

# *ProDES*

The Program  
Development and  
Evaluation System

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**A Re-evaluation of the  
Staff-assessed  
and  
Self-report Scales**

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# **ProDES -- The Program Development and Evaluation System**

## **A Re-evaluation of the Scales**

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# **ProDES -- The Program Development and Evaluation System**

## **A Re-evaluation of the Scales**

### **1. Why Test the Scales?**

One of the goals of *ProDES* has been to identify non-traditional measures of the effects of program intervention. In the developmental stage of the project we discovered that factors such as risk, need, self-esteem, values and school and family bonding were all thought to be key aspects of delinquent programs populations (brief descriptions of each of the scales are contained in Appendix A). To test the working assumptions of the programs, and to be able to evaluate their success in these areas we needed to be able to measure change on these dimensions. Established scales were identified, field tested and implemented. During the past three years we have been able to describe the juvenile population in these terms – what is the risk and need profile of different program intakes, what are the characteristics of juveniles with low self-esteem and/or anti-social values. More recently we have developed a classification system based entirely on these scale scores. For the analysis to be meaningful, for the policy discussion to be appropriate, it is important that the scales being employed actually measure what we think they are measuring. When we describe a juvenile as having high self-esteem and very anti-social values we want to know that this is an accurate description. To do this we need to know that the scales are working – that they are valid, reliable and stable over time. In this report we consider each of these issues in turn.

### **2. How Do We Test the Scales?**

There are several ways of assessing the utility of a scale. The first is to assess the *validity* of the scale – to what extent is the scale measuring what we believe it to be measuring. A second approach is to consider *reliability*, the extent to which all the items in a particular scale consistently measure in the same way. Lastly, we want to consider *stability* – the extent to which the categories on a particular scale remain unchanged over time. We will address each of these issues below. The final section of the report will examine some of the inter-relationships among the scales and compare results for *ProDES* with those reported for juveniles in other settings.

#### *Validity*

If we were considering the development of a new scale, or utilizing an existing scale for the first time we would consider a number of different types of validity. However, our goal here is to re-examine scales that have been in use for over three years, and have already been tested and scrutinized prior to implementation. We want to know whether or not all the items that comprise a scale still work in the way intended, that they combine to form the appropriate scale and do not overlap with items from other scales.

To assess this aspect of validity we have performed a statistical technique known as factor analysis. The logic behind the technique is fairly simple. Most scales are based on the assumption that asking a number of related questions and deriving an overall response is better

than asking a single question. So, if one takes all the survey questions associated with a number of scales one should be able to group together the questions or items in terms of the underlying scale or factor they are supposed to measure. For example, the self-esteem questions should look and be different to the values orientation questions. For a scale to work well these groupings should be clear.

Factor analysis performs this grouping function. It takes all the individual questions or items and groups together those that are statistically associated. The resulting factors are generally thought to represent the underlying conceptual dimensions measured by all the items. When these statistically derived groupings of items match those of the actual scales then we have some confidence that the scales themselves represent distinct conceptual measures.

### *Reliability*

The question of reliability is a little different since it focuses less on the meaning of a scale and more on the consistency of the measures provided by the items that comprise a scale. For example, if we had five weighing scales and four of them weighed a person as 140 pounds but the fifth weighed them as 240 pounds, then we would conclude that only four of the five scales were reliable (all providing the same measure). Further, we would identify the unreliable fifth scale by the fact that its result did not correlate highly with the average weight from the other four scales. Similarly, if four items tell us a youth has low school attachment, but the fifth item in the scale shows the youth to have high school attachment, then the fifth item is not reliable. Ideally, all items in a reliable scale should score in the same general direction, and the value for any single item should be highly correlated with the average score based on the remaining items in the scale.

### *Stability*

The scales used in *ProDES* provide a unique score for any individual juvenile. Someone could score 8 on the self-esteem scale, 26 on the values orientation scale and 3.5 on the family bonding caring and trust scale. Valuable though these individual scores may be, we need to be able to generalize the results in terms of some reference or comparison group. We ask, for example, whether an 8 on self-esteem reflects a score that is low average or high. To group scores into broader categories we must identify categories within each scale, points where we stop referring to a juvenile as having low self-esteem and begin to describe them as medium or high self-esteem. The category boundaries or cut-off points have been identified statistically<sup>1</sup> based upon the distribution of results found during the first six months of *ProDES* operation. The question we ask now is whether or not these cut-off points have shifted significantly. If the cut-off points are unstable it is possible that a juvenile who is classified as borderline low self-esteem using the established boundaries will be re-classified as borderline medium self-esteem if newer cut-off points are applied. Clearly, it is important for an information system such as *ProDES* that the cut-off points remain stable so that definitions of juveniles on the various scales do not change over time.

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<sup>1</sup> In general we have created four categories within each scale using the mean and +/- one standard deviation as the cutoff points.

## 3. The Results

### 1. VALIDITY

To test the validity of the scales we conducted a factor analysis of all the items comprising the fourteen self report scales – self-esteem, values, school (7 scales) and family (5 scales) bonding. The detailed results are included at Appendix B. Here we briefly assess the performance of each scale.

#### **Self-esteem**

The results of the factor analysis show that all ten self-esteem items are strongly correlated (or ‘load heavily’ to use factor analytic descriptions) on the first factor. This confirms that the self-esteem scale can be statistically re-created from all the individual items comprising all the self-report scales.

#### **Values**

The factor analysis suggests that the values orientation items do not comprise one distinct scale. Instead, we find that the values items are grouped on several factors<sup>2</sup>, suggesting that the scale really comprises a number of sub-scales. The fact that each of these values factors includes only values orientation items (rather than include also some items from the other scales) suggests that the values scale is internally valid.

#### **School Bonding**

The results identify single factors representing the measures of attachment to teachers (factor # 11), and consequences of arrest (factor # 13). In addition, the data points to factors that combine several scales. One of these (factor # 3) combines school attachment, perceived opportunities and school commitment items. A second factor (# 9) combines school and community involvement. Additional analysis focusing solely on the school bonding items confirms these results, showing that school and community involvement in particular are strongly inter-related and form one rather than two distinct scales. The results of the additional analysis identify a single perceived opportunities scale that is distinct from school attachment and school commitment. In addition it shows that the items comprising school commitment are divided across three different factors, with two items loading on one distinct factor, one with perceived opportunities and the remaining five all with school attachment.

