ for contrasts with the moderate and severe groups).

Table 3

Basic Information for Healthy Elderly and Dementia Participants

Variable	Statistic	Healthy Elderly	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
Age	*Mean*	72.26	73.61	74.86	75.71	74.56
	SD	6.57	7.75	8.12	9.04	8.24
	Range	52-91	51-95	51-94	50-95	50-95
	n	543	353	325	210	888
Education	*Mean*	15.06	13.61	12.50	11.98	12.83
	SD	2.83	3.00	3.10	3.20	3.15
	Range	2-20	4-20	3-20	4-20	3-20
	n	539	349	323	199	871
Gender	Male	222	166	128	77	371
	Female	321	187	197	133	517
Race	White	521	320	270	174	764
	African-	21	33	55	35	123
	n	542	353	325	209	887
Residence	Home	499	317	283	155	755
	Care Facility	1	14	26	42	82
	n	500	331	309	197	837
MMSE	*Mean*	28.69	23.46	15.85	6.18	17.63
	SD	1.23	2.65	2.42	2.99	6.64
	Range	21-30	20-30	11-19	0-10	0-30
	n	531	324	299	119	742

Among dementia groups the mild group was significantly younger than the severe group ($p < .02$). The effect of group on education was significant ($F = 76.61$, df = 3, $p < .001$). Pair-wise post-hoc comparisons of the four groups indicated that all contrasts but one (moderate vs. severe dementia) were significant ($p < .001$), with educational level decreasing as severity increased. Each group was composed of more women than men, but there was no significant difference in the proportion of men and women among the four groups ($\chi^2 = 7.15$, df = 3, $p = .07$). The overall effect of group on race

was significant ($\chi^2 = 50.29$, df = 3 $p < .001$). Two-by-two comparisons between groups with respect to race indicated that all two-way contrasts were significant ($p < .01$ or lower) except that between the moderate and severe dementia groups. The proportion of Afro-American participants increased as severity increased. The groups differed overall with respect to residence ($\chi^2 = 113.07$, df=3, $p < .001$). Two-by-two comparisons between all groups were significant ($p < .03$ or lower). The proportion of those in care facilities increased as severity increased.

Procedure. The CSADL was administered by trained examiners using the standardized procedure (c.f. p. 3). Thirty-one of the dementia participants were also rated by an observer to assess inter-rater reliability. For dementia participants, the participant's primary caregiver (usually a family member, c.f. Table 4) served as informant. The frequency of contact of the informant with the participant is also included in Table 4. For healthy elderly and physically impaired elderly participants, the interviewer administered the CSADL directly to the participant rather than to an informant. Initially interviews were conducted in person. As the project continued, some interviews were conducted by telephone. All physically impaired participants were interviewed by telephone. For the 576 dementia participants for whom the interview type was noted, 439 were conducted in person and 137 by telephone. Among the healthy elderly, 263 had interview type recorded; 208 were in person and 55 were by telephone. The effect of severity level on interview type was significant ($\chi^2 = 118.74$, df = 3, $p < .001$). Two-by-two comparisons showed healthy elderly participants had a greater proportion of in-person interviews than did the mild or severe dementia groups (p's$<.001$ by Fisher's test), while compared to the moderate dementia group the greater proportion was just short of significance ($p = .06$ by Fisher's test). The severe dementia group had a smaller proportion of in-person interviews than did the mild or moderate groups (both p's$<.001$ by Fisher's test). The mild-moderate group contrast was not significant.

Table 4

Data Relating to Informant for CSADL Interviews of Dementia Participants

Relation of Informant to Participant	Spouse	516
	Child	283
	Sibling	22
	Friend or other family	40
	Professional or other	19
	Missing	9
Frequency of Informant's Contact with Participant	More than 4 days per week	479
	3 to 4 days per week	47
	2 days per week	40
	Missing	323

Statistical Properties And Normative Data For The CSADL

Number of Participants with Unrated Items. In this section we present data concerning individual item results and scale scores. We first examined the frequency of unrated items for each of the seven scores within 543 healthy elderly and 889 dementia participants (c.f., Table 5).

Table 5

Number of Healthy Elderly and Dementia Participants with Specified Numbers of Unrated Items

Score	Group	Number of Unrated Items						
		0	1	2	3	4	5	>5
Total/Total ID	Healthy Elderly	427	89	17	6			4
	Dementia	651	132	52	24	8	9	13
Total-DR	Healthy Elderly	395	112	24	7	1		4
	Dementia	450	165	74	62	27	29	82
Score	Group	Number of Unrated Items						
		0	1	2	>2			
Bas	Healthy Elderly	449	33	7	4			
	Dementia	864	16	7	2			
Ins	Healthy Elderly	455	82	5	1			
	Dementia	669	135	45	40			
Bas-DR	Healthy Elderly	449	33	7	4			
	Dementia	864	16	7	2			
Ins-DR	Healthy Elderly	421	107	11	4			
	Dementia	454	169	77	189			

Relationship of CSADL Scores to Subject Variables for Dementia Participants. Correlations between CSADL scores and six subject variables are presented in Table 6 (p.20). The largest correlations with all seven CSADL scores were observed for interview type (in-person vs. telephone) and residence (home vs care facility). Age had low but significant correlations with all scores. Race (Caucasian vs. African-American) and education had low but significant correlations with all scores except Bas and Bas-DR. There were no significant correlations between CSADL scores and gender.

