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## SHAPS-C:

### The Snaith-Hamilton Pleasure Scale modified for clinician administration

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## **Abstract**

Anhedonia, a diminished or lack of ability to experience and anticipate pleasure represents a core psychiatric symptom in depression. Current clinician assessment of anhedonia is generally limited to one or two all-purpose questions and most well-known psychometric scales of anhedonia are relatively long, self-administered, typically not state sensitive, and are unsuitable for use in clinical settings. A user-friendly tool for a more in-depth clinician assessment of hedonic capacity is needed. The present study assessed the validity and reliability of a clinician administered version of the Snaith-Hamilton Pleasure Scale, the SHAPS-C, in 34 depressed subjects. We compared total and specific item scores on the SHAPS-C, SHAPS (self-report version), Montgomery-Åsberg Depression Rating Scale (MADRS), and the Inventory of Depressive Symptomatology-Self Rating version (IDS-SR). We also examined construct, content, concurrent, convergent, and discriminant validity, internal consistency, and split-half reliability of the SHAPS-C. The SHAPS-C was found to be valid and reliable. The SHAPS and the SHAPS-C were positively correlated with one another, with levels of depression severity, as measured by the MADRS, and the IDS-SR total scores, and with specific items of the MADRS and IDS-SR sensitive to measuring hedonic capacity. Our investigation indicates that the SHAPS-C is a user friendly, reliable, and valid tool for clinician assessment of hedonic capacity in depressed bipolar and unipolar patients.

## 1. Introduction

A diminished or lack of ability to experience or anticipate pleasure or anhedonia, and its assessment is central to understanding and treating depressive states (Hasler, Drevets, Manji, & Charney, 2004; Klein, 1974; Robinson, Cools, Carlisi, Sahakian, & Drevets, 2012; Spijker, Bijl, de Graaf, & Nolen, 2001a, 2001b; Treadway & Zald, 2011).

Research has indicated a distinct neurobiological difference between consummatory and anticipatory pleasure; evidence suggests that the latter is strongly aberrant in depression (Treadway & Zald, 2011). The National Institutes of Mental Health Research Domain Criteria (NIMH, RDoC) considers anhedonia a central construct for both better understanding of depression and discovery of more effective treatments (Cuthbert, 2014). Several self-rated scales for the assessment of hedonic capacity have been published, including the Chapman Revised Physical and Social Anhedonia Scales (CRPAS/CRSAS; Chapman, Chapman, & Raulin, 1976), the Fawcett Clark Pleasure Scale (FCPS; Fawcett, Clark, Scheftner, & Gibbons, 1983), and Snaith-Hamilton Pleasure Scale (SHAPS; Snaith et al., 1995). The latter is a 14-item, self-rated user-friendly measure that addresses shortcomings of previous measures, such as length, state versus trait sensitivity, and the relatively culture free nature of questions (Snaith et al., 1995), and has been further validated in independent samples since the original study (Franken, Rassin, & Muris, 2006; Leventhal, Chasson, Tapia, Miller, & Pettit, 2006; Nakonezny, Carmody, Morris, Kurian, & Trivedi, 2010). Furthermore, Research Domain Criteria (RDoC; Insel et al., 2010) outlined the SHAPS as a potential measure of ‘sustained responsiveness to reward,’ which is related to anhedonia. Reliable and valid measurement of hedonic capacity will only increase in importance as RDoC is incorporated into future research.

The SHAPS is a self-rated tool. The value of self-assessments in depressive states has been called into question (Corruble, Legrand, Zvenigorowski, Duret, & Guelfi, 1999; Prusoff, Klerman, & Paykel, 1972a, 1972b). While the effective use of self-assessment has been reported (Rush et al., 1986), severity of illness, presence of personality disorders, instructions, motivation, and mood-dependent memory are among the factors that can compromise the objectivity of self-assessments (Blaney, 1986; Corruble et al., 1999; Prusoff et al., 1972b). Furthermore, some have suggested that a complete assessment of depression should include both clinician-rated and self-report measures since each uniquely contribute to the prediction of treatment outcome (Uher et al., 2012).

