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Self Perceptions of Young Adults who Survived Severe Childhood Burn Injury

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Abstract

Objective—The transition of pediatric burn survivors into adulthood is accompanied by a reformulation of their self concept. In order to anticipate the need for and guide development of appropriate psychosocial interventions, this study examines how young adults who were burned as children perceive themselves and how this perception might affect their self-esteem.

Method—82 young adult burn survivors (45 males, 37 females) were assessed using the Tennessee Self-Concept, 2nd Edition (TSCS2) to determine how the participants perceive themselves and their interaction with society. To gain insight into the possible effects of these self-concept scores, relationships were analyzed between self-concept, a behavioral assessment (Young Adult Self-Report, YASR) and a psychiatric symptom assessment (Structured Clinical Interview for DSM-IV Axis I Disorders, SCID I).

Results—This group of burn survivors scored significantly lower in self-concepts, reflected in TSCS2 sub-scale scores of Physical function, appearance, and sexuality, Moral conduct, Personal values, Academics and work, and Identity than did the reference population. Pearson correlation coefficients showed that as Moral, Personal, Family and Social aspects of self concept decreased, clinical problems endorsed on the YASR sub-scales increased, including Anxiety Somatic, Attention, Intrusive and Aggressive. Persons with lower self-concept scores on the TSCS2 Personal, Family, and Social Scales, were more withdrawn on the YASR. Similarly those with lower TSCS2 scores on the Personal and Family Scales endorsed significantly more Thought Problems on the YASR. Affective distress on the SCID I was associated with significantly lower self concept. TSCS2 Total Self Concept, Personal, and all of the Supplementary Scale scores were significantly lower for the group with an affective disorder. Those whose SCID I scores were consistent with a current anxiety disorder had significantly lower scores for the TSCS2 Total Self Concept and Personal. Lower self-concept was associated with endorsement of SCID I symptoms (Identity, $p = .0018$, Satisfaction, $p = .0018$, and Behavior, $p = .0004$). Although the major limitation of this study using the TSCS2 is the lack of a matched reference population to compare with the burn survivors, the TSCS2 does help in gaining insight into the self esteem issues of this population.

Keywords

self concept; self-esteem; burns; adults; pediatric burn survivors

INTRODUCTION

Over the past 20 years the psychological aspects of burn injuries have become more dramatic as the ability of the surgical/medical community to successfully treat ever larger burns increases. Because survivors of large burns usually require both surgical and rehabilitation services at least until they reach 18 to 21 years of age, the necessary treatment of their burns frequently becomes a major focus in their lives, to be balanced with school, family, and friends. For young children and adolescents, the impact of the trauma of being burned and the social stigma surrounding their disfigurement has been the focus of many studies.^{1,2,3,4,5,6} Their body image (how they think about their physical appearance and abilities) is a significant component of their self concept (perception of all aspects of self) and resulting self-esteem (in what regard we hold ourselves). The latency age and teen age burn survivors appear to adjust core personal values by deemphasizing the importance of appearance and athleticism, while emphasizing personal attributes unrelated to appearance.^{5,7} This formulation results in a rather positive self concept and good self esteem at that time of life.

Less is known about the impact of large burns on young adult burn survivors. Transitioning into independence is a unique phase in an individuals' life. Reconstructive surgeries necessitated by growth are no longer necessary and contact with professional caregivers who supported them during active medical treatment diminishes. As they move from the teenage years to young adulthood they are given cause to reappraise their situation and themselves. This young adulthood period is when the familiar friends and surroundings are less central to daily life and new challenges are surmounted. Young adults are beginning to leave the homes of their parents to create new living arrangements for themselves and are forging romantic relationships.

The aim of this study was to describe the evolving self concept and esteem of young adult burn survivors who were 18 to 26 years of age and in the midst of this life transition for the purpose of anticipating common needs and to guide psychosocial intervention. The study goes on to explore the relationship between the self esteem measured by TSCS with the previously reported findings of YASR and increased prevalence of major psychiatric illness defined by the SCID^{8, 15}.

Based on results from younger groups of burn survivors, we hypothesize that as pediatric burn survivors transition into adulthood their self concept scores on the TSCS2 will be lower than in the general population.

METHODS

Initial contact was made either by mail, phone or when participants attended a medical follow-up appointment at the Shriners' Hospital for Children in Galveston, Texas. Written consent was obtained and the study was approved by The University of Texas Medical Branch Institutional Review Board. Participants were asked to return to the hospital for both interview and self-report psychological assessments. Travel expenses were paid, and they were given a \$100.00 honorarium. Several other aspects of this study have been published elsewhere.^{8,10,11,12,13,14,15,16,17,18} This study was supported by the National Institute of Disability and Rehabilitation Research grant # H133G990052, and was conducted as part of the General Clinical Research Center (GCRC) at the University of Texas Medical Branch at Galveston, which was funded by grant # M01RR00073 from the National Center for Research Resources, National Institute of Health, United States Public Health Service.