Comparable correlations for the healthy elderly participants were not calculated because of the very limited variability of their CSADL scores.

Table 6

Correlations of Seven CSADL Scores with Subject Variables for Dementia Participants

Variable	Age	Education	Gender	Race	Residence	Interview Type
Total	.20*	-.12*	.04	.09*	.35*	.51*
N	876	859	876	875	826	575
Bas	.20*	-.04	.04	.06	.38*	.50*
N	887	870	887	886	836	575
Ins	.18*	-.19*	.04	.12*	.26*	.42*
N	849	833	849	848	801	573
Total-DR	.20*	-.13*	.06	.10*	. 37*	.52*
N	807	794	807	806	764	564
Bas-DR	.20*	-.04	.04	.06	.38*	.50*
N	887	870	887	886	836	575
Ins-DR	.18*	-.20*	.07	.14*	.29*	.44*
N	700	687	700	699	660	523
Total ID	.20*	-.14*	.04	.10*	.33*	.44*
N	876	859	876	875	826	575

* $p<.01$; otherwise p values were >.05.

Reliability of CSADL Items and Scores. Results concerning inter-rater agreement for the 31 Dementia participants rated by both interviewer and observer were evaluated by means of Spearman rank-order correlations. In these analysis 47 CSADL items were used (all but the non-specific item 48). For each of the 47 items, if either rater used a rating of 9 (cannot rate) for a particular participant, that participant was omitted from the analysis. Only 17 items had ratings of 9, and only one of those (item 32, works for pay) had more than two participants with ratings of 9. Test instructions for item 32 require a rating of 9 if the subject is retired. Twenty-two of the 31 participants had ratings

of 9 for that item. Consequently, its high inter-rater correlation (*Rho* = 1.00) was based on only 9 participants and is of questionable utility. Coefficients for the remaining items were all considered valid. For those 46 items, 41 correlations were .92 or greater (27 were actually .99 or greater). The other five items had correlations ranging from .84 to .89.

Internal consistencies of CSADL scores were high. Based on the results of dementia and Healthy Elderly participants combined, the values of Cronbach's alpha for the scores were: Total = .98 (N=1078, 46 items); Bas = .97 (N=1363, 21 items); Ins = .98 (N=1124, 19 items); Total-DR = .98 (N=845, 46 items); and Ins-DR = .98 (N=875, 19 items). Values for Bas-DR are identical to those for Bas, as Bas includes no DR items.

Validity of CSADL Total and Subscale Scores. The discriminant validity of the CSADL is demonstrated by the ability of the CSADL scores to distinguish between a group of healthy elderly participants and three groups of Dementia participants with differing levels of cognitive impairment.

The effect of group (as defined above) on each CSADL score was evaluated in a univariate analysis of variance, followed by univariate analyses with four co-variates: age, education, residence, and interview-type (the variables that had the largest significant correlations with CSADL scores). The effects of group for each CSADL score (without and with co-variance) were as follows: Total (F = 1082.10, df = 3; F = 355.42, df = 7); Bas and Bas-DR (F = 418.21, df = 3; F = 188.09, df = 7); Ins (F = 1506.16, df = 3; F = 401.40, df = 7); Total-DR (F = 1012.21, df = 3; F = 344.36, df = 7); Ins-DR (F = 1301.28, df = 3; F=368.60, df = 7); and Total ID (F = 1300.43, df = 3; F = 377.43, df = 7). Since all group contrasts, with and without co-variates, were highly significant ($p < .001$), post hoc two-way contrasts were carried out, and again, all were found to be highly significant ($p < .001$). The means and standard deviations for each CSADL score by group are presented in Table 7 (p. 22).

Because of the small number of physically impaired participants, we did not include any results from that group in analyses of group statistics. The relevant data that shows physically impaired participants to be, in general, less dependent than dementia participants are presented in Table 8, Number of Participants by Group with Specific Numbers of Total Items Dependent (pp. 23-24), Appendix B, Frequency Distributions of Dependency Ratings for CSADL Items by Group, and Appendix C, Significance of Differences between Groups by CSADL Item.