These results confirm that four of the school bonding scales can be clearly delineated from the individual self-report items. The school commitment scale does not remain intact, and seems to be divided across three individual factors. Finally, the items comprising the two scales, school and community involvement, appear to be indistinguishable, suggesting that there is one involvement scale rather than two.

#### **Family Bonding**

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<sup>2</sup> All factor numbers refer to the factors reported on the rotated component matrix of the factor analytic results in Appendix B.

The results identify single factors representing the measures of identity support (factor # 4), caring and trust (factor # 6), and control and supervision (factor # 14). In addition, the data points to a factor that combines the two scales intimate and instrumental communication (factor # 2). Once more, additional analysis focusing solely on the family bonding items confirms these results, showing that intimate and instrumental communication are very strongly inter-related forming one rather than two distinct scales.

## 2. RELIABILITY

Most scales combine a number of different items (or questions) into a general measure that reflects the particular concept of interest – self-esteem, for example. The logic behind the use of a scale is such that all youths that score positively on one item should also score positively on the other items. A reliable scale is simply one in which all the items score in the same direction – when one indicates a person to have high self-esteem then all other items should also indicate high self-esteem. In contrast, when items in a scale are inconsistent – some measuring high and others low on self-esteem for example – the scale itself is unreliable. In such circumstances one must identify and remove the item(s) that are unreliable.

There is a measure used by researchers -- *Cronbach's alpha* -- which provides an assessment of the overall reliability of a scale. In general, acceptable scales should have alpha coefficients of 0.6 or more, with values of 0.8 or better indicating very reliable scales.

In addition to the overall alpha, reliability analysis provides a measure of the correlation between each item of the scale and the scale score based on all remaining items in the scale.<sup>3</sup> If an item is unreliable it will have a low correlation with the scale score based upon the remaining items. Removal of the problem item should improve the reliability of the overall scale.

The results of the reliability analysis for all self-report scales are provided in Appendix C. The assessment of reliability for each of the scales is discussed below.

### Self-esteem

The Cronbach's alpha for the self-esteem scale was 0.71, indicating a scale that is well within the acceptable bounds of reliability. Individual item scores showed some variation though none were low enough to warrant any concern.

### Values

The overall scale alpha for the values orientation scale was 0.85, a very high score indicating that the scale is extremely reliable. An examination of the individual item-total correlation's shows that only one item performed poorly. Question 38 of the values scale – "When I get in trouble it's my own fault" did not correlate highly with the overall values scores. Since slightly less than one quarter of juveniles agree with this statement irrespective of their overall values classification, the item does not help discriminate juveniles in terms of their values. If it were removed from the scale it would only very marginally increase the overall alpha.

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<sup>3</sup> This measure is the 'item-score correlation'. The results are reported in Appendix C.

### **School Bonding**

Table 1 presents the Cronbach's alpha results for each of the seven school bonding scales. Six of the scales exceed 0.7 and all achieve acceptable levels of performance. No single item is identified as having a low item-scale correlation. In terms of reliability, all seven scales are performing very well.

Taking into account the results of the factor analysis, we examined the reliability coefficient for a scale that combined both involvement scales. The alpha for the combined scale was 0.70 and all four items had an acceptable item-scale correlation.

**Table 1 Reliability Analysis of School Bonding Scale**

| <b>Scale:</b>               | <b>Alpha</b> |
|-----------------------------|--------------|
| School Attachment           | 0.76         |
| Attachment to Teachers      | 0.71         |
| School Commitment           | 0.75         |
| Perceived Opportunities     | 0.65         |
| Consequences of Arrest      | 0.74         |
| School Involvement          | 0.72         |
| Community Involvement       | 0.70         |
| <i>Combined Involvement</i> | <i>0.70</i>  |

### **Family Bonding**

Table 2 shows the reliability coefficients for each of the five family bonding scales. Four of the five scales have strong results with alpha's exceeding 0.7. The scale 'control and supervision' has an alpha of just 0.6, a level considered to be only marginally acceptable.

Examination of the control and supervision scale shows that the problems stem from inconsistency in the responses to one of the three items. The scale asks three questions to juveniles, and there is generally close agreement on two – "My parents want to know whom I go out with" and "My parents want to know where I go after school". The third question is somewhat different, asking "My parents know whom I spend time with". Clearly there is a separation between what juveniles report their parents wanting to know and actually knowing.

As above, we examined the reliability coefficient for a scale that combined both communication scales. The alpha for the combined scale was 0.83 and all seven items had a high item-scale correlation.

**Table 2 Reliability Analysis of Family Bonding Scale**

| <b>Scale:</b> | <b>Alpha</b> |
|---------------|--------------|
|---------------|--------------|

|                               |             |
|-------------------------------|-------------|
| Caring & Trust                | 0.81        |
| Identity Support              | 0.76        |
| Control & Supervision         | 0.60        |
| Intimate Communication        | 0.73        |
| Instrumental Communication    | 0.76        |
| <i>Combined Communication</i> | <i>0.83</i> |

### 3. STABILITY

When the staff assessed and self reported scales were initially classified we used data from the first six months of *ProDES* operation to identify appropriate cut-off points for each of the categories. At the time of the present analysis we are able to analyze data on approximately 4,000 cases spanning almost three and a half years of juvenile intake. The goal is to see whether or not the initial cutoff points have changed significantly over time. Using the means and standard deviations generated from the larger sample we reclassified the juvenile population using the newer, revised cut-off points. By comparing the distribution of the population based on both the old and the new cut-off points we can easily identify those scales where significant change has occurred.