SUBJECTS

This investigation is part of a larger study involving 101 young adults, 18 to 28 years of age, who were burned a minimum of 2 years prior to study enrollment.⁸ Participants' must have suffered burns over a minimum of 30% of their body. Subjects were assessed between the spring of 2000 until the fall of 2002. Of the 101 participants, 82 chose to fill out the TSCS instrument. Participants' mean age was 21 ± 2.5 years and 45 were males (55%) and 37 were females (45%). The mean total burn surface area (TBSA) was $52.8\% \pm 19.4\%$. Sixty-eight of the participants had visible scarring (not normally covered by clothing), major limb amputation, or both. (Tables 1 and 2). Statistically, these 82 subjects were indistinguishable from the total group of 101. The burn location data was unavailable for 1 female.

INSTRUMENTS

The primary psychological measure, the Tennessee Self-Concept Scale, 2nd Edition (TSCS2),⁹ is a standardized 82-item self-report instrument designed to describe self-concept. This assessment is designed for use with those 13 to 90 years of age. Responses are rated on a 5-point Likert scale (1=Always false, 2=Mostly false, 3=Partly false and partly true, 4=Mostly true, 5=Always true). Table 3 describes the 16 self concept scales, 3 supplementary scores, 4 validity scores and 2 summary scores. "The estimated test-retest reliabilities range from .47 for the Inconsistent Responding score to .82 for the Total Self-Concept score on the Adult Form (median .76)." ⁹ The TSCS2 has been used in many studies and the range of Validity scores derived from some of those studies are available in the Manual. A complete list of items (table 4) has been included to clarify the dimensions of the assessment and a series of Crumbach Coefficient Alphas were calculated to assess the internal consistency of the TSCS2 with our group of burned individuals (table 5). The Crumbach Coefficient Alphas indicated a strong internal consistency.

The Young Adult Self-Report (YASR) is Part of the Achenbach Cross-Informant package designed to be compared to both a normative population and the responses of close family members on matched items.¹⁹ The assessment covers an age range of 18–30 years and is a 119 item behavioral self-report. The rating scale is as follows: 0= Not true, 1= Somewhat or sometimes true, 2=Very true or often true. The psychometric properties of the YASR scale are covered in detail in the manual provided with the scale.¹⁹ There is a high correlation between the YASR scale and similar information (Young Adult Behavior Checklist) gathered from relatives observing the individual ¹⁶ Previously reported results using these instruments with this populations showed that most pediatric burn survivors are making the transition into adulthood with minimal unexpected difficulties with females having more problems than the males in the group.⁸

The SCID I is the Structured Clinical Interview for DSM-IV Axis I Disorders,²⁰ administered by a qualified clinician. Charles Holzer Ph.D. trained and checked by reviewing randomly selected audio tapes of the interviews. Previously reported results concerning this instrument with this population revealed a high prevalence of major psychiatric illness.¹⁵

STATISTICAL ANALYSIS

Initially, a Student's t-test was utilized to compare the TSCS2 Scale Scores of the subjects and the reference group. Next, the impact of gender, injury characteristics and other demographics on esteem (TSCS2 Scale Scores) were also analyzed by Students' t-tests. Lastly, Pearson product moment correlations were utilized to examine the relationship between esteem (TSCS2 Scale Scores) and emotional and behavioral indicators of well-being (YASR scores). Esteem (TSCS2) was compared between two sub-groups of the

sample – those with and those without DSM-IV diagnostic indicators (as determined in the SCID I interview) for major mental illness, using Students' t-tests.

RESULTS

Comparisons with reference population

All of the TSCS2 scores, with the exception of the Conflict Scale, were lower than the reference population (see Figures 1 & 2). The difference was statistically significant for the Physical ($p < .001$), Moral, ($p = .036$), Personal ($p < .001$), and Academic/Work ($p = .008$) Scales. When the TSCS2 Supplementary Scores which combine the Identity, Satisfaction and Behavior aspects of each of the main Scales were calculated the Identity score was found to be significantly lower for the burn survivors than the reference group ($p = .002$); whereas Satisfaction and Behavior scores were quite similar to the comparison group.

On the TSCS2 Validity Scales, burn survivors were significantly less consistent in their responses ($p = .03$) than those in the reference group.⁸ Although not statistically significant, the burn survivors were more prone to Self-Criticism and Faking Good than the reference population.