The concurrent validity of the CSADL is demonstrated by its relationship to the Blessed Dementia Scale (Blessed DS: Blessed, Tomlinson, and Roth, 1968), a frequently used measure of dependency in activities of daily living. We used only the weighted CSADL scores for these analyses, since the Bessed DS score is a weighted score. With only Dementia participants the correlation of Total with the Blessed DS was .88 (N = 808). For Dementia and healthy elderly participants combined the correlation with the Blessed DS was .93 (N = 1345). The correlations of Bas with the total for the three basic Blessed items were .87 (N=885) for the Dementia participants and .89 (N=1424) for the two groups combined. The correlations of Ins with the total for the eight instrumental Blessed items were .77 (N=784) for Dementia participants and .91 (N=1324) for the Dementia and healthy elderly participants combined. All correlations were highly significant ($p < .001$).

Table 7

Statistics for CSADL Scores by Group

Score	Group	Mean	SD	Range	N
Total	Healthy Elderly	.77	2.15	0-22	539
	Mild Dementia	28.63	20.49	0-119	349
	Moderate Dementia	48.98	23.68	0-119	321
	Severe Dementia	88.02	32.94	4-138	205
Bas and Bas-DR	Healthy Elderly	.04	.25	0-4	539
	Mild Dementia	3.61	6.98	0-51	352
	Moderate Dementia	8.31	10.48	0-54	325
	Severe Dementia	28.75	21.27	0-63	209
Ins	Healthy Elderly	.75	2.11	0-22	542
	Mild Dementia	22.52	13.64	0-57	340
	Moderate Dementia	36.22	13.56	0-57	310
	Severe Dementia	49.49	9.44	17-57	198
Total-DR	Healthy Elderly	.55	1.85	0-22	539
	Mild Dementia	26.95	20.30	0-119	341
	Moderate Dementia	46.90	24.71	0-113	288
	Severe Dementia	89.45	33.93	4-138	177
Ins-DR	Healthy Elderly	.51	1.78	0-22	539
	Mild Dementia	21.34	13.82	0-57	293
	Moderate Dementia	34.89	14.51	0-57	250
	Severe Dementia	49.67	9.90	14-57	156
Total ID	Healthy Elderly	.35	.92	0-9	539
	Mild Dementia	13.87	8.16	0-44	349
	Moderate Dementia	21.19	8.76	0-43	321
	Severe Dementia	33.06	10.06	4-46	205

In conjunction with evaluating the discriminant validity of the CSADL we examined the relationship of dependency, as measured by the CSADL scores, to degree of cognitive impairment, measured by the MMSE total score. Among Dementia participants the correlations with MMSE were: for Total, -.60 (N = 729); for Total ID, -.56 (N = 729); for Bas and Bas-DR, -.46 (N = 740); for Ins, -.59, (N=702); for Total-DR, -.59 (N = 664); and for Ins-DR, -.58 (N = 562). All *p*'s were < .001.

Normative Information for Individual Items for All Groups. Basic statistics for individual items are presented in Appendices B and C. All ratings used for these two appendices are based on present dependency. In Appendix B the frequency distributions of ratings for each item are provided for Healthy Elderly, Physically Impaired, and Mild, Moderate, and Severe Dementia participants (as well as for the combined Dementia group). Note that the *n* per group varies slightly from item to item because some individuals were not rated on some items. The overall differences between groups with respect to level of dependency were significant for all 47 items by χ^2 test (all *p*'s<.001). Contrasts between all possible pairs of groups for every item were carried out using an exact probability test. In Appendix C each cell contains the significance of the difference with respect to the level of rated dependency between the two indicated groups for a particular CSADL item.

Table 8a-c demonstrates the overlap between groups with respect to dependency for the items that make up the three major scores for the CSADL, Total, Bas, and Ins.. It shows the number of individuals by group who have a particular number of items rated dependent (a rating of 1 to 3).

Table 8a

Number of Participants by Group with Specific Numbers of Total Items Dependent

Group	Number of Items Rated Dependent					
	0	1-10	11-20	21-30	31-40	41-46
Healthy Elderly	429	114				
Physically Impaired	5	18	3			
Mild Dementia	5	118	166	50	10	4
Moderate Dementia	1	31	117	126	42	8
Severe Dementia	0	1	24	57	62	66
All Dementia	6	150	307	233	114	78

Table 8b

Number of Participants by Group with Specific Numbers of Bas Items Dependent

Group	Number of Items Rated Dependent					
	0	1-4	5-8	9-13	14-18	19-21
Healthy Elderly	511	32				
Physically Impaired	19	5	1	1		
Mild Dementia	102	190	40	13	5	3
Moderate Dementia	25	164	75	36	17	8
Severe Dementia	6	34	34	43	41	52
All Dementia	133	388	149	92	63	63

Table 8c

Number of Participants by Group with Specific Numbers of Ins Items Dependent

Group	Number of Items Rated Dependent					
	0	1-4	5-8	9-12	13-16	17-19
Healthy Elderly	437	102	3	1		
Physically Impaired	5	11	8	2		
Mild Dementia	8	47	80	98	87	33
Moderate Dementia	1	5	32	59	110	118
Severe Dementia	0	1	1	16	43	149
All Dementia	9	53	113	173	240	300

Normative Information for Scores for Dementia Participants. Percentile equivalents for raw scores are presented for the seven scores in Appendix D. The mean, standard error of the mean, and standard deviation of the sample are presented at the top of the table for each score.