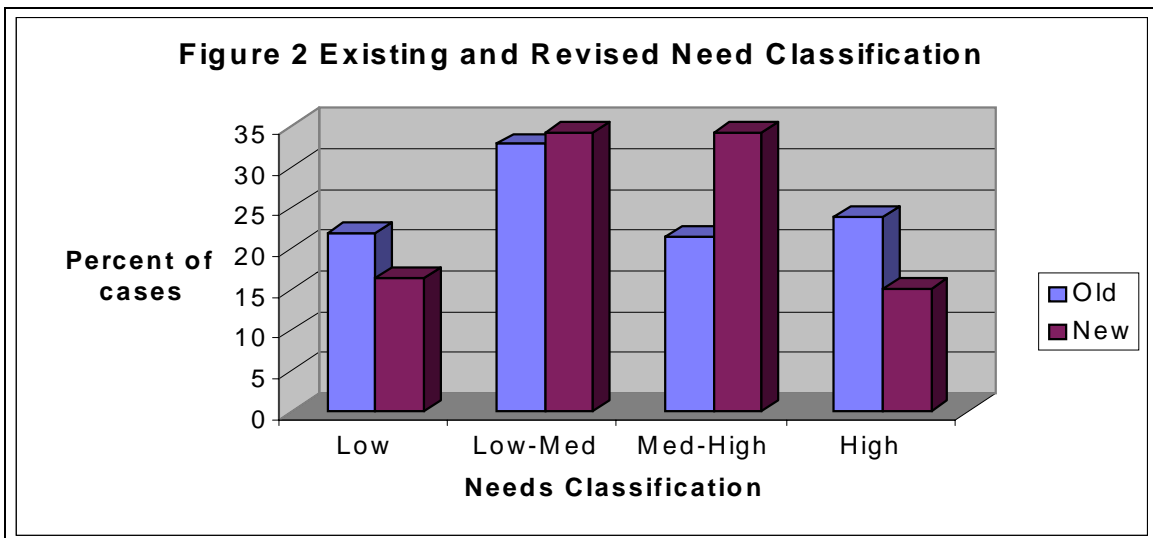
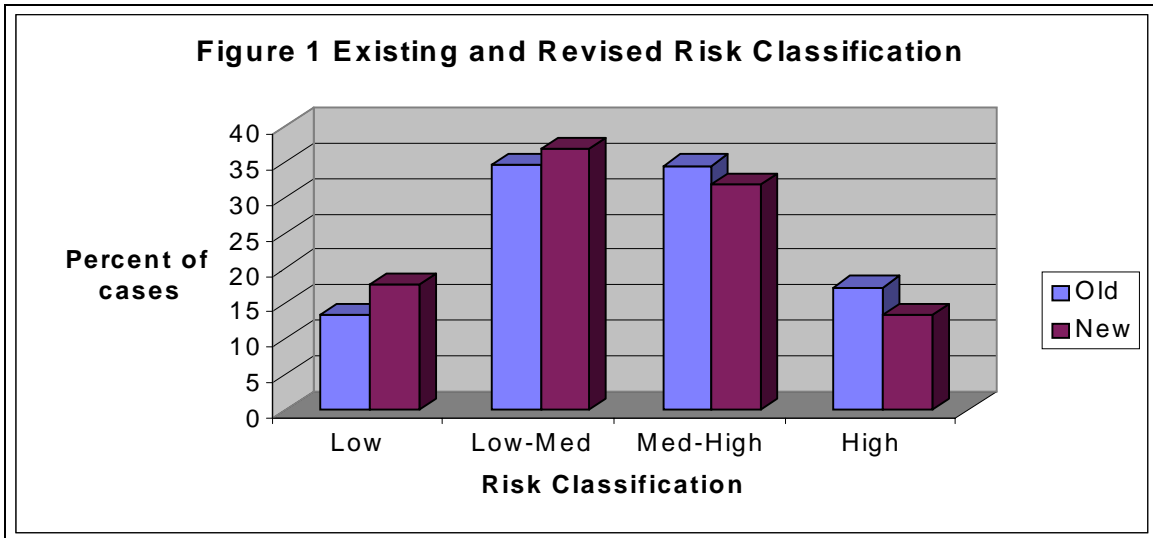
| <b>Table 3 Comparison of Existing and Re-calculated<br/>Cut-Off Points for Risk and Need Scales</b> |                     |                     |
|---|---------------------|---------------------|
| <b>Cut-Off Points</b>   |                     |                     |
| <b>Characteristic*</b>  | <b>Old Score</b>    | <b>New Score</b>    |
| <b>Risk</b>   |                     |                     |
| <b>Low</b>  | <b>5 or less</b>    | <b>6.0 or less</b>  |
| <b>Low-Medium</b>   | <b>6 to 12</b>      | <b>6.1 to 12.5</b>  |
| <b>Medium-High</b>  | <b>13 to 18</b>     | <b>12.6 to 19.0</b> |
| <b>High</b>   | <b>19 or more</b>   | <b>19.1 or more</b> |
| <b>Need</b>   |                     |                     |
| <b>Low</b>  | <b>9.9 or less</b>  | <b>7.5 or less</b>  |
| <b>Low-Medium</b>   | <b>10.0 to 18.9</b> | <b>7.6 to 17.9</b>  |
| <b>Medium-High</b>  | <b>19.0 to 24.9</b> | <b>18.0 to 28.0</b> |
| <b>High</b>   | <b>25 or more</b>   | <b>28.1 or more</b> |

#### **Risk and Need**

Table 3 shows the results for the risk and needs assessments and Figures 1 and 2 illustrate the changes that result when the initial cut-off points are replaced by the newer revised points. The newer cut-off points tend to reduce the number of juveniles classified as 'high' and 'medium-high' risk and increase the proportion classified in the lower low categories. For the

needs assessment the newer cut-off scores tend to draw more juveniles to the middle two categories, reducing the proportion classified as having either low or high needs. The changes have occurred because the larger sample shows that, on average, juveniles have slightly higher average risk and slightly lower average needs than was first estimated.

Based on these results it would seem appropriate to reclassify both the risk and the needs scales using the updated cut-off points.



**Self Esteem and Values**

The data for the self-esteem and values self-report scales suggests little change in the cut-off points over time (Table 4). For self-esteem the data suggests there has been no change at all in the boundaries of the three categories. For the values orientation scale there is more evidence of change. There has been a slight decrease in the average values orientation score

and a reduction in the amount of variance around that average. As a result, the newer cut-off points effectively reduces the proportion of juveniles classified as either very pro-social or very anti-social and increases the number in the two middle categories (Figure 3).

Clearly there is no need to alter the definition of the self-esteem categories. For the values scale some minor re-classification is necessary.

**School Bonding**

The data for the seven school bonding scales indicate that no significant change has taken place on any of the scales (Table 5). Comparisons of the distributions using the old and new cut-off points are virtually identical in all cases. No change to the classification of any school bonding scales is necessary.

