Overexcitability is a term used to describe five forms of heightened experiencing that contribute to the developmental potential of gifted children. Two alternative means of assessing overexcitabilities were examined: questionnaire and interview. It was hypothesized that the interview, offering the possibility for probing and clarification of responses, would yield richer response material than the questionnaire. Contrary to expectations, the interview did not yield higher overexcitability scores. In two separate comparisons of the questionnaire and interview, similar results were obtained for four of the five forms of overexcitability. Correlations between questionnaire and interview scores were too low to consider the methods equivalent for making individual assessments. Older children, ages 12-14, scored higher than younger ones, ages 9-11. Most of those in the younger group had difficulty writing their answers; therefore, the interview is recommended for children below age 12.

It is often acknowledged that gifted and talented people are energetic, enthusiastic, intensely absorbed in their pursuits, endowed with vivid imagination, sensuality, moral sensitivity, and emotional vulnerability (Barron, 1963; Goertzel, Goertzel, & Goertzel, 1978; Hollingworth,
1942); in short, they exhibit heightened intensity of experience. Studying the mental health of intellectually and artistically gifted youth. Dabrowski 11938, 1967) recognized the intensity of their emotions, and their sensitivity and susceptibility to extremes of mood and feeling, as part and parcel of their psychophysical makeup. Rather than view the emotional extremes as indicative of mental imbalance, even today a notion held by many, he perceived them as potential for further growth. This idea became embodied in his concept of developmental potential.

Developmental potential is defined by the individual's constellation of talents, special abilities, and intelligence, plus five ways of processing the data of experience: psychomotor, sensual, intellectual, imaginational, and emotional. Dabrowski (1967) called them "forms of psychic overexcitability" to emphasize an intensification of mental and emotional activity that strongly departs from the norm. Overexcitabilities contribute to the individual's psychological development and their strength can be taken as a measure of developmental potential.

The five forms of overexcitability are described briefly as follows: Psychomotor refers to the person's level of energy, an augmented capacity for being active and energetic; sensual refers to an expanded and enriched sensory experience; intellectual refers to the pursuit of knowledge and the search for truth, expressed through discovery, questioning, love of ideas and theoretical analysis; imaginational refers to the realm of fantasy, dreams and inventions, vivid imagery, richness of associations, and penchant for the unusual; finally, emotional refers to the depth and intensity of emotional life expressed through a wide range of feelings, attachments, and compassion for people, especially children, and other living things. These five forms of overexcitability are also referred to as five dimensions of mental functioning in the model of developmental potential (Piechowski, 1979).

This model is well suited to the study of the gifted and talented. The five dimensions of the developmental potential have been shown to be stronger in the gifted than in the nongifted (Gallagher, 1985; Piechowski & Colangelo, 1984; Silverman & Ellsworth, 1981); to distinguish artists from the intellectually gifted (Piechowski, Silverman, & Falk, 1985); to be observable in very young gifted children (Silverman, 1983); and to be more pronounced in artists (Piechowski & Cunningham, 1985) and in creative adolescents (Schiever, 1985). Recently, Ackerman (1993) was able to show by means of discriminant analysis that the overexcitabilities can distinguish gifted from nongifted high school students.

Most studies employing the model of developmental potential have used the Overexcitability Questionnaire to measure the strength of the five overexcitabilities. The questionnaire consists of 21 open-ended items to which subjects respond at their leisure (Figure 1).

The expression of an overexcitability is given a weight of 1, 2, or 3 depending on how rich or how intense it is judged to be in a given response. A weak response is scored 1, a response
with a distinct expression of overexcitability is scored 2, and a response marked by richness and intensity is scored 3 (Falk, Piechowski, & Lind, 1994). The examples below were taken from actual responses to the questionnaire. Numerical intensity weight, gender, and age are given in parentheses after each example.

**Psychomotor**
"The best physical activity is climbing the ropes at school (1; girl, age 9); "I feel active after lunch. I run around a lot right after lunch" (2; boy, age 9); "I feel the most energy when I am about to go swimming. I feel as if I could go on forever and make higher limits" (3; girl, age 11). The first example expresses an occasional energetic exercise; the second, a regularly arising surge of energy and impulse to discharge it physically; and the third, an intense drive.