Based on the initial promise of the SHAPS, we modified this scale for use as a clinician-administered tool, SHAPS-C, by adding specific item wording, instructions, and probe questions, as well as modification of the scoring. Care was taken to phrase the questions such that both the consummatory and the anticipatory aspects of anhedonia could be assessed. The SHAPS-C includes the same 14 areas of hedonic experience as the SHAPS. SHAPS items are scored 0 or 1. Items on the SHAPS-C are scored from 1 to 4 (1=Lots of pleasure, 4=No pleasure) to allow for greater score variability (Franken et al., 2006; Liu, Wang, Zhu, Li, & Chan, 2012). The inclusion of “lots of pleasure” which is scored 1, can also allow the investigation of high moods should that be of assessment interest particularly in bipolar conditions (SHAPS-C, see Supplemental Information).

The construct, content, and face validity of the SHAPS-C stem from the fact that it is closely modeled after the SHAPS and explores identical areas of hedonic capacity. We further assessed the concurrent validity of the SHAPS-C by examining its relationship to the SHAPS in a group of unipolar and bipolar depressed patients. The

convergent validity was assessed by examining the relationship between the SHAPS-C and specific items of the MADRS and IDS-SR assessing hedonic capacity. Similarly, we assessed its discriminant validity by looking at items from the Montgomery-Asberg Depression Rating Scale (MADRS; Montgomery & Asberg, 1979) and Inventory of Depressive Symptomatology-Self Rating (IDS-SR; Trivedi et al., 2004) that are not presumed to be directly related to hedonic capacity. In addition, we examined the reliability of the SHAPS-C by assessing its internal consistency and split-half reliability.

## **2. Materials and Methods**

We studied 34 depressed subjects (18 males) with a mean age of 46.7 years (SD = 10.4, range 24-63) who participated in depression studies at the National Institute of Mental Health (NIMH), Bethesda, MD, under Institutional Review Board approved protocols including written informed consent. Subjects were diagnosed based on a best estimate diagnostic procedure that included psychiatric interview, assessment by the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) patient edition (SCID I/P; First, 2002), and interview of family members as well as review of past history and records as indicated. Subjects who met criteria for current Major Depressive Disorder (MDD;  $n = 21$ ) or Bipolar Disorder (BD,  $n = 13$ ) in the depressive phase participated. Subjects with current psychosis, cognitive impairment, unstable medical conditions, or acute suicide risk were excluded. We also excluded manic or hypomanic subjects ( $n = 2$ ). Although the SHAPS-C can measure increased pleasure, such a low number of subjects did not justify inclusion into the study. All subjects completed the SHAPS-C, SHAPS, MADRS, and the IDS-SR (Table 1).

Pearson correlations were calculated to better understand the concurrent validity of the SHAPS-C. MADRS Inability to Feel (item 8) and IDS-SR General Interest (item 19) and Capacity for Pleasure and Enjoyment (item 21) were examined in relationship to the SHAPS-C total scores. Similarly, the discriminant validity of the SHAPS-C was assessed by the level of correlation between MADRS Concentration (item 6), Energy (item 7), and Pessimism/Guilt (item 9) and IDS-SR Concentration (item 15), Outlook Towards Self (item 16), Energy (item 20), and Somatic Concerns (item 25), items that are not presumed to be directly related to hedonic capacity. Significance was evaluated at  $p < .05$ , two-tailed. To have 80% power to demonstrate a correlation of at least  $r = .50$ , a minimum of 26 cases were required; 34 cases yielded 90% power. Finally, Cronbach's alpha and the Spearman-Brown coefficient were used to examine the internal consistency, and split-half reliability of the SHAPS-C, respectively.

### 3. Results

The mean scores for the SHAPS-C, SHAPS, IDS-SR (total), and MADRS (total) for the study sample were 41.9 (SD = 7.2), 6.5 (SD = 4.3), 43.5 (SD = 12.0), and 32.7 (SD = 6.3), respectively (Table 1). This suggests a moderate to severely depressed sample.

The SHAPS-C was internally consistent (Cronbach's  $\alpha = .90$ ). Removing individual items did not change the internal consistency substantially in either direction. The Spearman-Brown split-half reliability was .90. In addition to evidence for the reliability of the SHAPS-C, we also found support for the SHAPS as an internally consistent measure (Cronbach's  $\alpha = .88$ , Spearman Brown = .93).

The SHAPS-C was positively correlated with the SHAPS ( $r = .82, p < .001$ ). Figure 1 illustrates this relationship and shows that patients had the full range of scores on the SHAPS, but they did not reach the lower levels of the SHAPS-C. This was expected since the lowest scores on the SHAPS-C would indicate higher than normal levels of pleasure which is not expected in a group of moderate to severely depressed patients. Given the overlap in the content of the questions for these scales, we examined the relationships between corresponding items. Spearman correlations were used due to the short range of values for the items. The correlations ranged from .37 to .73 with 12 of 14 items having correlations over .50.