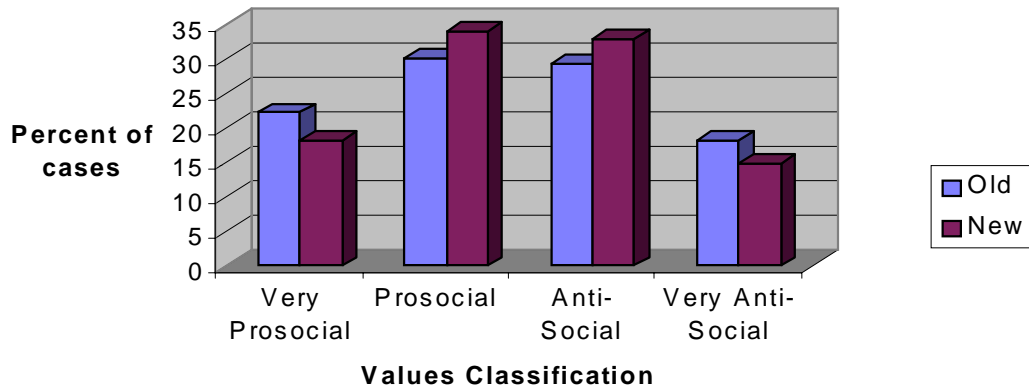
**Family Bonding**

As above, the results show that for each of the five family bonding scales there has been no significant change in the cut-off points for any of the scales (Table 6). Comparison of the distributions using the old and new cut-off points are, again, virtually identical in all cases. As with school bonding, no change to the classification of any family bonding scale is necessary.

**Table 4 Comparison of Existing and Re-calculated Cut-Off Points for Self-Esteem and Values Scales**

| <b>Cut-Off Points</b>  |                       |                      |
|------------------------|-----------------------|----------------------|
| <b>Characteristic*</b> | <b>Old Score</b>      | <b>New Score</b>     |
| <b>Self Esteem</b>     |                       |                      |
| <b>Low</b>             | <b>6 or less</b>      | <b>6 or less</b>     |
| <b>Medium</b>          | <b>7 to 8</b>         | <b>7 to 8</b>        |
| <b>High</b>            | <b>9 to 10</b>        | <b>9 to 10</b>       |
| <b>Values</b>          |                       |                      |
| <b>Low</b>             | <b>11.99 or less</b>  | <b>10.25 or less</b> |
| <b>Low-Medium</b>      | <b>12.00 - 17.99</b>  | <b>10.26 - 17.1</b>  |
| <b>Medium-High</b>     | <b>18.00 to 23.99</b> | <b>17.2 to 24.0</b>  |
| <b>High</b>            | <b>24.00 or more</b>  | <b>24.01 or more</b> |

**Figure 3 Existing and Revised Values Classification**



**Table 5 Comparison of Existing and Re-calculated  
Cut-Off Points for School Bonding Scales**

**Cut-Off Points**

| <b>Characteristic*</b>         | <b>Old Score</b> | <b>New Score</b> |
|--------------------------------|------------------|------------------|
| <b>School Attachment</b>       |                  |                  |
| Low                            | 2.91 or less     | 2.89 or less     |
| Low-Medium                     | 2.92 to 3.91     | 2.90 - 3.91      |
| Medium-High                    | 3.92 to 4.91     | 3.92 - 4.94      |
| High                           | 4.92 or more     | 4.95 or more     |
| <b>Attachment to Teachers</b>  |                  |                  |
| Low                            | 2.76 or less     | 2.77 or less     |
| Low-Medium                     | 2.77 - 3.63      | 2.78 - 3.65      |
| Medium-High                    | 3.64 - 4.50      | 3.66 - 4.52      |
| High                           | 4.51 or more     | 4.53 or more     |
| <b>School Commitment</b>       |                  |                  |
| Low                            | 2.74 or less     | 2.72 or less     |
| Low-Medium                     | 2.75 - 3.38      | 2.73 - 3.39      |
| Medium-High                    | 3.39 - 4.02      | 3.40 - 4.06      |
| High                           | 4.03 or more     | 4.07 or more     |
| <b>Perceived Opportunities</b> |                  |                  |
| Low                            | 2.83 or less     | 2.81 or less     |
| Low-Medium                     | 2.84 - 3.95      | 2.82 - 3.79      |
| Medium-High                    | 3.96 - 4.75      | 3.80 - 4.78      |
| High                           | 4.76 or more     | 4.79 or more     |
| <b>Consequences of Arrest</b>  |                  |                  |
| Low                            | 1.87 or less     | 1.84 or less     |
| Low-Medium                     | 1.88 - 3.08      | 1.85 - 3.07      |
| Medium-High                    | 3.09 - 4.29      | 3.08 - 4.29      |
| High                           | 4.30 or more     | 4.30 or more     |
| <b>School Involvement</b>      |                  |                  |
| Low                            | 1.00 or less     | 1 or less        |
| Low-Medium                     | 1.01 - 1.83      | 1.01 - 1.81      |
| Medium-High                    | 1.84 - 3.06      | 1.82 - 3.03      |
| High                           | 3.07 or more     | 3.04 or more     |
| <b>Community Involvement</b>   |                  |                  |
| Low                            | 1.00 or less     | 1.00 or less     |
| Low-Medium                     | 1.01 - 2.32      | 1.01 - 2.22      |
| Medium-High                    | 2.33 - 3.69      | 2.23 - 3.57      |
| High                           | 3.70 or more     | 3.58 or more     |

**Table 6 Comparison of Existing and Re-calculated  
Cut-Off Points for Family Bonding Scales**

**Cut-Off Points**

| <b>Characteristic*</b>            | <b>Old Score</b> | <b>New Score</b> |
|-----------------------------------|------------------|------------------|
| <b>Caring and Trust</b>           |                  |                  |
| Low                               | 3.22 or less     | 3.20 or less     |
| Low-Medium                        | 3.23 - 3.92      | 3.21 - 3.91      |
| Medium-High                       | 3.92 - 4.60      | 3.92 - 4.63      |
| High                              | 4.61 or more     | 4.64 or more     |
| <b>Identity Support</b>           |                  |                  |
| Low                               | 2.42 or less     | 2.40 or less     |
| Low-Medium                        | 2.43 - 3.37      | 2.41 - 3.36      |
| Medium-High                       | 3.38 - 4.33      | 3.37 - 4.30      |
| High                              | 4.34 or more     | 4.31 or more     |
| <b>Control and Supervision</b>    |                  |                  |
| Low                               | 2.76 or less     | 2.76 or less     |
| Low-Medium                        | 2.77 - 3.59      | 2.77 - 3.59      |
| Medium-High                       | 3.60 - 4.42      | 3.60 - 4.45      |
| High                              | 4.43 or more     | 4.46 or more     |
| <b>Intimate Communication</b>     |                  |                  |
| Low                               | 1.41 or less     | 1.45 or less     |
| Low-Medium                        | 1.42 - 2.48      | 1.46 - 2.51      |
| Medium-High                       | 2.49 - 3.55      | 2.52 - 3.58      |
| High                              | 3.56 or more     | 3.59 or more     |
| <b>Instrumental Communication</b> |                  |                  |
| Low                               | 1.90 or less     | 1.90 or less     |
| Low-Medium                        | 1.91 - 2.88      | 1.91 - 2.89      |
| Medium-High                       | 2.89 - 3.86      | 2.90 - 3.89      |
| High                              | 3.87 or more     | 3.90 or more     |