Interpreting the Scores of Individuals with Unrated Items. Total scores, which can include up to five unrated items, can be affected by these unrated items, in that they may cause an observed total

score to underestimate the true score. To understand the potential effect of five or fewer unrated items (including double-digit items counted as unrated) on total scores, three things must be considered:

1) Is a given item likely to receive a high rating and, consequently, have a relatively large effect on the score? – Many items are unlikely to have high ratings.

2) Is a given individual likely to have unrated items that might have received high ratings had they been rated? – Individuals with relatively low dependency scores on the items that have been rated are unlikely to have received high dependency ratings on unrated items.

3) What is the level of a individual's total percentile score? – Many percentile scores remain in the same range even if five items that should have received high dependency ratings are unrated.

Based on the above considerations, we carried out analyses of the potential effect of unrated items on percentile scores for Total and Total ID with 407 subjects from the present group that had been collected by the time of the analyses (c.f., Mack and Patterson, 2006b). On the basis of these analyses, we decided not to correct scores to compensate for unrated items, since in almost all cases having as many as five unrated items had no practical effect on percentile scores.

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Appendix A

Item Numbers and Descriptions with Sub-scale Placement

1	Initiates bath or shower	Bas	25	Shops for clothes	Ins
2	Prepares bath/shower	Bas	26	Finds way about in familiar surroundings	Bas
3	Gets in and out	Bas	27	Orients to unfamiliar surroundings	Ins
4	Cleans self	Bas	28	Travels beyond walking distance	Ins
5	Controls timing of urination	Bas	29	Drives motor vehicle	Ins
6	Controls timing of bowels	Bas	30	Initiates activities of personal interest	Ins
7	Recognizes need to eliminate	Bas	31	Carries out activities of personal interest	Ins
8	Cleans/re-clothes afterward	Bas	32	Does subject work for pay?	
9	Initiates grooming	Bas	33	Initiates work around the house	Ins
10	Washes	Bas	34	Carries out work effectively	Ins
11	Brushes teeth	Bas	35	Looks up numbers	Ins
12	Combs hair/shaves	Bas	36	Dials numbers	Ins
13	Initiates dressing	Bas	37	Answers phone	
14	Selects clothes		38	Takes messages	Ins
15	Puts on clothes	Bas	39	Pays for purchases	Ins
16	Fastens clothing	Bas	40	Manages [other] finances	Ins
17	Initiates eating at appropriate times	Bas	41	Spontaneously expresses thoughts/needs	
18	Carries out acts of eating	Bas	42	Responds accurately to spoken information	
19	Eats with acceptable manners	Bas	43	Reads/ understands words/short phrases	
20	Prepares own meals	Ins	44	Reads/understands complex material	Ins
21	Initiates moving about the environment	Bas	45	Writes short phrases	Ins
22	Actively moves about the environment	Bas	46	Writes complex material	Ins
23	Takes medications as scheduled	Ins	47	Is socially appropriate	
24	Shops for groceries	Ins	48	Has other dependent behaviors	

Appendix B

Frequency Distributions of Dependency Ratings for CSADL Items by Group

Item	Dependency Frequency	Group					
		Healthy Elderly N=543	Physically Impaired N=26	Mild Dementia N=353	Moderate Dementia N=325	Severe Dementia N=210	All Dementia N=889
1	Never	542	26	283	190	42	516
	Sometimes	1	0	32	40	18	90
	Usually	0	0	9	26	21	56
	Always	0	0	28	68	128	224
	No Rating	0	0	1	1	1	3
2	Never	543	25	313	214	50	578
	Sometimes	0	0	11	25	8	44
	Usually	0	0	5	18	12	35
	Always	0	1	23	68	139	230
	No Rating	0	0	1	0	1	2
3	Never	543	23	328	257	86	672
	Sometimes	0	1	8	23	14	45
	Usually	0	0	1	15	17	33
	Always	0	2	15	29	92	136
	No Rating	0	0	1	1	1	3
4	Never	543	23	328	261	78	668
	Sometimes	0	2	10	29	22	61
	Usually	0	0	6	18	22	46
	Always	0	1	7	17	87	111
	No Rating	0	0	2	0	1	3

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
5	Never	535	25	306	268	102	677
	Sometimes	7	0	27	30	30	87
	Usually	0	0	7	15	18	40
	Always	0	1	12	11	60	83
	No Rating	1	0	1	1	0	2
6	Never	541	25	326	282	117	726
	Sometimes	1	0	18	29	31	78
	Usually	0	0	3	11	9	23
	Always	0	1	5	3	53	61
	No Rating	1	0	1	0	0	1
7	Never	542	25	338	288	114	741
	Sometimes	0	0	8	22	30	60
	Usually	0	0	4	8	15	27
	Always	0	1	3	7	51	61
	No Rating	1	0	0	0	0	0
8	Never	542	25	333	280	106	720
	Sometimes	0	0	12	24	18	54
	Usually	0	0	5	15	15	35
	Always	0	1	3	6	71	80
	No Rating	1	0	0	0	0	0
9	Never	539	26	307	231	68	607
	Sometimes	0	0	27	39	24	90
	Usually	0	0	10	25	22	57
	Always	0	0	9	30	96	135
	No Rating	4	0	0	0	0	0