Table 2 shows the relationships between the anhedonia (SHAPS-C, SHAPS) and depression scales (MADRS, IDS-SR; Fig. 2). As predicted, the SHAPS-C and SHAPS totals were significantly correlated with MADRS Inability to Feel (item 8) and IDS-SR General Interest (item 19) and Capacity for Pleasure or Enjoyment (item 21). These relationships suggest the convergent validity of the SHAPS-C. Interestingly, the correlation between hedonic capacity and mood ranged from low to moderate indicating that mood and hedonic capacity could be considered as relatively independent constructs. Specifically, the correlation between SHAPS and SHAPS-C totals with MADRS Apparent Sadness (item 1) were 0.22 and 0.47, with Reported Sadness (item 2) were 0.44 and .049, with IDS-SR Sad Mood (item 5) were 0.33 and 0.47, with IDS-SR Mood reactivity (item 8) were 0.38 and 0.54, and with IDS-SR Mood Variation (item 9) were -0.20 and -0.25. The SHAPS-C and SHAPS totals were not significantly correlated with MADRS Concentration (item 6 ( $r = .19, p = .29$ ;  $r = .16, p = .40$ , respectively), Energy (item 7) ( $r = .21, p = .23$ ;  $r = .12, p = .51$ ), and Pessimism/Guilt (item 9) ( $r = .01, p = .95$ ;



$r = .06, p = .75$ ), nor with the corresponding items of the IDS-SR Concentration (item 15) ( $r = .15, p = .40; r = .16, p = .38$ ), Energy (item 20) ( $r = .31, p = .08; r = .29, p = .12$ ), Outlook Towards Self (item 16) ( $r = -.13, p = .48; r = -.19, p = .32$ ). In addition, as predicted IDS-SR Somatic Concerns (item 25) was not significantly correlated with the hedonic capacity measures ( $r = .22, p = .23; r = .19, p = .31$ ). These non-significant associations support the discriminant validity of the SHAPS-C.

#### **4. Discussion**

In-depth measurement of hedonic capacity along with the measurement of mood and behavior is important in depression treatment studies (Boyer, Tassin, Falissart, & Troy, 2000). Self-administered assessments may not be sufficient, particularly in severe psychiatric conditions. In addition, for a complete assessment of depression both clinician-rated and self-report measures may be included since each can uniquely contribute to the prediction of treatment outcome (Uher et al., 2012). This study introduces the SHAPS-C, a clinician administered version of the SHAPS, and demonstrates its internal consistency, split-half reliability, and convergent and discriminant validity with the SHAPS, MADRS, IDS-SR in a group of depressed patients for assessment of anhedonia. The SHAPS-C was strongly positively correlated with the original SHAPS and with specific hedonic items from the MADRS and IDS-SR, but not non-hedonic questions. The high correlation between the SHAPS and SHAPS-C suggests they tap into the same construct. However, the size of the correlation indicates that about a third of the variance ( $r^2 = .67$ ) from one is not explained by the other which may point to the uniqueness of a clinician measure.

Similar correlations between the MADRS and SHAPS were reported in the original study by Snaith et al. (Snaith et al., 1995) although their original sample of 46 patients was not limited to depressed patients and included mixed psychiatric disorders that displayed anhedonia. The similarity between results from the initial SHAPS study and the current study suggest that mood and hedonic capacity could be considered separate constructs and closer attention should be paid to the assessment of hedonic capacity. In addition, laboratory findings suggest that underlying neurobiological and neuropsychological substrates for anhedonia may be useful in clarifying relevant endophenotypes of depression related to anhedonia (Gottesman & Gould, 2003; Hasler et al., 2004; Pizzagalli et al., 2009; Pizzagalli, Jahn, & O'Shea, 2005). Hedonic tone may assist in elucidating links and differentiations among various psychiatric disorders (Snaith et al., 1995) including bipolar conditions and depression subtypes.

The present study has several limitations that future studies should address. While the sample size of 34 yielded 90% power for the study, a larger sample size will be needed to confirm the current findings. Future studies reporting on validity and reliability of the SHAPS-C in larger clinical samples will help to continue investigate the usefulness of this measure. There were no control groups in the current study. Addition of various control groups in future studies will further enrich the current findings. In particular, assessment of hedonic capacity not only in depressive states but also in manic or hypomanic states will require a tool for assessment in both directions. SHAPS-C's scoring and questions are designed such that a bidirectional assessment can take place. In addition, the use of the measure with control subjects as well as patient groups could

provide normative information to establish normal and pathological levels of hedonic capacity.