## 4. Some Comparisons

### Self-Esteem

Rosenberg's scale of self-esteem was selected primarily because it offered a well-used, well-tested and easily administered measure of self-esteem. Figure 3 shows how Rosenberg's original results for a 1963 sample of New York City high schools compares with the data for

*ProDES*.<sup>4</sup> The more current, delinquent sample is clearly more likely to score in the high self-esteem category.

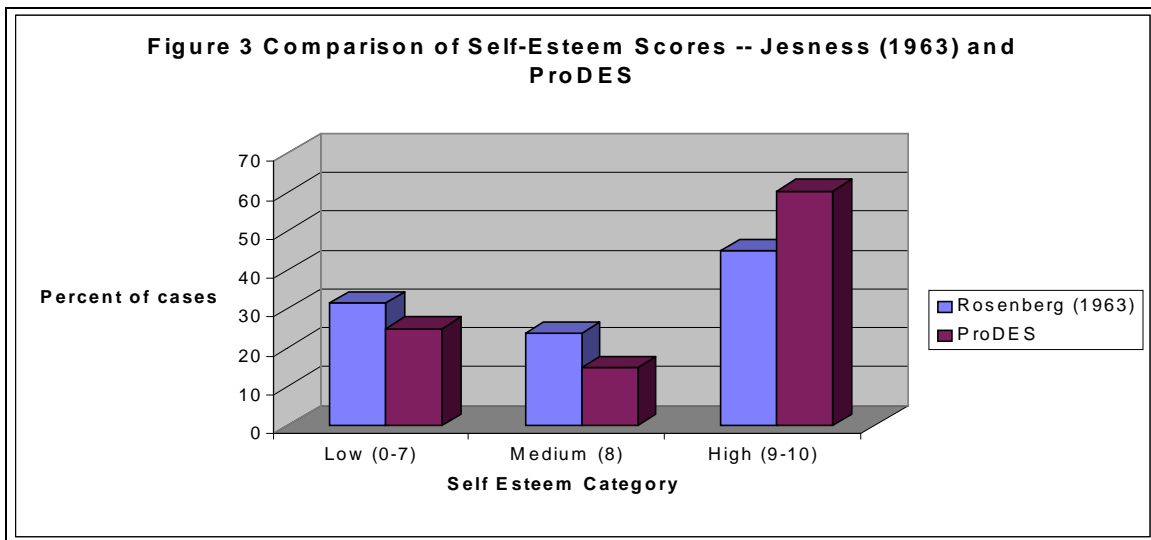


Table 7 shows the correlation between self-esteem and a number of other scales – risk, needs and values. The results show self-esteem to correlate negatively with all three measures, suggesting that as self-esteem improves so risk, need and anti-social values all decline. All three results support the emphasis placed on self-esteem by most delinquent programs.

**Table 7 The Correlation Between Risk, Need, Self-Esteem and Values**

| Scale: | Risk | Need         | Self-esteem   | Values        |
|--------|------|--------------|---------------|---------------|
| Risk   |      | <b>0.63*</b> | <b>-0.17*</b> | <b>0.18*</b>  |
|        | Need |              | <b>-0.29*</b> | <b>0.28*</b>  |
|        |      | Self-esteem  |               | <b>-0.48*</b> |
|        |      |              | Values        |               |

Note: \* Indicates correlation's significant  $p < 0.001$ .

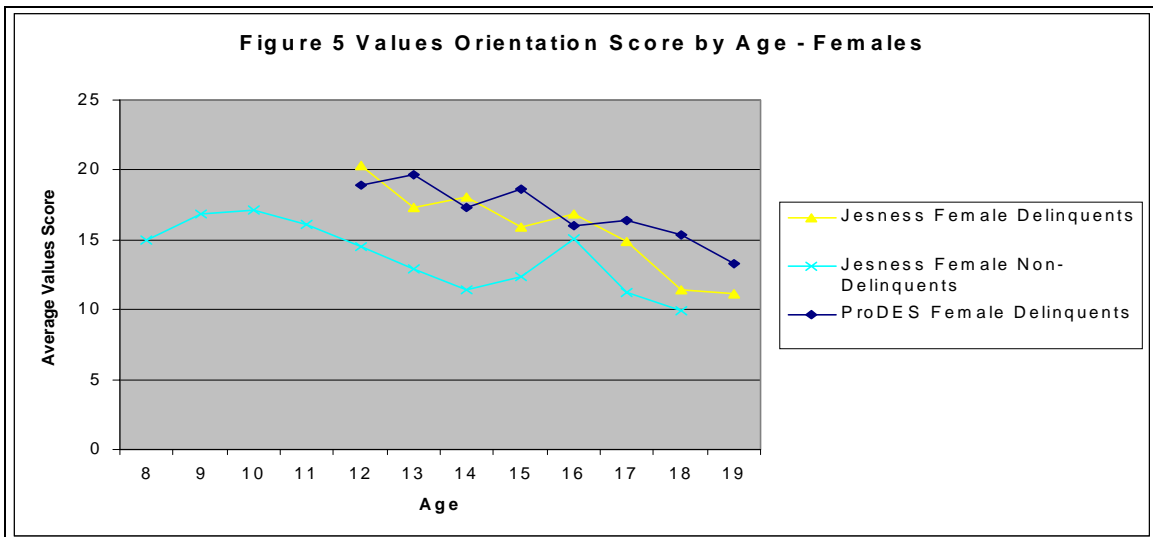
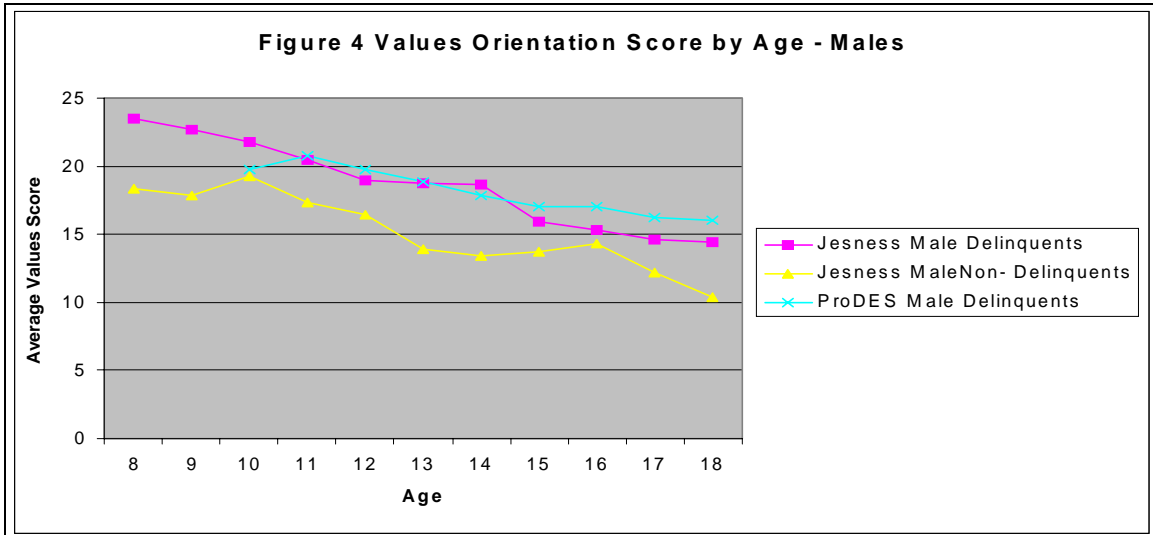
### Values