Correlations with demographics

Relationships between TSCS2 self concept scores and the demographics of the group were explored with Pearson Correlation Coefficients. Demographic variables included burn size, visible scarring, major limb amputation, age at time of injury, and number of years since injury. No demographic variable was statistically significant. Females had slightly, but not significantly, lower TSCS2 self-concept scores overall. Males were significantly more likely to present themselves as doing better, reflected in a high score for the TSCS2 Validity Scale, Faking Good.

Table 6 examines the effect of burn location on the TSCS2 scales. There was no statistical difference between those with and without amputations, but only 9 had significant amputations. Likewise the 63 who had facial/neck burns did not score statistically different from the 18 without facial/neck burns in any the TSCS2 scales. Finally the presence of groin burns did not seem to influence any of the TSCS2 scale scores. The number of individuals in each group certainly mediates against finding significant differences.

Correlations with YASR

Placing the results of the TSCS2 in the context of the other measures was done to enrich the understanding of the TSCS2 data. These same subjects had also been given the Achenbach Young Adult Self-Report (YASR) and a Structured Clinical Interview for DSM-IV Disorders (SCID I).

Using Pearson Correlation Coefficients, the relationship between the Self-Concept Scales of the TSCS2 and the YASR scales were tested and reported in Table 7 TSCS2 Scores for the Moral, Personal, Family and Social Scales decreased significantly as scores on the Anxiety, Somatic, Attention, Intrusive, and Aggressive Scales on the YASR increased, meaning that as self concept scores diminished, emotional and behavioral problem scores increased. A decrease in the Personal, Family, and Social Scales on the TSCS2 was associated with higher scores on the Withdrawn Scale of the YASR. Similarly, those with lower scores on the Personal and Family Scales on the TSCS2 had significantly higher scores on the Thought Problems Scale. Neither the Physical nor the Academic/Work Scales correlated significantly with any of the Scales on the YASR.

T-tests with SCID identified diagnoses

To assess symptoms of psychiatric disorders, the participants were interviewed using the Structured Clinical Interview (SCID I) for DSM-IV disorders. For the following analysis, participants were grouped according to whether or not they met criteria for a potential DSM-IV Axis I diagnosis of anxiety, affective or substance abuse disorder. TSCS2 scores were compared using the Student's t-test (Table 8 & 9). Those diagnosed with current anxiety disorders had significantly lower scores for the Total Self Concept Scale, ($p=0.0017$), the Personal Scale ($p=.0004$), and each of the three Supplementary Scales (Identity, $p=.0018$; Satisfaction, $p=.0018$; and Behavior, $p=.0004$).

Those whose symptoms were consistent with a current affective disorder had statistically significant low scores on Total Self Concept ($p=.0013$) and the Personal Scale ($p=.0014$). All of the Supplementary Scale scores were significantly lower for the group with an affective disorder (Identity, $p=.0034$, Satisfaction, $p=.007$, and Behavior, $p=.0028$). In most instances, young adult survivors with affective disorders had a poorer overall self-esteem, which as noted above has been documented for other populations. Young adults with a current substance abuse disorder, showed no significant differences from those with no current SCID I disorder for any of the TSCS2 Scales.

DISCUSSION

Self-esteem is essential to a positive adulthood. Very few studies of self-esteem for any age group of burn survivors have been published and very few focused on the young adults who were burned as children. The current study identified a significant decrease in self esteem in a young adult population who are survivors of a major pediatric burn injury. Tucker reported in 1987 there were many psychosocial problems in adult burn survivors.²¹ These were noted at only at discharge but also at a point about 1 year post discharge. There are few studies beyond that. In 1989, Orr and colleagues did an extensive study of body image, self-esteem, and depression using a variety of instruments for each of these variables as well as perceived social support by family and friends for a group of 121 individuals ranging in age from 14 to 27 years who were an average of 5 years post burn.²² Greater self esteem, positive body image, and less depression were highly correlated with social support in that sample of burn survivors ($p<0.01$). Social support from their family members and friends was an ameliorating factor. Social support positively correlated with both body image and self-esteem. Teenage and adult female survivors of major burn injury had scored lower on body image than similar age males with similar burn sizes.²² Holland, van Loey and Faber reported in adults at 18 months post burn a significant correlation between self esteem and depression.²³ Bergamasco et al (2002) who studied 35 individuals ranging in age from 16 to 54, suggested that females place greater value on physical attractiveness for social acceptance.²⁴ With adults, the more positive the body image the higher the self-esteem regardless of gender. Though gender appeared to have had minimal impact on self-esteem in our sample, the males "faked good," meaning that they were more likely to present as doing better than scale scores indicated, and the females were more sexually active.¹⁷