**Sensual**
"I like to taste things, it's sort of fun" (1; boy, age 11); [Taste is special] "when [ taste my favorite food--lobster. It tastes luscious and juicy" (2; boy, age 9); [The pleasure of taste is] "a steak and having time to just savor every bite" (3; girl 15). The enjoyment of taste is present in the first example, but in the second it is richer and more vivid. The third and the stronger example was taken from an adult because sensual overexcitability is the least represented in responses of younger subjects (Piechowski & Colangelo, 1984), and therefore hard to find at its most intense.

**Intellectual**
"During tests I think about how and what's going on inside my head" (1; boy, age 11); "I think about my thoughts being different from other people's thoughts and wonder what they think and how they 'word' it" (2; girl, age 13); "I think I'm the only kid who loves to ask questions. I mean that's . . . my life! Questions, questions, and finally when I get all those questions answered, it's put together, and it's like a puzzle and all the pieces have been put together and it looks decent. And if there's a missing piece I just have to imagine what's supposed to be there. If somebody won't answer my question, I get angry!" (3; girl, age 13). The first example expresses curiosity about one's thinking in a very limited context; in the second, the scope of intellectual curiosity and awareness of one's thought processes is much greater. In the third example, curiosity and pursuit of knowledge are expressed with great intensity.

**Imaginational**
"My daydream is to become an astronaut" (1; girl, age 9); "I daydream about time machines and where I would go in them" (2; boy, age 13); "I like to dream about different countries, places that I make up myself, even animals that I make up. Just anything that is unusual to me" (3; girl, age 13). In the first example, the daydream occurs within the bounds of physical reality; in the second, these bounds are freely transcended; in the third, an imaginary reality is created.
Emotional
"I feel really high when I play football with my friends" (1; boy, age 13); "I often feel happy. When I ride my bike I feel a special kind of pride. I have the same feeling when the Broncos win, or when the snow is falling outside" (2; boy, age 134); "When I feel really happy I feel like nothing can go wrong for the rest of my life . . . When I am really happy it is more so than other people I know. When I am quite happy I am so high it seems like nothing could ever get me into a bad mood" (3; boy, age 13). In the first example, intensification of feeling is occasioned by the excitement of a game and the company of friends; in the second, the feelings are deeper, quietly spontaneous and evoked on quite dissimilar occasions; in the third, feelings are very intense, and there is an awareness that this makes the respondent different from other people.

Purpose of the Study
For adult subjects who have much to say and are willing to write it down, the questionnaire can be very time consuming. For children under the age of 12 or 13, writing itself can be a problem. This study was undertaken to determine if an interview might be more suitable for younger subjects and generate richer and more abundant material than the questionnaire. We hypothesized that children (9- to 14-year-olds) would have higher overexcitability (OE) scores on the interview than on the questionnaire.

Further, we investigated the effect of age and gender on OE scores. Based on Dabrowski's theory that developmental potential, like intellectual ability, is innate and not learned, we hypothesized that there would be no age differences in OE scores. Studies with adult populations have found no correlation between age and OEs (Lysy & Piechowski, 1983; Miller, Silver-man, & Falk, 1994), but the effect of age on OEs has not been examined in younger subjects.

Gender differences on psychological dimensions are less evident for gifted individuals than for those in the general population (Wolleat, 1979). Gallagher's (1985) study with sixth graders supports this finding for OE scores. Therefore, we hypothesized that there would be no differences between gifted boys and girls on OE scores.

Method
Subjects
The subjects were 46 youngsters (21 girls, 25 boys) recruited from the participants of the "University for Youth," a summer program for gifted and talented children at the University of Denver. (Due to lack of time and interest, six of an original group of 52 did not complete both instruments.) Admission into the program requires achievement scores of at least 2.0 grade levels above the child's actual placement in school. The age and sex distributions were as follows: age 9-11 (10 girls, 18 boys), age 12-14 (11 girls, 7 boys).
Procedure
Two interviewers contacted the parents and children for their consent to participate in the study. As an incentive, the children were given a token honorarium.

Subjects were randomly assigned to groups. Group A: Twenty-six children (13 girls, mean age 11.3, and 13 boys, mean age 11.0) answered the questionnaire first. Between one and two weeks later they were interviewed. Group B: Twenty children (8 girls, mean age 11.5, and 12 boys, mean age 11.0) were interviewed first and wrote their responses to the questionnaire afterwards.

Following completion of both assessments, the children were asked which method they preferred and whether they had required help writing answers to questionnaire items.