The values orientation scale is taken from the larger Jesness Inventory. Results from the original study compared values for male and female respondents drawn from delinquent and non-delinquent populations. Figures 4 and 5 compare these original results with those for *ProDES*. It can be seen that for both males and females the *ProDES* results follow very closely

<sup>4</sup> The *ProDES* categories have been redefined slightly so that a score of '7' is classified as low self-esteem and 'medium self-esteem' is restricted to a score of 8. In *ProDES* scores of 7 or 8 are classified as medium self-esteem.

the age-specific results for the original delinquent sample, and that both groups are consistently above (more anti-social) the non-delinquent comparison group.

Data from Table 7 shows that the values score has a significant positive relationship with both risk and need – indicating that juveniles with more anti-social values have higher risk and needs scores. As noted above, the negative correlation between values and self-esteem shows that anti-social values are associated with low self-esteem.



**School Bonding**

Table 8 presents the correlation among the seven school bonding scales. All but one – consequences of arrest and community involvement – are significantly related, though it is evident that the size of the correlation varies considerably. The relatively small negative correlation for consequences of arrest and the other school bonding variables shows that juveniles who feel their arrest will not be damaging to their future (low scores) tend to score higher on the other scales such as school attachment and perceived opportunities. Among the

stronger associations are those linking school attachment, school commitment and perceived opportunities (a result we identified earlier in the factor analysis) and a strong relationship between school and community involvement (again, a result reported above in the factor analysis).

Table 9 compares the mean school bonding scores from the present sample with baseline scores obtained from the original research study in Toledo, Ohio (Cernkovich and Giordano, 1992). The Toledo study did not focus on adjudicated delinquents, but included in the sample juveniles aged 12 through 19, of whom 51 percent were female and 45 percent white. The mean school bonding scores for the Philadelphia sample are generally comparable with those of the baseline Toledo sample -- attachment to teachers, for example, was 3.64 in Philadelphia, compared with 3.68 in Toledo; perceived opportunities 3.80 to 3.85. Even Philadelphia's low mean school involvement score was slightly higher than the Toledo score -- 1.84 to 1.74. One noticeable difference occurs on the consequences of arrest score -- 3.08 in Philadelphia, 3.61 in Toledo -- suggesting that the delinquent *ProDES* population are less likely to feel that an arrest is damaging to their future educational and occupational opportunities.

Taken together these two sets of results comport with *a priori* expectations and support the conclusion that the school bonding scales are valid and effective.

**Table 8 Correlations Among Sub-Scales for School Bonding**

| Scale:            | School Attachment      | Attachment to Teachers | School Commitment       | Perceived Opportunities | Consequences of Arrest | School Involvement    | Community Involvement |
|-------------------|------------------------|------------------------|-------------------------|-------------------------|------------------------|-----------------------|-----------------------|
| School Attachment |                        | <b>0.30*</b>           | <b>0.58*</b>            | <b>0.42*</b>            | <b>-0.12*</b>          | <b>0.10*</b>          | <b>0.12*</b>          |
|                   | Attachment to Teachers |                        | <b>0.39*</b>            | <b>0.22*</b>            | <b>-0.06*</b>          | <b>0.10*</b>          | <b>0.10*</b>          |
|                   |                        | School Commitment      |                         | <b>0.41*</b>            | <b>-0.08*</b>          | <b>0.20*</b>          | <b>0.19*</b>          |
|                   |                        |                        | Perceived Opportunities |                         | <b>-0.17*</b>          | <b>-0.07*</b>         | <b>0.10*</b>          |
|                   |                        |                        |                         | Consequences of Arrest  |                        | <b>0.04*</b>          | 0.03                  |
|                   |                        |                        |                         |                         | School Involvement     |                       | <b>0.43*</b>          |
|                   |                        |                        |                         |                         |                        | Community Involvement |                       |

Note: \* Indicates correlation's significant  $p < 0.001$ .