Similar to teenage and adult samples, the Total Self-Concept score for our young adult sample was only slightly lower than the normative group. The significantly lower score on the Physical scale was consistent with the visible and functional differences common with major burn injuries. In addition, TSCS2 Personal and Identity scores were significantly lower than the reference population, suggesting diminished self-esteem in respect to physical health and attractiveness for the young adult survivors. (see Table 7). A matter that tends to confound the effects of the physical stigma involved with large visible scars was expressed by several of the participants. Some of them distinguished between their long time

acceptance of their visible and functional problems caused by burn injury and their inability to accept others' reactions to their scars

LeDoux and colleagues⁷, using the Piers Harris Self-Concept Scale and the Harter Self-Perception Scale, found higher scores in all domains, when compared to normative population scores. Pope et al reported in 2006 using Body Esteem Scale and the Satisfaction with Appearance Scale with the Youth Quality of Life Questionnaire to study 36 teenagers (13–19) who were burned as children and found very similar data.²⁵ However, the young adults in our sample scored lower than the TSCS2 normative population. This apparent contradiction may reflect the environment of the adolescent which is very protective, compared to that of the young adult. Most of the adolescents in LeDoux's and Pope's studies appeared to have compensated for changes in appearance as not important to their esteem.

The most exciting new approach to the problem comes from Lawrence and Fauerbach. Lawrence et al (2006) had recently developed and validated a new instrument for measuring perceived stigmatizing behavior (PSQ)²⁶ The instrument was validated on a 'self selected, volunteer' population of burn survivors who are on average 18 years post burn. Subsequently the measure has been shown to be appropriate for children and their parents²⁷ High stigmatization and low social comfort as measured by the Social Comfort Scale are thought to be linked to low self esteem. Based on that premiss, the individuals with facial burns should have had lower self esteem on the TSCS2 scales than those without facial burns.. The total scale score and the physical scale score on the TSCS2 supported that notion but was not statistically significant (see Table 6). Although the PSQ is now validated, it has not been applied in a systematic study of long term burn survivor populations like that reported in this paper. Since other data, as noted above, seem to indicate that adolescents are clearly different from young adults, it will be important in the future studies to keep these groups separate or better yet longitudinally study burn survivors as they pass through adolescence into adulthood. Such very long term outcomes are now part of the new priorities for the NIDRR Model Burn System program.

Meyer and colleagues¹⁵ reported that 59.4 % of this group of burn survivors had one or more lifetime Axis I diagnoses, with anxiety disorders being the most frequent. The TSCS2 Physical Scale score was not associated with a current SCID I diagnosis.

The magnitude of the interaction of self-concept with behavior becomes apparent when reviewing the correlations between TSCS2 self-concept scores and Young Adult Self-Report Scales. Low Moral, Personal, Family and Social self-esteem scores were significantly correlated with the YASR scales, except the Physical scale. As self-esteem decreased, problems endorsed on the YASR increased.

Deflated esteem, underachievement, behavior and mood problems characterized this sample of young adult survivors of major, pediatric burn injury. One possible explanation for these findings may be the sense of identity disruption experienced by these young adult burn injury survivors. Recent research studies have found an important psychological impact on young adults based on maintaining a sense of identity continuity with a positive view of the past²⁸. Those studies indicate that nostalgia for the past with a sense of lower identity continuity had negative consequences in young adults for sense of well-being, perceived ability to deal with challenges and decreased interest in new opportunities. This study did not directly assess the sense of identity continuity or nostalgia in the participants, but it is a potential avenue for further study in understanding the mechanism behind the lower self-concept experienced by young adult burn injury survivors.

Other insight into this study's findings can be gained in comparing to research reports on young adult cancer survivors. While the medical significance and treatment needs are quite different, the impact on health and self-concept is comparable. Research reports on identity and psychological outcome with young adult cancer survivors indicate that well-being is adversely related to the centrality of cancer in self-concept.²⁹⁴ This would indicate another possible explanation for the study's findings depending on the degree that the burn injury has become central to the participants' identity.

LIMITATIONS

This study is limited significantly by the lack of an appropriate control group. The age range of the reference population was 13 to 90.⁹ When the publisher of the TSCS2 was contacted, the company insisted that there was no age or gender effect on the response to the instrument. They declined to provide the breakdown by age or sex of the reference population so specific comparisons on using those parameters could not be done. Although the instrument provides what appears to be a valid, internally consistent picture of the subjects who survived major burn injury, the lack of age and gender match comparisons is a significant limitation of the paper. Previously studied teen age burn survivors⁷ less than 18 years of age had higher self esteem than reported in this study of young adults. So since the reference population used in the current study includes individuals between 13 and 18 as well as those between 30 and 90 years of age, the results of the study may be biased. Those individuals outside of the age range of the burn survivors may have biased the results. On a positive note one could utilize the TSCS2 multiple times in a teen age population as they aged from 13 into adulthood. Such a study might clarify if the self esteem is really higher when the subjects are adolescents than after they become young adults.