In sum, exploration of hedonic capacity in diagnostic, clinical, and neurobiological investigations requires valid and reliable tools. Given the controversy of self-assessments in severe psychiatric disorders, including depression, and possible unique contribution of self-assessments and clinician-assessments for prediction of outcome, the availability of a user-friendly clinician-administered tool for assessment of anhedonia is of potential value. We propose that SHAPS-C could be considered such a tool.

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Table 1. Demographic and clinical characteristics of study sample.

	<b><u>N (%)</u></b>
Diagnosis	
• Major Depressive Disorder	21 (62)
• Bipolar Disorder	13 (38)
Gender (Male)	18 (53)
Race (Caucasian)	21 (62)
	<b><u>Mean</u></b>
	<b><u>(SD)</u></b>
Age	46.7 (10.4)
SHAPS-C Total	41.9 ( 7.2)
SHAPS Total	6.5 ( 4.3)
IDS-SR	
• Total	43.5 (12.0)
• General Interest	2.1 ( 0.9)
• Capacity for Pleasure/Enjoyment	1.8 ( 0.7)
MADRS	
• Total	32.7 ( 6.3)
• Inability to Feel	3.8 ( 1.0)

Note: SHAPS-C= Snaith-Hamilton Pleasure Scale-Clinician Administered; IDS-SR = Inventory of Depressive Symptomatology-Self Rating; MADRS = Montgomery Asberg Depression Rating Scale; SHAPS= Snaith-Hamilton Pleasure Scale.

Table 2. Correlations between the SHAPS, SHAPS-C, IDS-SR, and MADRS, and specific scale items.

		SHAPS (Total)	SHAPS-C (Total)	IDS-SR (Total)	IDS-SR (General Interest)	IDS-SR (Capacity for Pleasure or Enjoyment)	MADRS (Total)
SHAPS-C (Total)	<i>r</i>	.846					
	<i>p</i>	.000					
IDS-SR(Total)	<i>r</i>	.518	.552				
	<i>p</i>	.003	.001				
IDS-SR, item 19 (General Interest)	<i>r</i>	.393	.477	.590			
	<i>p</i>	.029	.006	.000			
IDS-SR, item 21 (Capacity for Pleasure or Enjoyment)	<i>r</i>	.538	.691	.543	.647		
	<i>p</i>	.002	.000	.001	.000		
MADRS (Total)	<i>r</i>	.515	.563	.774	.393	.595	
	<i>p</i>	.003	.001	.000	.029	.000	
MADRS, item 8 (Inability to Feel)	<i>r</i>	.475	.527	.493	.321	.571	.769
	<i>p</i>	.006	.002	.005	.078	.001	.000

Note: CPES = SHAPS-C= Snaith-Hamilton Pleasure Scale- Clinician Administered; IDS-SR = Inventory of Depressive Symptomatology Self Rating; MADRS = Montgomery Asberg Depression Rating Scale; SHAPS= Snaith-Hamilton Pleasure Scale.



Figure 1.