**Table 9  
School Bonding Scores For *ProDES* and Original Research (Toledo, Ohio).**

| Dimension:              | Mean Score<br><i>ProDES</i> | Mean Score<br>Original Study |
|-------------------------|-----------------------------|------------------------------|
| School attachment       | 3.92                        | 4.22                         |
| Attachment to teachers  | 3.66                        | 3.68                         |
| School commitment       | 3.38                        | 3.62                         |
| Perceived opportunities | 3.80                        | 3.85                         |
| Consequences of arrest  | 3.08                        | 3.61                         |
| School involvement      | 1.82                        | 1.74                         |
| Community involvement   | 2.23                        | NA                           |

**Family Bonding**

Table 10 presents the correlation among the five family bonding scales. All the correlations are positive, highly significant and very high. The very strong relationship between intimate and instrumental communication repeats the conclusion reported earlier in the factor analysis

**Table 10 Correlations Among Sub-Scales for Family Bonding**

| Scale:         | Caring & Trust   | Identity Support      | Control & Supervision  | Intimate Communication     | Instrumental Communication |
|----------------|------------------|-----------------------|------------------------|----------------------------|----------------------------|
| Caring & Trust |                  | <b>0.48*</b>          | <b>0.40*</b>           | <b>0.36*</b>               | <b>0.46*</b>               |
|                | Identity Support |                       | <b>0.17*</b>           | <b>0.22*</b>               | <b>0.30*</b>               |
|                |                  | Control & Supervision |                        | <b>0.30*</b>               | <b>0.38*</b>               |
|                |                  |                       | Intimate Communication |                            | <b>0.63*</b>               |
|                |                  |                       |                        | Instrumental Communication |                            |

Note: \* Indicates correlation's significant  $p < 0.001$ .

Table 11 compares the mean family bonding scores from the present sample with baseline scores obtained from the original research study in Toledo, Ohio (Giordano and Cernkovich, 1987). The Toledo study did not focus on adjudicated delinquents, but included in the sample juveniles aged 12 through 19, of whom 51 percent were female and 45 percent white. Three of the family bonding scores for the Philadelphia sample -- caring and trust, identify and support and intimacy and communication -- are comparable with those of the baseline Toledo sample. However, the Philadelphia sample has much lower scores on both the control and supervision and the instrumental communication measures.

Once again, these two sets of results comport with *a priori* expectations and support the conclusion that the family bonding scales are valid and effective.

**Table 10**  
**Family Bonding Scores For *ProDES* and Original Research (Toledo, Ohio).**

| <b>Dimension:</b>          | <b>Mean Score<br/>ProDES</b> | <b>Mean Score<br/>Original Study</b> |
|----------------------------|------------------------------|--------------------------------------|
| Caring and Trust           | 3.93                         | 3.98                                 |
| Identity and Support       | 3.37                         | 3.33                                 |
| Control and Supervision    | 3.61                         | 4.03                                 |
| Intimacy and Communication | 2.52                         | 2.62                                 |
| Instrumental Communication | 2.90                         | 3.46                                 |

## 5. Conclusions

This re-examination of the scales used in *ProDES* has helped answer a number of questions. First and foremost is the general conclusion that the scales, as a whole, are working well. The indicators of validity and reliability are for the most part very positive, and the relationships among the measures appear intuitive and in line with expectations. Comparison of the scale results with data from the original sources shows that the result obtained in *ProDES* are what one would expect from this delinquent population.

To a certain extent these positive findings are the result of the initial decision to select established, well utilized, and carefully monitored scales from the delinquent literature rather than try to devise new scales or adopt scales that have not been validated. The stability of the scale cut-off points over time was less predictable and provides additional confidence in the scales themselves.

Within the broadly positive results there are still a few indications that some changes should or could be made. In particular:

- The cut-off points for the risk and needs scales should be adjusted to take into account the information learned from the larger sample.
- The value orientation scale could exclude the last item (#38) since it does not help discriminate between juveniles with pro- or anti-social values.
- The school and community involvement scales could be combined to create a valid and reliable composite 'involvement' scale within school bonding.
- The intimate and instrumental communication scales could be combined to create a valid and reliable composite 'communication' variable within family bonding.

None of these changes involves a major restructuring of the staff-assessed or self-reported section of *ProDES* though it will affect in some relatively minor way the clusters currently being discussed. The proposed approach is to make all the changes noted above, and to re-evaluate their impact after a year or so of operation.

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## Appendix A

### Description of the Scales

#### Self-esteem

Morris Rosenberg in his research on juvenile delinquency developed this ten-item scale.<sup>5</sup> Rosenberg's scale has been used by other researchers through the years in their own studies on self-esteem and delinquency, school performance, deviant response, and adolescent problems. Rosenberg's scale is both effective in measuring self-esteem and brief, making it a perfect scale for large-scale research projects.

The scale consists of 10 questions answered on a 4-point scale from Strongly Agree to Strongly Disagree.<sup>6</sup> For scoring purposes the 10 questions are scored only as agreement or disagreement.

Rosenberg's (1963) original classification differs slightly from that of *ProDES*, with 'medium' self-esteem restricted to those scoring 8 points for Rosenberg and to 7 and 8 for *ProDES*.

#### Jesness Values Orientation

The Values Orientation Scale is part of the 155 item Jesness Inventory. This particular sub-scale contains 38 items, all coded true/false. The Jesness Inventory has been validated on a juvenile population and is relatively easy to administer.

The Jesness Values Orientation Scale has a very strong correlation to the Responsibility Scale of the California Personality Index (CPI), suggesting a significant level of over-lap between the concepts of values and responsibility. Juveniles who score high on the scale have agreed with many of the following opinions:

- that much of what happens to them is due to luck
- they are concerned about being in the know, and like to feel they can out-smart the other person
- they seek thrills and excitement
- they are concerned about their status, which is achieved through being tough, grownup and masculine
- although they maintain an air of self-sufficiency they are concerned about their future, feeling that others may be against them and they might get into trouble

Many State and local juvenile justice agencies in their assessment of delinquent values have utilized Jesness. It is suggested by Jesness that high scores on the scale indicate that delinquent actions are not totally ego-alien, but may be reinforced by a set of values which reward delinquent behavior. Helping a juvenile of this type to change toward more conventional

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<sup>5</sup> For a more detailed description and assessment of this scale see Robinson & Shaver (1973) *Measures of Social Psychological Attitudes*, published by the Institute for Social Research, University of Michigan.

<sup>6</sup> The scale is traditionally used as a 6 point Guttman scale in which the 10 questions are combined to form 6 'items'. Robinson & Schaver show that it is equally valid to score the scale as a simple 10-point additive scale.

patterns of behavior may eventually be shown to be more difficult than would be the case with another whose delinquency is not so thoroughly integrated into a total pattern.

The scale used by *ProDES* is scored as an additive scale, with a possible range from 0 to 38.

### **School Bonding**

This measure is derived from the general belief that a lack of attachment to parents and teachers and a weak commitment to educational and occupational goals are associated with both school failure and involvement in delinquency. Furthermore, it tests the assumption that adolescents with low scores on the various scales are the most likely candidates for delinquency. The measure comprises seven sub-scales.