Another limitation is that the findings concerning the population used in this study may not generalize to other burn survivor populations. Shriners Hospital for Children cares for predominately lower socioeconomic patient group, a group that often has a number of additional stressors which might influence self esteem.

The TSCS2 completion was one section of a large multiday study that involves many standardized questionnaires^{8,10-18}. About 20 percent of the participants of the multiday study claimed this questionnaire was just too much to do. Although those 19 individuals do not have different demographics from the 82 who did fill it out, certainly their refusal to participate does influence the reliability of the results.

CONCLUSION

The TSCS2 has strong internal consistency when used in a young adult population of burn survivors. Lower self-concept, underachievement, behavior and mood problems characterized this sample of young adult survivors of pediatric burn injury. The significantly lower self-concept scores regarding moral, personal, and academic/work aspects of self-concept are indicative of low self-esteem and feeling unsuccessful. Survivors seemed to feel worthwhile within the contexts of family and friends, whereas outside those arenas, they expressed lowered self-esteem through anxiety, withdrawal, acting-out, somatic complaints, intrusive thoughts, and poor concentration. This understanding of the specific developmental challenges faced by young adult survivors provides potential focus for efforts to assist in their continued growth and adjustment.

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References

- Bernstein N, O'Connell K, Chedekel D. Patterns of burn adjustment. *J Burn Care Rehabil.* 1992; 13:4–12. [PubMed: 1572855]
- Meyer WJ, LeDoux J, Blakeney P, Herndon D. Diminished adaptive behaviors among pediatric burn survivors. *J Burn Care Rehabil.* 1995; 9:511–18. [PubMed: 8537423]
- Blakeney P, Meyer W III, Robert R, Desai M, Wolf S, Herndon D. Long-term psychological adaption of children who survive burns involving 80% or greater total body surface area. *J Trauma.* 1998; 44:625–34. [PubMed: 9555833]
- Blakeney P, Robert R, Meyer WJ III. Psychological and social recovery of children who have been disfigured by physical trauma: elements of treatment indicated by empirical data. *Int Rev Psychiat.* 1998; 10:196–200.
- Robert R, Meyer WJ III, Bishop S, Rosenberg L, Murphy L, Blakeney PE. Disfiguring burn scars and adolescent self-esteem. *Burns.* 1999; 25:581–85. [PubMed: 10563682]
- Thomas CR, Blakeney P, Holzer CE III, Meyer W III. Psychiatric disorders in long term adjustment of adolescent burn survivors. *J Burn Care Res.* 2009; 30:458–63. [PubMed: 19349893]
- LeDoux J, Meyer W, Blakeney P, Herndon D. Positive self-regard as a coping mechanism for pediatric burn survivors. *J Burn Care Rehabil.* 1996; 17:472–76. [PubMed: 8889874]
- Meyer WJ III, Blakeney P, Russell W, Thomas C, Robert R, Berniger F, Holzer C III. Psychological problems reported by young adults who were burned as children. *J Burn Care Rehabil.* 2004; 25:98–106. [PubMed: 14726746]
- Fitts, WH.; Warren, WL. The Tennessee self-concept (TSCS): 2). 2. Western Psychological Services; 1996.
- Rosenberg M, Blakeney P, Robert R, Thomas C, Holzer C III, Meyer WJ III. Quality of life of young adults who survived pediatric burns. *J Burn Care Res.* 2006; 27:773–78. [PubMed: 17091070]
- Rosenberg L, Robert R, Thomas C, Holzer CE III, Blakeney P, Meyer WJ III. Assessing potential suicide risk of young adults burned as children. *J Burn Care Res.* 2006; 27:779–85. [PubMed: 17091071]
- Baker CP, Russell WJ, Meyer W III, Blakeney P. Physical and Psychological rehabilitation outcomes for young adults burned as children. *Archives Physical Med Rehabil.* 2007; 88(Suppl 2):s57–s64.
- Baker C, Rosenberg M, Mossberg P, Holzer C, Blakeney P, Robert R, Thomas C, Meyer W. Relationships between the quality of life questionnaire (QLQ) and the SF-36 among young adults burned as children. *Burns.* 2008; 34:1163–68. [PubMed: 18672333]
- Rosenberg L, Blakeney P, Meyer WJ, Holzer C, Thomas CR. The importance of family environment for young adults burned during childhood. *Burns.* 2007; 33:541–46. [PubMed: 17512667]
- Meyer WJ, Blakeney P, Thomas CR, Russell W, Robert RS, Holzer CE. Prevalence of major psychiatric illness in young adults who were burned as children. *Psychosomatic Medicine.* 2007; 69:377–82. [PubMed: 17510292]
- Russell W, Holzer CE III, Robert RS, Thomas CR, Blakeney P, Meyer WJ III. Differences in behavioral perceptions between young adult burn survivors and cross-inrmants. *J Burn Care Res.* 2008; 29:750–55. [PubMed: 18695613]