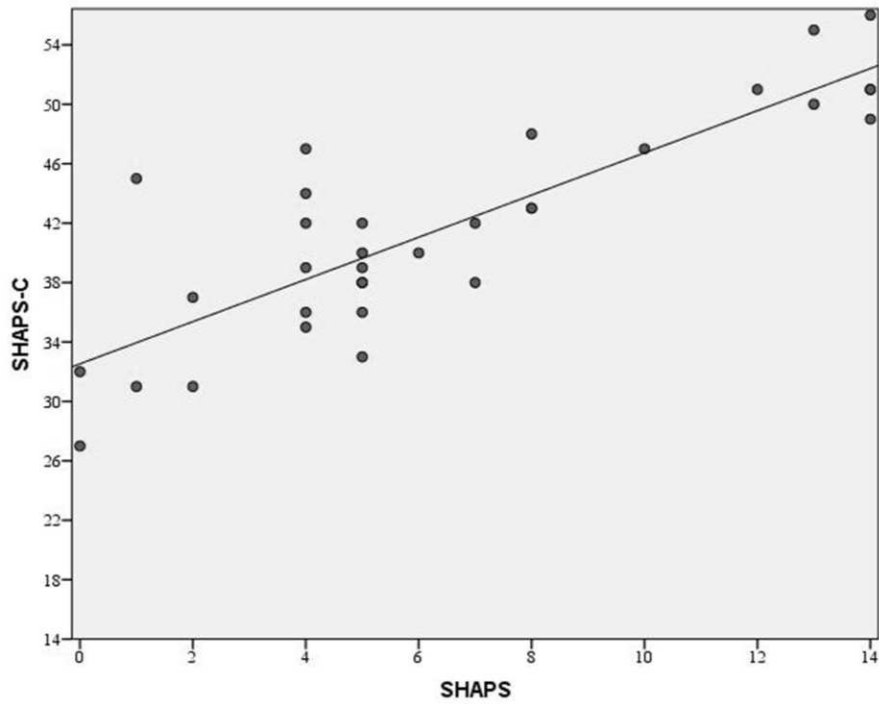
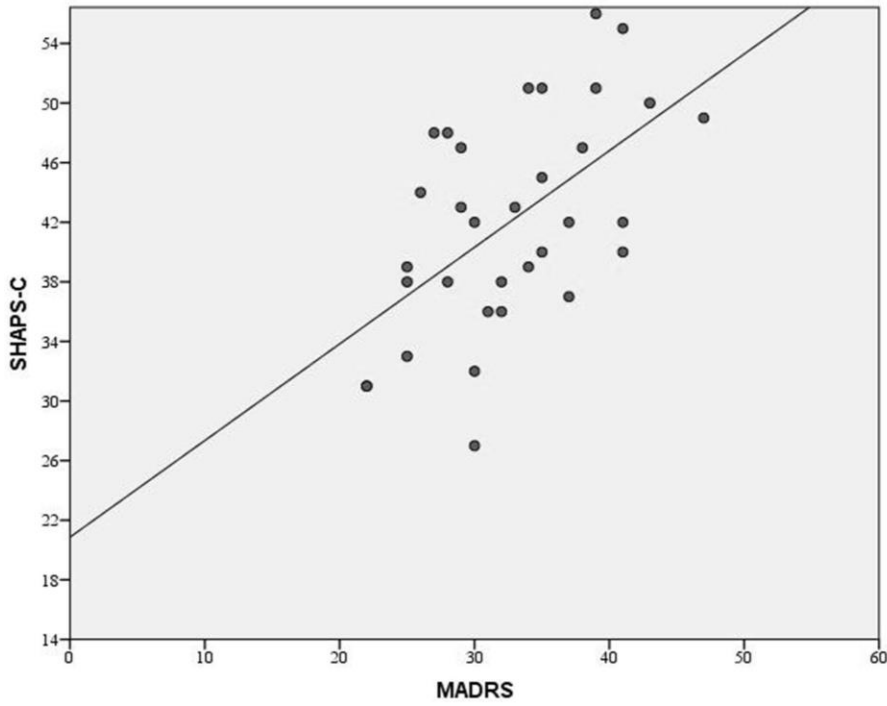


Figure 2.



## Supplemental Information

### *SHAPS-C* *The Snaith-Hamilton Pleasure Scale- Clinician Administered*

The purpose of this assessment is to evaluate the ability to enjoy/experience pleasure during the past week [or another time frame].

- First, determine if any pleasure was experienced in the given area and then rate the reported level of pleasure.
- In the absence of the actual experience, assess the patient's anticipation of pleasure. For example: "if you had the opportunity to eat your favorite food, do you think you would enjoy it?" Decreased energy and diminished concentration can commonly interfere with engaging in some of the areas under question in this assessment. Differentiate such symptoms from anhedonia. For example: "if you were not feeling so tired and could go for a walk to your favorite beach do you think you would enjoy the walk?" or "if you could concentrate, do you think you would enjoy reading?"
- The rating of Average/Usual pleasure is equivalent to pleasure at Baseline, and/or when not in a mood episode.
- It is possible that the area under question has never been pleasurable for the individual, regardless of their mood state. In such cases, assess changes that might have occurred. For example: "I have never enjoyed taking showers but when I am depressed I really cannot get myself to do it, even the idea of taking a shower is unpleasant." This response would be scored 4. However if the person said "I have never enjoyed taking showers and I still feel the same about it, I do it out of habit". This response would be scored 2.