Measures
The Overexcitability Questionnaire has 21 probing questions that tap the five areas of overexcitability. Subjects are instructed to write their answers using as much space as needed and taking as much time as necessary.

In the Overexcitability Interview, the subjects are asked the same questions that make up the items of the Overexcitability Questionnaire. However, the interviewer is free to probe for elaboration if the child does not understand the question, or if an answer is too brief, or when the child needs encouragement to continue.

The Questionnaire and Interview protocols were scored independently for overexcitability by four trained raters working in pairs. Each item was scored for the presence and intensity of one or more forms of OE. If no OE was found in a response, the score was 0. The presence of an OE was scored on a scale of intensity from 1 to 3. Disagreements on item scores were resolved by arriving at a consensus. The consensus step increases accuracy by requiring the raters to reread and reevaluate the items on which they differed and to justify the particular score they have given. This helps to maintain their skill and prevents its drifting into lower reliability or decay. In this way the two necessary elements of reliability--accuracy and stability--are safeguarded (Hollenbeck, 1978).

The mean correlation for the pairs of raters before consensus was .72. The consensus scores were used as the final scores. In a recent study, internal consistency (Cronbach's alpha) for total OE scores averaged .77 for gifted adults (Miller, Silverman, & Falk, 1994).

The test-retest reliability for the Overexcitability Questionnaire completed three to six weeks apart by a group of 60 adults was .65 (Ammirato, 1987).

Validity for the Overexcitability Questionnaire is accruing from studies of groups with known characteristics. American artists (Piechowski, Silverman, & Falk, 1985) and Venezuelan
artists (Manzanero, 1985) both evidenced high imaginational OE scores, and studies of gifted adults have shown higher intellectual OE scores than a comparison group (Piechowski, Silverman, & Falk, 1985). Also, imaginational OE distinguished highly creative junior-high students from less creative students (Schiever, 1985) and differentiated high and low scorers on the Torrence Tests of Creative Thinking for sixth graders (Gallagher, 1985). In line with traditional gender-role socialization, Miller, Silverman, and Falk (1994) found that adult females scored higher on emotional OE than males.

Results

Comparison of Questionnaire and Interview Scores

Table 1 shows the mean scores for each overexcitability on the questionnaire for Group A and on the interview for Group B and reports the t value for the test of the difference between means. By comparing the OE scores of those in Group A who answered the questionnaire first and those in Group B who had the interview first, any practice effect encountered from subjects having completed the previous instrument was avoided.

On four of the five OEs, no significant differences exist between the two groups. Subjects completing the questionnaire had significantly higher scores on emotional OE than those answering the same questions in interview form (t = 2.26, p < .05).

In a comparison of mean OE scores from the questionnaire for Group B and the interview for Group A, four of the five OEs showed no significant differences. However, the interview produced significantly higher psychomotor OE scores than did the questionnaire (t = -2.58, p < .05).

The correlations between overexcitability scores on the questionnaire and the interview are: Psychomotor .53, sensual .47, imaginational .55, intellectual .67, and emotional .52.

Almost all the 9- to 11-year-olds and two-thirds of the 12- to 14-year-olds preferred the interview. More than two-thirds (70 percent) of the younger group needed help writing their answers on the questionnaire. None of the older group required help.

Age and Gender Effects on OE Scores

Group A and Group B were combined to analyze the effects of age and gender on OE scores for both forms of administration (questionnaire and interview). To guard against Type I error, a multivariate analysis of variance (MANOVA) was conducted using age and gender as independent variables and the OE scores as multiple dependent variables. Previous studies indicate moderate, but significant, correlations between the five OEs (Lysy & Piechowski, 1983; Miller, Silverman, & Falk, 1994; Piechowski & Colangelo, 1984). (Because the results were identical for questionnaire and interview scores, only the results for the questionnaire are shown.)
There were significant age differences for both methods. On emotional, intellectual, and imaginational OEs, older children ages 12-14 scored higher than younger children ages 9-11. The two groups did not differ on sensual and psychomotor OEs. There were no overall differences between males and females and no interaction effects between age and gender for either method.

**Discussion**

The purpose of the study was to compare methods of assessing forms of overexcitability in gifted children and to see which method, the questionnaire or the interview, was more suitable for use with younger subjects. Most of the subjects voiced preference for the inter-view. Additionally, almost all of the younger children, 9 to 11-years-olds, required help in writing their responses to the questionnaire.