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
10	Never	539	25	338	278	103	720
	Sometimes	0	1	5	26	17	48
	Usually	0	0	5	10	23	38
	Always	0	0	4	11	66	81
	No Rating	4	0	1	0	1	2
11	Never	532	26	328	263	86	678
	Sometimes	0	0	10	29	24	63
	Usually	0	0	8	13	21	42
	Always	0	0	6	20	79	105
	No Rating	11	0	1	0	0	1
12	Never	505	24	318	253	83	655
	Sometimes	0	1	20	31	24	75
	Usually	0	1	9	13	21	43
	Always	0	0	5	28	81	114
	No Rating	38	0	1	0	1	2
13	Never	539	26	324	240	74	639
	Sometimes	0	0	19	35	27	81
	Usually	0	0	4	24	14	42
	Always	0	0	6	24	95	125
	No Rating	4	0	0	2	0	2
14	Never	539	26	254	135	41	431
	Sometimes	0	0	59	86	24	169
	Usually	0	0	19	36	19	74
	Always	0	0	20	64	126	210
	No Rating	4	0	1	4	0	5

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
15	Never	538	22	320	257	79	657
	Sometimes	0	3	26	38	25	89
	Usually	0	1	3	15	26	44
	Always	0	0	2	14	80	96
	No Rating	5	0	2	1	0	3
16	Never	537	23	306	254	92	653
	Sometimes	0	1	30	42	20	92
	Usually	0	2	7	17	23	47
	Always	0	0	7	11	74	92
	No Rating	6	0	3	1	1	5
17	Never	541	26	279	190	78	548
	Sometimes	0	0	46	56	23	125
	Usually	0	0	16	27	20	63
	Always	0	0	12	49	89	150
	No Rating	2	0	0	3	0	3
18	Never	538	25	330	292	109	732
	Sometimes	3	1	18	22	35	75
	Usually	0	0	3	7	32	42
	Always	0	0	2	2	34	38
	No Rating	2	0	0	2	0	2
19	Never	541	26	319	278	101	699
	Sometimes	0	0	22	31	39	92
	Usually	0	0	7	10	26	43
	Always	0	0	5	6	44	55
	No Rating	2	0	0	0	0	0

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
20	Never	523	19	152	40	8	201
	Sometimes	3	3	57	51	8	116
	Usually	2	1	39	37	5	81
	Always	13	3	98	191	185	474
	No Rating	2	0	7	6	4	17
21	Never	541	26	294	251	134	680
	Sometimes	0	0	26	34	19	79
	Usually	1	0	20	16	14	50
	Always	0	0	12	24	43	79
	No Rating	1	0	1	0	0	1
22	Never	537	25	328	287	146	762
	Sometimes	1	1	12	22	15	49
	Usually	1	0	9	7	14	30
	Always	0	0	3	9	35	47
	No Rating	4	0	1	0	0	1
23	Never	439	23	119	54	3	177
	Sometimes	12	2	80	35	5	120
	Usually	0	0	25	21	7	53
	Always	28	0	101	184	166	451
	No Rating	64	1	28	31	29	88
24	Never	534	14	109	34	7	151
	Sometimes	2	2	63	30	3	96
	Usually	2	1	31	34	7	72
	Always	5	9	144	217	187	548
	No Rating	0	0	6	10	6	22

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
25	Never	538	16	125	45	10	181
	Sometimes	0	1	46	27	3	76
	Usually	0	2	25	29	7	61
	Always	5	7	147	215	184	546
	No Rating	0	0	10	9	6	25
26	Never	541	23	296	238	86	621
	Sometimes	2	1	32	46	31	109
	Usually	0	0	12	23	23	58
	Always	0	0	13	17	69	99
	No Rating	0	2	0	1	1	2
27	Never	530	21	85	33	12	131
	Sometimes	9	1	109	75	15	199
	Usually	2	1	58	68	27	153
	Always	2	2	93	146	155	394
	No Rating	0	1	8	3	1	12
28	Never	533	17	119	36	16	172
	Sometimes	3	0	69	48	8	125
	Usually	2	0	45	27	6	78
	Always	4	9	116	211	177	504
	No Rating	1	0	4	3	3	10
29[1]	Never	487	14	108	26	4	139
	Sometimes	0	0	19	11	1	31
	Usually	18	2	33	19	4	56
	Always	17	10	177	235	187	599
	No Rating	21	0	16	34	14	64