1. **Pleasure/enjoyment from favorite radio/TV program:** (Questions to consider: Have you had any pleasure or enjoyment from radio/TV programs or similar activities during the past [time frame]? What are your favorite programs? Have you watched/listened to them? [if not] Do you think you would enjoy them if you did? Is your experience of pleasure in this area similar or different from usual?):

4. No pleasure
3. Some pleasure
2. Average/usual pleasure
1. Lots of pleasure

2. **Pleasure/enjoyment from family or close friends:** (Questions to consider: Who are some of the people you usually spend time with? Family or friends? Have you spent any time with them during the past [time frame]? Talked on the phone? Any contact? Did you enjoy such contacts? Do you think you would enjoy them if you did? Is your experience of pleasure in this area similar or different from usual?):

4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
3. **Pleasure/enjoyment from hobbies or pastimes:** (Questions to consider: What are some of your hobbies/pastime activities? Have you done any during the past [time frame]? Did you enjoy them? Do you think you would enjoy them if you did? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
4. **Pleasure/enjoyment from a favorite meal/food:** (Questions to consider: What are your favorite foods? Have you had any during the past [time frame]? Did you enjoy yourself? If you have not had any, would you enjoy them if you had any? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
5. **Pleasure/enjoyment from a warm bath or refreshing shower:** (Questions to consider: Do you usually enjoy a warm bath or a refreshing shower? Have you taken any this past [time frame]? Did you enjoy it? Would you if you had? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
6. **Pleasure/enjoyment from scent of flowers, smell of a fresh sea breeze, or freshly baked bread:** (Questions to consider: What are your favorite flowers? What kind of perfumes/scents do you like? Baked bread? What else? Have you had any of these experiences during the past [time frame]? Would it give you any pleasure if you had? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure

7. **Pleasure/enjoyment from seeing other people's smiling faces:** (Questions to consider: I assume you have come in contact with several people during the past [time frame]. How does it feel when they smile? How about smiling children? Even if you have not, would you experience any pleasure or enjoyment to see smiling faces? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
8. **Pleasure/enjoyment from looking handsome/beautiful/sharp after an effort to look nice:** (Questions to consider: have you made any effort to look nice this past [time frame]? Did it give you any experience of enjoyment/pleasure? If you had the opportunity to make yourself look nice, would you enjoy it? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
9. **Pleasure/enjoyment from reading a book, magazine, or newspaper:** (Questions to consider: Have you read any books in the past [time frame]? Do you generally like to read or look at magazines? Newspaper? Similar activities? If concentration were not a problem, would you enjoy reading a book? Looking at a magazine? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
10. **Pleasure/enjoyment from a favorite beverage:** (Questions to consider: What is your favorite drink? Coffee? Tea? Water? Other? Have you had any in the past [time frame]? Did you enjoy it? Would you if you had any? Is your experience of pleasure in this area similar or different from usual?):
4. No pleasure
  3. Some pleasure
  2. Average/usual pleasure
  1. Lots of pleasure
11. **Pleasure/enjoyment from small things:** (Questions to consider: What are some of the small things you have enjoyed? Taking note of something small? A bright sunny

day? A star on your child's homework? Have you experienced any such small pleasures in the last [time frame]? What other small pleasures do you remember from the past? Would you enjoy them now? Is your experience of pleasure in this area similar or different from usual?):

4. No pleasure
3. Some pleasure
2. Average/usual pleasure
1. Lots of pleasure

12. **Pleasure/enjoyment from a beautiful landscape or view:** (Questions to consider: Do you like nature? What are some of your favorites? What kind of landscape or view? Have you seen any in the past [time frame]? Did you enjoy it? Would you enjoy if you had seen /experienced any? Is your experience of pleasure in this area similar or different from usual? ):

4. No pleasure
3. Some pleasure
2. Average/usual pleasure
1. Lots of pleasure

13. **Pleasure/enjoyment from helping others:** (Questions to consider: Do you usually like to help people? Have you helped anyone during the past [time frame]? What was that like? Would it make you feel good if you had the opportunity to help someone? Is your experience of pleasure in this area similar or different from usual?):

4. No pleasure
3. Some pleasure
2. Average/usual pleasure
1. Lots of pleasure

14. **Pleasure/enjoyment from receiving praise from others** (Questions to consider: have you received any complements/praise? What kind of complements/recognition do you usually enjoy getting? What was that like? How do you think you would feel if you received complements/praise/recognition in the past [time frame]? Is your experience of pleasure in this area similar or different from usual?):

4. No pleasure
3. Some pleasure
2. Average/usual pleasure
1. Lots of pleasure

Total score (range: 14-56): \_\_\_\_\_