17. Meyer WJ, Russell W, Thomas CR, Robert RS, Blakeney B. Sexual attitudes behavior of young adults who were burned as children. *Burns*. 2010; 37:215–21. [PubMed: 21050666]
18. Thomas C, Russell W, Robert R, Holzer C, Blakeney P, Meyer W. Personality disorders and traits in young adult survivors of pediatric burn injury. *Journal of Personality Disorders*. 2012; 26:255–66. [PubMed: 22486454]
19. Achenbach, TM. Manual for the Young Adult Self-Report and Young Adult Behavior Checklist. Vol. 1997. Burlington, VT: University of Vermont Department of Psychiatry; 1997.
20. First, Michael B.; Spitzer, Robert L.; Gibbon, Miriam; Williams, Janet BW. Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition With Psychotic Screen (SCID-I/P W/ PSY SCREEN). New York: Biometrics Research, New York State Psychiatric Institute; Nov. 2002
21. Tucker P. Psychosocial problems amongst adult burn victims. *Burns*. 1987; 13:7–14.
22. Orr DA, Reznikoff, Smith GM. Body image, self-esteem, and depression on burn-injured adolescents and young adults. *J Burn Care Rehabil*. 1989; 10:454–461. [PubMed: 2793926]
23. Holland HW, van Loey NE, Faber AW. Self esteem in adults with burns. *Burns*. 2009; 35S:S19.
24. Bergamasco EC, Rossi LA, Amancio ADaCG, Carvalho EC. De Body image of patients with burn sequelae: evaluation through the critical incident technique. *Burns*. 2002; 28:47–52. [PubMed: 11834329]
25. Pope SJ, Soloms WR, Done DJ, Cohn N, Possamai AM. Body image, mood and quality of life in young burn survivors. *Burns*. 2007; 33:747–755. [PubMed: 17707785]
26. Lawrence JW, Fauerbach JA, Heinberg L, Docto M, Thomb BD. The reliability and validity of the Perceived Stigmatization Questionnaire (PSQ) and the Social Comfort Questionnaire (SCQ) among an adult burn survivor sample : Psychological Assessment. 226:18, 106–111.
27. Lawrence JW, Rosenberg L, Mason S, Fauerbach JA. Comparing parent and child perceptions of stigmatizing behavior experience by children with burn scars. *Body Image*. 2011; 8:70–73. [PubMed: 21074503]
28. Iyer A, Jetten J. What's left behind: Identity continuity moderates the effect of nostalgia on well-being and life choices. *J Pers Soc Psychol*. 2011; 101:94–108. [PubMed: 21355658]
29. Park CL, Bharadwaj AK, Blank TO. Illness centrality disclosure and well-being in younger and middle-aged adult cancer survivors. *Br J Health Psychol*. 2011; 16:880–889. [PubMed: 21988070]

Figure 1.
Tennessee Self-concept: Summary scores

Tennessee Self-Concept Self-Concept Scales

Figure 2.
Tennessee Self-concept: Self-concept scales
*Significant to $P < .01$

Table 1

Age, education, burn size, gender and ethnicity

	Normative Sample N= 1,396	Study Sample N= 82
	Mean	Mean
Age	26.4+17.3	21.0+2.5
Education	14.0+3.1	12.2+1.7
TBSA	N/A	52.8%+19.4%
Gender		
Male	40.1 %	55 %
Female	53 %	45 %
Ethnicity		
White	66.5%	66.7%
Black	13.9%	15.5%
Hispanic	8.2%	16.7%
Other	11.4%	1.1%

Table 2

Burn Location and Major Amputation Information

	N= 81
Burn on face and/or neck	63
Burn on groin area	11
Foot amputations	4
Leg amputations	2
Hand amputations	6

Table 3**SCALES OF THE TENNESSEE SELF CONCEPT.**

Summary Scores

Total Self-Concept (TOT): Overall self-concept and related level of self-esteem.

Conflict (CON): “Who I am” vs “Who I am not”.

Self-Concept Scales

Physical (PHY): Perception of appearance, health, physical skills, and sexuality.

Moral (MOR): Moral and ethical perception.

Personal (PER): Sense of worth and adequacy.