#### *School Attachment*

This dimension measures the degree to which students care about school and have positive feelings for it. This is the most general of the dimensions and is composed of the following two items:

- ⇒ "I feel as if I really don't belong in school" (reverse scored)
- ⇒ "I wish I could drop out of school" (reverse scored)

High scale scores indicate high levels of school attachment

#### *Attachment to teachers*

This dimension reflects feelings of respect and admiration for one's teachers. It comprises the following two items:

- ⇒ "Most of my teachers treat me fairly"
- ⇒ "I like my teachers"

High scale scores indicate high levels of attachment to teachers.

#### *School commitment*

This dimension measures the degree to which a juvenile has a "stake in conformity" that insulates him or her from delinquent involvement. This is reflected in such matters as the extent to which he or she invests time and effort in academic activities, gets good grades, shows concern for future achievement, and has high aspirations for the future. It comprises the following items:

- ⇒ "How many hours a week do you usually spend doing homework?"
- ⇒ "What grades do you normally get in school?"
- ⇒ "How far would you like to go in school?"
- ⇒ "How far do you think you will go in school?"
- ⇒ "Getting good grades is not important to me?" (reverse scored)
- ⇒ "I try hard in school"
- ⇒ "School work is very important"
- ⇒ "Homework is a waste of time"

High scale scores indicate high levels of educational commitment.

### *Perceived opportunities*

This dimension taps the juvenile's perception of opportunities of future success. It comprises two items:

- ⇒ "I'll never have as much opportunity to succeed as kids from other neighborhoods" (reverse scored)
- ⇒ "My chances of getting ahead and being successful are not very good" (reverse scored)

Neither item makes direct reference to school, but Cernkovich and Giordano suggest that the perception of one's future opportunities are very much conditioned by one's attachment and commitment to school.

High scale scores are indicative of a positive perception of future opportunities.

### *Consequences of arrest*

This dimension measures the effect the juvenile believes that an arrest will have on their future educational and occupational opportunities. It comprises two items:

- ⇒ "How likely is it that your arrest will hurt your chances of going as far as you like in school?"
- ⇒ "How likely is it that you arrest will hurt your chances of getting the kind of job you want?"

High scale scores indicate a high level of perceived risk.

### *School involvement*

This dimension refers to the amount of behavioral participation in different school activities. As the temporal dimension of attachment, involvement in an activity or set of activities suggests commitment to that activity. There are two items to this measure:

- ⇒ "How many days a week do you spend on school athletic teams?"
- ⇒ "How many days a week do you spend attending athletic events, plays or school dances?"

High scale scores indicate a high level of involvement in school activities.

### *Community involvement*

This dimension measures the amount of behavioral participation in general community activities (not school related). It also comprises two items:

- ⇒ "How many days a week do you spend on organized athletic/sports teams?"
- ⇒ "How many days a week do you spend attending local community centers?"

High scale scores indicate a high level of involvement in community activities.

## **Family Bonding**

The idea underlying the family bonding scales is that attachment to parents forms the basis of conformity. The more strongly a child is attached to his/her parents, the more strongly he/she is bound to their expectations, and therefore the more strongly he/she is bound to conformity with the legal norms of society. The authors of the family bonding scale, Cernkovich and Giordano, found that each of the scales except for intimate communication were significantly related to delinquency within their sample. The measure comprises five subscales.

### ***Caring and trust***

This is a six-item scale measuring the degree of intimacy of a relationship (caring, trust and affection), arguably the most critical area of support a family can provide to children. The following questions comprise this dimension:

- ⇒ "My parents/caregivers often ask about what I am doing in school."
- ⇒ "My parents/caregivers give me the right amount of affection."
- ⇒ "One of the worst things that could happen to me would be finding out that I let my parents/caregivers down."
- ⇒ "My parents/caregivers are usually proud of me when I've finished something I've worked hard at."
- ⇒ "My parents/caregivers trust me."
- ⇒ "I'm closer to my parents/caregivers than a lot of kids my age."

High scale scores reflect high levels of caring and trust.

### ***Identity support***

Cernkovich and Giordano argue that identity support is especially important during adolescence because of the uncertainties and self-doubts that characterize this period of the life cycle. Positive support is characterized by the belief that parents respect, accept, and support the youth for what he/she is. The four negatively worded items comprising this dimension are:

- ⇒ "My parents/caregivers sometimes put me down in front of other people."
- ⇒ "Sometimes my parents/caregivers won't listen to me or my opinions."
- ⇒ "My parents/caregivers sometimes give me the feeling that I'm not living up to their expectations."
- ⇒ "My parents/caregivers seem to wish I were a different type of person."

High scale scores reflect high levels of identity support.

### ***Control and supervision***

This three-item scale measures the degree to which parents monitor the behavior of their children. The items are:

- ⇒ "My parents/caregivers want to know who I'm going out with when I go out with other boys/girls."
- ⇒ "In my free time away from home, my parents/caregivers know who I'm with and where I am."

⇒ “My parents/caregivers want me to tell them where I am if I don't come home right after school.”

High scale scores reflect high levels of control and supervision.

### ***Intimate communication***

This three-item scale measures the extent to which families share their private thoughts and feelings. Criminologists such as Travis Hirschi have recognized intimacy of communication between a parent/caregiver and child to be an important dimension of attachment. Three items were employed:

⇒ “How often do you talk to your parents/caregivers about the boy/girl whom you like very much?”

⇒ “How often do you talk to your parents/caregivers about questions or problems about sex?”

⇒ “How often do you talk to your parents/caregivers about things you have done about which you feel guilty?”

High scale scores reflect high levels of intimate communication.

### ***Instrumental communication***

Cernkovich and Giordano point to the fact that it is not just communication with parents/caregivers per se that is important, but rather the *content* of that communication. Travis Hirschi (1969) found that the discussion of future plans was an important index of attachment. In *ProDES* this dimension is measured by 4 items that indicate the extent to which families discuss future plans together. The items are:

⇒ “How often do you talk to your parents/caregivers about problems you have at school?”

⇒ “How often do you talk to your parents/caregivers about your job plans for the future?”

⇒ “How often do you talk to your parents/caregivers about problems with your friends?”

⇒ “How often do you talk to your parents/caregivers about how well you get along with your teachers?”

High scale scores reflect high levels of instrumental communication.