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
30	Never	541	22	206	93	28	328
	Sometimes	0	0	45	41	16	102
	Usually	1	1	15	31	16	62
	Always	1	1	83	157	146	386
	No Rating	0	2	4	3	4	11
31	Never	540	22	218	109	39	367
	Sometimes	1	0	46	44	16	106
	Usually	1	1	16	28	16	60
	Always	1	1	68	140	135	343
	No Rating	0	2	5	4	4	13
32[2]	Never	243	9	25	15	6	46
	Sometimes	2	0	6	4	0	10
	Usually	0	1	3	4	1	8
	Always	93	14	97	118	83	299
	No Rating	205	2	222	184	120	526
33	Never	536	21	199	126	38	364
	Sometimes	2	0	55	58	16	129
	Usually	1	1	25	25	21	71
	Always	2	3	72	114	135	321
	No Rating	2	1	2	2	0	4
34	Never	537	19	192	109	39	341
	Sometimes	0	0	73	81	21	175
	Usually	1	2	32	35	22	89
	Always	2	4	54	98	125	277
	No Rating	3	1	2	2	3	7

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
35	Never	541	25	207	97	9	314
	Sometimes	1	0	59	33	4	96
	Usually	0	0	26	29	12	67
	Always	1	1	54	159	180	393
	No Rating	0	0	7	7	5	19
36	Never	542	26	269	153	22	445
	Sometimes	0	0	32	30	5	67
	Usually	0	0	19	22	14	55
	Always	1	0	33	114	163	310
	No Rating	0	0	0	6	6	12
37	Never	542	26	291	226	62	580
	Sometimes	0	0	18	19	9	46
	Usually	0	0	16	19	9	44
	Always	1	0	25	56	124	205
	No Rating	0	0	3	5	6	14
38	Never	540	26	142	80	10	233
	Sometimes	2	0	84	50	7	141
	Usually	0	0	38	37	16	91
	Always	1	0	84	149	170	403
	No Rating	0	0	5	9	7	21
39	Never	542	24	197	77	13	288
	Sometimes	0	2	52	43	8	103
	Usually	0	0	21	27	6	54
	Always	1	0	81	175	181	437
	No Rating	0	0	2	3	2	7

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
40	Never	526	17	48	10	0	59
	Sometimes	1	1	30	8	0	38
	Usually	0	1	32	9	1	42
	Always	16	7	240	295	206	741
	No Rating	0	0	3	3	3	9
41	Never	542	26	222	170	50	443
	Sometimes	1	0	78	68	32	178
	Usually	0	0	32	51	42	125
	Always	0	0	21	35	86	142
	No Rating	0	0	0	1	0	1
42	Never	541	26	181	128	31	341
	Sometimes	2	0	111	110	51	272
	Usually	0	0	48	66	47	161
	Always	0	0	11	20	80	111
	No Rating	0	0	2	1	1	4
43	Never	543	26	288	213	60	562
	Sometimes	0	0	35	40	23	98
	Usually	0	0	14	27	14	55
	Always	0	0	12	43	111	166
	No Rating	0	0	4	2	2	8
44	Never	542	24	180	100	21	302
	Sometimes	0	1	81	46	21	148
	Usually	1	0	39	62	10	111
	Always	0	1	48	109	156	313
	No Rating	0	0	5	8	2	15

Appendix B (continued)

Item	Dependency Frequency	Healthy Elderly	Physically Impaired	Mild Dementia	Moderate Dementia	Severe Dementia	All Dementia
45	Never	542	23	236	127	17	381
	Sometimes	0	2	40	44	12	96
	Usually	0	0	27	36	15	78
	Always	0	1	45	108	163	316
	No Rating	1	0	5	10	3	18
46	Never	538	18	134	42	4	181
	Sometimes	3	2	40	29	4	73
	Usually	0	0	28	31	4	63
	Always	1	6	135	212	194	541
	No Rating	1	0	16	11	4	31
47[3]	Never	535		280	241	148	670
	Sometimes	3		46	44	29	119
	Usually	0		13	11	10	34
	Always	0		11	23	17	51
	No Rating	5		3	6	6	15

[1] For item 29 (Drives motor vehicle) there is a relatively large number of missing ratings due to the fact that on the earliest form of the CSADL, this item was not included.

[2] This item is frequently rated "cannot rate" because of specific instructions and are therefore is not included in scores.

[3] This item was not administered to the Physically Impaired participants.