Family (FAM): Adequacy, worth and value as a family member.

Social (SOC): Adequacy and worth in a social context.

Academic/Work (ACA): Perception of how respondents see themselves and others see them in a school or work setting.

Supplementary Scores

Identity (IDN): “Who I am”.

Satisfaction (SAT): “Satisfaction with myself”.

Behavior (BHV): “How I behave”.

Validity Scores

Inconsistent Responding (INC): Discrepancy in paired responses about the same subject matter.

Self-Criticism (SC): Mildly derogatory statements about oneself.

Faking Good (FG): Attempt to make a favorable impression.

Response Distribution (RD): Indication of the confidence with which an individual responds.

Table 4

Item Analysis: Mean raw entries for each scale separated into the realms of the supplementary scores.

PHYSICAL	
Identity	
1. I am an attractive person.	3.49
2. I have a healthy body.	3.77
3. I consider myself a sloppy person.	1.83
4. I am full of aches and pains.	2.26
5. I am a sick person.	1.52
Satisfaction	
1. I don't feel as well as I should.	2.33
2. I am neither too fat of too thin.	3.65
3. I should have more sex appeal.	2.69
4. I look fine just the way I am.	3.54
Behavior	
1. I take good care of myself physically.	3.63
2. I try to be careful about my appearance.	3.93
3. I feel good most of the time.	3.81
4. I am not good at games and sports.	2.43
5. I have trouble sleeping.	2.40
MORAL	
Identity	
1. I am an honest person.	4.20
2. I am a decent sort of person.	4.27
3. I am morally weak.	1.66
4. I am a bad person.	1.48
Satisfaction	
1. I wish I could be more trustworthy.	2.70
2. I am satisfied with my moral behavior.	4.20
3. I shouldn't tell so many lies.	2.07
4. I am satisfied with my relationship with God.	3.67
Behavior	
1. I have trouble doing the things that are right.	1.85
2. I am true to my religion in my everyday actions.	3.20
3. I sometimes do very bad things.	2.17
4. I do what is right most of the time.	4.06
PERSONAL	
Identity	
1. I am a cheerful person.	4.02
2. I am a nobody.	1.61
3. I am a hateful person.	1.51
4. I am losing my mind.	1.63

5. I have a lot of self-control. 2.13

Satisfaction

1. I am just as nice as I should be. 3.96

2. I am not the person I would like to be. 2.56

3. I despise myself. 1.69

4. I am satisfied to be just what I am. 3.67

Behavior

1. I try to run away from my problems. 2.21

2. I can always take care of myself in any situation. 4.02

3. I solve my problems quite easily. 3.45

FAMILY

Identity

1. I am a member of a happy family. 4.08

2. My family would always help me with any 4.02

3. I am not loved by my family. 1.31

4. I feel that my family doesn't trust me. 1.63

Satisfaction

1. I am satisfied with my family relationships. 4.02

2. I understand my family as well as I should. 4.05

3. I treat my parents as well as I should. 4.01

4. I am too sensitive about the things people in my family say. 2.54

5. I should love my family more. 2.77

Behavior

1. I do not act the way my family thinks I should. 2.52

2. I take real interest in my family. 4.19

3. I quarrel with my family. 2.63

SOCIAL

Identity

1. I am a friendly person. 4.49

2. I am mad at the whole world. 1.63

3. I am hard to be friendly with. 1.49

Satisfaction

1. I am as sociable as I want to be. 3.88

2. I am satisfied with the way I treat other people. 4.10

3. I ought to get along better with people. 2.49

4. I am no good at all in social situations. 2.18

Behavior

1. I do not feel at ease with other people. 2.39

2. I get along well with other people. 4.19

I try to understand the other persons point of view. 4.12

3. I see something good in everyone I meet. 3.60

4. I find it hard to talk to strangers. 2.61

ACADEMIC/WORK

1. Math is hard for me.	2.77
2. I am not as smart as the people around me.	2.58
3. It is easy for me to learn new things.	4.14
4. I do well at math.	3.24
5. Other people think I am smart.	3.92
6. I am not good at the work I do.	1.68
7. I'll never be as smart as other people.	1.96
8. I like to work with numbers.	2.86
9. I can't read very well.	1.94
10. I do as well as I want to at almost any job.	4.01
11. I do not know how to work well.	1.61
12. It's easy for me to understand what I read.	2.35

1=always false, 2=mostly false, 3=partly false, partly true, 4=mostly true, 5=always true

Table 5

Cronbach's Coefficient Alpha

Scales		Supplementary Scores	
Academic/Work	0.70	Identity	0.87
Behavior	0.86	Satisfaction	0.86
Family	0.83	Social	0.78
Moral	0.78	Total	0.93
Personal	0.79		
Physical	0.86		

