This paper relates one of a series of studies intended to develop and refine a paper- and pencil measure of perception of pain. The ultimate aim of these studies is to develop a battery of measures which can be administed in absentia to persons not in pain. This battery is intended to predict the subject's health orientation and care.

This study is a replicative study intended to assess the stability of factors found in a smaller (N=68) sample of the same population. A sample of 163 undergraduates enrolled in psvchology courses for non-majors at state universities voluntarily completed the inventory. In the original study, twelve dimensions were isolated. With the larger sample size, 10 dimensions appeared to underlie the data. The Pain Perception Inventory (PPI) is the instrument used in both studies. Three options for response were allowed for all thirty items that made up the inventory. Subjects indicated their agreement, disagreement, or lack of opinion to items such as "I have experienced a great deal of pain".

Naming the factors (or scales) that result from a factor analytic study is a first step to determine stability. On a broad level, the ability to retain scale names and constructs is the sin qua non of factorial stability. However, the assignment of names is always tentative and, at least in the initial instrument stages, largely intuitive.

The process of assigning meaningful names to the factor scales, used for both the original study (factor analytic study I) and the replicative study (factor analytic study II), is given here in detail for whatever insight into this intuitive procedure such details may offer.

 I. Factor analytic study I - Twelve scales.

 a. Using SPSS, a principle components
 factor analysis with oblique rotation was undertaken, resulting in twelve factors.

b. The factor pattern matrix was analyzed to determine which items presented a factor loading of ± 0.500 . These items were intended to define each scale. (Four items did not have a high enough factor loading to be assigned according to the criterion. These were assigned to that factor upon which the item had the largest weight, factor loadings = 0.37; 0.40; 0.42; 0.43).

c. A seperate table for each factor was compiled. Each set of items and their factor loadings, together with an explanation of direction of subjects response to them, made up the tables.

d. Each table was content analyzed in the attempt to assign a name to the scale. More often than not content analysis amounted to a sophisticated term to indicate that one key word within an item was selected as reasonably representitive of the theme of the items taken togeth er. Occasionally, no single theme appeared. In this case, either the highest loading item or the most prevelant theme was selected.

e. Scale names and sample items and their loadings were then organized. Descriptions of high scores were also prepared. II. Factor analytic study II - Ten scales.

a. Steps a through c were repeated with the data collected for the second study. These resulted in ten factors.

b. In an attempt to preserve, to the extent possible, the names of the scales, specific items were traced from the original study to the replication. Five scale names were retainable. The majority of weight, judged by the magnatude of the comparitive factor loadings, on these scales resulted from the same items. For example, scale 5 from the original study was called "Delay". It was named from the items, "I would seek medical treatment if pain was bothering me for more than a week." This item had a factor loading of -0.853 in study I; it had the same loading in study II, although secondary items varied between the two studies. In order to ditinguish between this scale and another scale from study II also emphasizing delay, the name of scale 5 was qualified to add "short-term". The other scales retaining the same name and overall theme were: Tolerance, Hindrance, Empathy, and Cognizance.

c. The remaining 4 factors were named as previously. Names of the resulting scales and description of the meaning of scores of all ten scales are given below. (High scores are described except for bi-polar factors which are presented in terms of both sides of the factor.)

1. Medical utilization (includes original Inconsistency scale) - One should prompty seek medical care for pain although cost may be a facto considered. There is acknowledgement that some social pain-causing conditions exist. Both experience and definitional are included.

2. Endurance - a high score indicates that pain has some ultimate meaning. If still necessary after attempting to discover the meaning of pain, one should seek medical help. A low score indicates one should endure pain.

3. Long-term delay (includes original Definition scale) - A low score indicated recognition of the existence of pain but no seeking medical advice unless forced. A high score does not associate pain with misery. Presumably, therefore, the high scorer would not have to be force to seek medical care.

4. Tolerance - Once one is in pain there is no escape, no toleration. Therefore, one attempts to avoid pain.

5. Short-term delay - One should give pain a chance to go away by itself; then, if necessary, seek medical treatment.

6. Stoicism - One does not complain when one is in pain.

7. Hindrance - (includes the original Helplessness scale) - A low score indicates that pain is viewed as restrictive. High scorers believe that medical help is not necessarily sought for phisical pain nor is such pain found enjoyable. People are not the cause of pain. High scorers on this scale may present a sport-connected ideology whereby pain is viewed as a warning (which may not be heeded) to stay outof the game or practice. Trainer care (for male athletes at least) rather than medical care would be sought and the cause of pain would be physical rather than social. (This scale will be expanded and hypotheses related to sports activity will be tested in a future study.)

8. Empathy - Pain is the physical sensation which presents absence on comfort. One can learn what pain is like by observation of others in pain.

9. Intellectualization - Low scores indicate pain does not disrupt consentration. This may be related to pain tolerance itself, that is, a low score on the intellectualization factor may be related to high pain tolerance. "Your attitude toward pain can control the sensation to a large extent" is the meaning of high scores.

10. Cognizance - Although pain is an emotional sensation, one tries to ignore it's presence.

The naming procedure is essentially a straightforward process. In attempting to determine stability, the process may be compicated by the imposed condition to retain as many constructs and associated names as possible. There was an obvious lack of stability of factors with increasing sample size when stability is viewed through the naming precedure.

Another possibility in assessing stability is to look at what percentage of variance is accounted for by stable factors as compared to nonstable factors. The stable factors from study I accounted for 33.0% out of a total of 73.2% for the twelve factors extracted. The stable factors for study II accounted for 22.5% out of 64.3%. Thirty-five percent of the variance accounted for by the ten factors extracted is attributable to stable factors, whereas the stab le factors represent 45.1% of the original 12 factors accounted for in study I. The factors extracted first in these factor analysis procedures were less stable. Since they accounted for a greater percent of the variance, to the extent they were not replicated, the stable factors ration reported above will decrease.

Obviously factor stability is a function of sample size. How markedly will factors change if the study is repeated with a new population? With the number of factor analytic studies being done in educational psychology today, to what extent can we count on the conclusions drawn?

Would these factors change again if once more data was collected on the same population? How stable would these factors be across populations? How many more items and subjects are needed for the joint conditions of stable constructs and reliable scales? These questions are still unanswered, leaving only a partial approach to the assessment of stability. Further research is necessary.