Appendix C

Significance of Differences between Groups[1] by CSADL Item

Item	Groups Contrasted									
	HE-PI	HE-Mild	HE-Mod	HE-Sev	PI-Mild	PI-Mod	PI-Sev	Mild-Mod	Mild-Sev	Mod-Sev
1		<.001	<.001	<.001		<.010	<.001	<.001	<.001	<.001
2	<.001	<.001	<.001	<.001		<.030	<.001	<.001	<.001	<.001
3	<.001	<.001	<.001	<.001			<.001	<.001	<.001	<.001
4	<.001	<.001	<.001	<.001			<.001	<.001	<.001	<.001
5	<.050	<.001	<.001	<.001			<.001		<.001	<.001
6		<.001	<.001	<.001			<.010	<.020	<.001	<.001
7	<.050	<.001	<.001	<.001			<.010	<.010	<.001	<.001
8	<.050	<.001	<.001	<.001			<.010	<.010	<.001	<.001
9		<.001	<.001	<.001		<.030	<.001	<.001	<.001	<.001
10	<.050	<.001	<.001	<.001			<.001	<.001	<.001	<.001
11		<.001	<.001	<.001			<.001	<.001	<.001	<.001
12	<.010	<.001	<.001	<.001			<.001	<.001	<.001	<.001
13		<.001	<.001	<.001		<.040	<.001	<.001	<.001	<.001
14		<.001	<.001	<.001	<.030	<.001	<.001	<.001	<.001	<.001
15	<.001	<.001	<.001	<.001			<.001	<.001	<.001	<.001
16	<.001	<.001	<.001	<.001			<.001	<.020	<.001	<.001
17		<.001	<.001	<.001		<.010	<.001	<.001	<.001	<.001
18		<.001	<.001	<.001			<.010		<.001	<.001
19		<.001	<.001	<.001			<.001		<.001	<.001
20	<.001	<.001	<.001	<.001	<.040	<.001	<.001	<.001	<.001	<.001
21		<.001	<.001	<.001			<.010	<.050	<.001	<.001
22		<.001	<.001	<.001			<.040	<.050	<.001	<.001
23		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
24	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
25	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
26		<.001	<.001	<.001			<.001	<.010	<.001	<.001
27	<.010	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
28	<.001	<.001	<.001	<.001	<.010	<.001	<.001	<.001	<.001	<.001
29	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
30	<.020	<.001	<.001	<.001	<.020	<.001	<.001	<.001	<.001	<.001
31		<.001	<.001	<.001	<.040	<.001	<.001	<.001	<.001	<.001

32	<.010	<.001	<.001	<.001		<.020	<001		<.010	-

Appendix C (Continued)

Item	Groups Contrasted									
	HE-PI	HE-Mild	HE-Mod	HE-Sev	PI-Mild	PI-Mod	PI-Sev	Mild-Mod	Mild-Sev	Mod-Sev
33	<.001	<.001	<.001	<.001	<.050	<.001	<.001	<.001	<.001	<.001
34	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
35		<.001	<.001	<.001	<.010	<.001	<.001	<.001	<.001	<.001
36		<.001	<.001	<.001	<.050	<.001	<.001	<.001	<.001	<.001
37		<.001	<.001	<.001		<.030	<.001	<.001	<.001	<.001
38		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
39	<.010	<.001	<.001	<.001	<.010	<.001	<.001	<.001	<.001	<.001
40	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.010
41		<.001	<.001	<.001	<.010	<.001	<.001	<.010	<.001	<.001
42		<.001	<.001	<.001	<.001	<.001	<.001	<.010	<.001	<.001
43		<.001	<.001	<.001		<.010	<.001	<.001	<.001	<.001
44	<.010	<.001	<.001	<.001	<.010	<.001	<.001	<.001	<.001	<.001
45	<.001	<.001	<.001	<.001		<.001	<.001	<.001	<.001	<.001
46	<.001	<.001	<.001	<.001	<.030	<.001	<.001	<.001	<.001	<.001
47	NA	<.001	<.001	<.001	NA	NA	NA		<.040	

[1] Groups are indicated as follows:

Healthy Elderly	HE
Physically Impaired	PI
Mild Dementia	Mild
Moderate Dementia	Mod
Severe Dementia	Sev

Appendix D. 1

Percentile Equivalents for Total Based on 876 Dementia Participants

Mean = 49.95, SE_M = 1.15, *SD* = 33.90

Total	Percentile	Total	Percentile	Total	Percentile	Total	Percentile
135-138	>99	70	77	46-47	54	22	24
134	98	69	76	45	53	21	22
132-133	97	68	75	43-44	52	20	21
123-131	96	67	74	42	50	19	19
118-122	95	66	73	41	49	18	17
115-117	94	65	72	40	48	17	16
111-114	93	64	71	39	47	16	15
108-110	92	63	70	38	46	15	14
104-107	91	62	69	37	44	13-14	12
100-103	90	61	68	36	43	12	11
95-99	89	59-60	67	35	41	11	10
94	88	58	66	34	40	10	9
92-93	87	57	65	33	38	9	8
90-91	86	56	64	32	37	8	7
87-89	85	55	63	31	35	7	6
84-86	84	54	62	29-30	33	6	5
82-83	83	53	61	28	32	5	4
78-81	82	52	60	27	31	4	3
76-77	81	51	59	26	29	3	2
74-75	80	50	58	25	28	2	1
73	79	49	56	24	27	0-1	<1
71-72	78	48	55	23	25		