Table 6

Effect of amputations, facial/neck burns and groin burns on the TSCS 2 scales

TSCS 2 Scale	No Amputations N= 72 [*]		Amputations N=9 [*]		No Facial/ Neck Burns N= 18 ^{***}		Facial/Neck Burns N=63 ^{***}		No Groin Burns N= 70 ^{***}		Groin Burns N=11 ^{***}	
	Mean ± Std		Mean ± Std		Mean ± Std		Mean ± Std		Mean ± Std		Mean ± Std	
Total	48.7 ± 10.9		42.9 ± 5.6		52.2 ± 10.4		47.0 ± 10.5		48.3 ± 11.2		47.4 ± 6.1	
Conflict	51.0±11.0		48.6 ±10.2		48.6 ± 10.6		51.3 ± 10.9		50.5 ± 11.1		51.9 ± 9.3	
Physical	44.3±16.5		45.4±19.6		47.1 ± 16.0		43.7 ± 17.0		43.0 ± 16.3		53.9 ±17.3	
Moral	47.1 ± 9.8		43.7 ±5.6		47.5 ± 8.4		46.5 ± 9.8		46.3 ± 9.6		49.5 ± 8.8	
Personal	46.2±10.9		40.9 ±6.7		50.2 ± 10.7		44.3 ± 10.3		45.5 ± 11.1		46.5 ± 6.8	
Family	49.4±10.7		44.9 ±8.0		53.2 ± 7.4		47.7 ± 10.9		48.9 ± 10.7		49.1 ± 8.9	
Social	50.1±10.2		43.0± 5.3		52.8 ± 11.2		48.3 ± 9.6		49.2 ± 10.6		50.1 ± 6.2	
Academic/Work	46.5±10.4		46.4 ±6.3		48.8 ± 6.5		45.8 ± 10.7		47.3 ± 10.3		41.5 ± 5.9	

* p= Not Significantly Different using p 0.01

**

p= Not Significantly Different using p 0.01

p= Not Significantly Different using p 0.01

Table 7
Pearson Correlations Between TSCS2 Self-Concept Scores and YASR Problem Scores

N= 84						
Scales	Physical	Moral	Personal	Family	Social	Work School
Anxiety	-0.04	** -0.43	** -0.52	** -0.58	** -0.55	-0.31
Withdrawn	-0.08	-0.35	** -0.51	** -0.54	** -0.51	-0.28
Somatic	-0.12	** -0.36	** -0.56	** -0.37	** -0.48	-0.20
Thought	0.16	-0.30	** -0.46	** -0.41	-0.32	-0.29
Attention	-0.06	** -0.37	** -0.53	** -0.39	** -0.35	-0.27
Intrusive	-0.10	** -0.43	** -0.58	** -0.54	** -0.53	-0.31
Aggressive	-0.15	** -0.36	** -0.53	** -0.47	** -0.38	-0.25
Delinquent	0.07	-0.18	-0.024	-0.35	-0.19	-0.16

p<.01

Table 8

T tests Comparing TSCS2 Mean T Supplementary Scores; No Current SCID Dx vs Current SCID Dx

SCID Dx	No Current SCID Dx N= 28	Current Anxiety N= 22	Current Affective N=11	Current Substance N=8
	mean	std	mean	std
Identity	51.6	10.7	41.9 **	9.0 **
Satisfaction	51.9	8.9	44.0 **	7.7 **
Behavior	52.6	11.8	40.6 *	7.1 **

*
p<.001

**
p<.01

Table 9

T tests Comparing TSCS2 Mean T Scales Scores; No Current SCID Dx vs Current SCID Dx

SCID Dx	No Current Dx N=37		Current Anxiety N=22		Current Affective N=11		Current Substance N=8	
TSCS 2 Scale	mean	std	mean	std	mean	std	mean	std
Total	51.9	9.9	42.8 **	10.5 **	40.7 **	7.7 **	51.4	7.0
Conflict	49.8	10.8	55.8	10.3	55.5	11.7	58.8	8.3
Physical	47.0	16.1	39.5	17.5	42.1	19.7	47.0	19.7
Moral	49.2	9.3	43.0	10.4	41.5	6.4	47.3	5.6
Personal	53.1	11.2	41.3 *	12.5 *	40.5 **	8.8 **	50.0	10.6
Family	51.7	9.5	45.3	10.7	44.2	7.2	53.9	7.8
Social	51.1	8.1	45.6	12.1	46.4	8.4	50.4	9.5
Academic/Work	48.9	11.3	46.1	12.5	42.2	11.3	53.4	8.1

*
p<.001

**
p<.01