Appendix D. 2

Percentile Equivalents for Bas Based on 887 Dementia Participants

Mean = 11.25, SE_M = .55, *SD* = 16.26

Bas	Percentile	Bas	Percentile	Bas	Percentile
63	>99	26-27	86	11	69
60-62	97	25	85	10	68
54-59	96	24	84	9	67
49-53	95	23	83	8	65
47-48	94	21-22	82	7	61
43-46	93	20	81	6	59
40-42	92	18-19	80	5	56
38-39	91	17	78	4	53
36-37	90	16	77	3	50
33-35	89	15	76	2	43
30-32	88	14	74	1	36
28-29	87	13	73	0	27
		12	71		

Appendix D. 3

Percentile Equivalents for Ins Based on 849 Dementia Participants

Mean = 33.78, SE_M = .57, *SD* = 16.55

Ins	Percentile	Ins	Percentile	Ins	Percentile
57	>99	38	56	19	24
56	91	37	54	18	22
55	89	36	53	17	21
54	88	35	51	16	19
53	85	34	49	15	17
52	83	33	48	14	15
51	81	32	46	13	14
50	78	31	45	12	13
49	76	30	43	11	12
48	74	29	41	10	11
47	73	28	40	9	9
46	71	27	38	8	8
45	69	26	36	7	7
44	67	25	35	6	6
43	65	24	33	5	5
42	63	23	31	4	4
41	61	22	29	3	3
40	58	21	27	2	2
39	57	20	25	0-1	1

Appendix D. 4

Percentile Equivalents for Total-DR Based on 807 Dementia Participants

Mean = 47.74, SE_M = 1.23, *SD* = 34.79

Total-DR	Percentile	Total-DR	Percentile	Total-DR	Percentile	Total-DR	Percentile
135-138	>99	70-71	78	43	55		
132-134	97	69	77	42	54	20	25
127-131	96	67-68	76	41	53	19	23
118-126	95	66	75	40	52	18	22
115-117	94	65	74	38-39	51	17	21
111-114	93	64	73	37	50	16	19
107-110	92	63	72	36	48	15	17
102-106	91	62	71	35	47	14	15
99-101	90	61	70	34	45	13	14
95-98	89	59-60	69	33	43	11-12	13
94	88	58	68	32	42	10	11
91-93	87	57	67	31	41	9	10
89-90	86	56	66	29-30	38	8	9
87-88	85	54-55	65	28	36	7	8
84-86	84	53	64	27	35	6	7
81-83	83	52	63	26	34	5	5
78-80	82	51	62	25	33	4	4
76-77	81	50	60	24	31	3	3
74-75	80	48-49	59	23	29	2	2
72-73	79	46-47	58	22	28	0-1	1
		44-45	56	21	26		

Appendix D. 5

Percentile Equivalents for Bas-DR Based on 887 Dementia Participants

Mean = 11.25, SE_M = .55, *SD* = 16.26

Bas	Percentile	Bas	Percentile	Bas	Percentile
63	>99	26-27	86	11	69
60-62	97	25	85	10	68
54-59	96	24	84	9	67
49-53	95	23	83	8	65
47-48	94	21-22	82	7	61
43-46	93	20	81	6	59
40-42	92	18-19	80	5	56
38-39	91	17	78	4	53
36-37	90	16	77	3	50
33-35	89	15	76	2	43
30-32	88	14	74	1	36
28-29	87	13	73	0	27
		12	71		

Appendix D. 6

Percentile Equivalents for Ins-DR Based on 700 Dementia Participants

Mean = 32.46, SE_M = .65, *SD* = 17.26

Ins-DR	Percentile	Ins-DR	Percentile	Ins-DR	Percentile
57	>99	38	58	19	28
56	91	37	57	18	26
55	89	36	56	17	24
54	88	35	54	16	22
53	85	34	53	15	21
52	83	33	52	14	19
51	81	32	50	13	17
50	78	31	48	12	15
49	77	30	47	10-11	14
48	75	29	46	9	12
47	73	28	44	8	10
46	71	27	42	7	9
45	69	26	40	6	8
44	68	25	38	5	6
43	66	24	37	4	5
42	65	23	34	3	4
41	63	22	32	2	3
40	61	21	31	0-1	2
39	60	20	29		

Appendix D. 7

Percentile Equivalents for Total ID Based on 876 Dementia Participants

Mean = 21.03, SE_M = .39, *SD* = 11.53

Total ID	Percentile	Total ID	Percentile	Total ID	Percentile
45-46	>99	30	79	14	32
44	96	29	77	13	29
43	95	28	76	12	25
42	94	27	73	11	23
41	93	26	72	10	20
40	91	25	69	9	16
39	90	24	65	8	13
38	89	23	63	7	11
37	88	22	60	6	9
36	87	21	57	5	7
35	86	20	54	4	6
34	85	19	51	3	4
33	83	18	48	2	3
32	82	17	44	1	1
31	80	16	40	0	<1
		15	36		