Of the three hypotheses of the study, that the interview would produce higher OE scores than the questionnaire, that there would be no age differences in OE profiles (on the assumption that developmental potential is constant), and that there would be no gender differences in OE profiles, only the last one was confirmed: Boys and girls had comparable OE scores. Contrary to our hypotheses, the interview did not produce higher OE scores than the questionnaire and older children had higher OE scores than younger children.

**Group Comparisons**

When making group comparisons of overexcitabilities, the two methods of assessing developmental potential yielded similar results, except for the difference on emotional OE in one comparison and psychomotor in the other. The interview appears to facilitate a higher incidence of psychomotor responses. Since these mostly involve games, sports, and evidence of personal prowess, they are cause for pride and easy to communicate in an interview. However, the interview appears to suppress emotional expression to some degree. As a more personal and private matter, feelings are less likely to be divulged in an interview. On the other hand, the anonymity of a written response would appear to facilitate personal disclosure.

For the purpose of comparing groups, the two methods can be considered nearly equivalent—only two out of ten OE comparisons were different. The questionnaire is easier than the interview; it is more economical and more sensitive to emotional issues.

The modest correlations between scores on the questionnaire and the interview (mean = .55) indicate that the two assessment methods cannot be considered entirely equivalent, and therefore, cannot be substituted for the other in making individual assessments. Although the items are the same, the change from writing in private to a face-to-face interview and the interviewer's prompting introduce a new set of conditions.
It should be noted, however, that correlations between alternate forms of open-ended instruments do not achieve the same degree of consistency as do more objective instruments. For example, the correlations between alternate forms of the moral judgment interview used with subjects aged 10 to 14 were .37-.56 with a median of .40 (Colby, Kohlberg, Gibbs, & Liberman, 1983). Age related differences were evident in questionnaire scores for imaginational, intellectual, and emotional overexcitability. Most likely this reflects increasing skill in written expression rather than an increase in the strength of the overexcitabilities per se. It should be noted that this occurs at the age when formal operations begin. Whether the finding of age differences contradicts the assumption of the constancy of developmental potential is impossible to say since the measurement of something not fully realized presents an obvious difficulty.

The finding that boys and girls scored similarly on the des indicates that gender-role socialization is not evident in overexcitability responses at this age. This is consistent with Kitano's (1990) finding that there were no gender differences in parents' reports of young children (preschoolers) on items designed to reflect the overexcitabilities. Because our subjects were participants in a gifted program, the fact that we found no differences between girls and boys on overexcitability scores adds further support to the research that finds a lack of gender differences to be characteristic of the psychological profile of the creatively gifted.

The privacy of written response and the unknown audience of the research project appear to facilitate personal disclosure, more so than what the student feels free to say in an interview. Thus, contrary to expectation, the interview does not elicit more evidence of overexcitability than does the questionnaire. Except for psychomotor, rather, it seems occasionally to inhibit some highly personal and emotional responses.

The questionnaire data for the older group are very similar to those of highly creative gifted youngsters in Schiever's (1985) study. Gallagher (1985) used the interview with gifted and nongifted 11- and 12-year-olds. The results for her gifted group are similar to those for the age 12-14 group in this study.

The broad spectrum of the five forms of overexcitability suggests a way of testing the strength of developmental potential in groups of different levels of giftedness and creativity. For instance, Jane Piirto (personal communication, March 21, 1994) found that a highly selected group of artistically gifted adolescents at a summer Governor's Institute consistently received high intensity scores on all their overexcitability responses. The availability of the interview as a method nearly equivalent to the questionnaire, opens the way for assessment of overexcitability profiles in younger children of different degree and kind of precocity, giftedness, and creativity.

* This research was supported by a grant from the Spencer Foundation. The generous and
cooperative spirit of Dr. Elinor Katz, Director of the University for Youth at the University of Denver and of Dr. R. Frank Falk is gratefully acknowledged. Fran J. Axley and Teri Lutz skillfully carried out the interviews. Parents and children are especially thanked for their willing participation and the time and effort contributed to this project. Dr. Barry A. Grant was once again an invaluable critic.

Table 1
Comparison of Mean Overexcitability Scores from Questionnaire (Group A) and Interview (Group B)

Legend for Chart:

A - Overexcitability
B - Questionnaire, Mean, (N=26)
C - Questionnaire, sd, (N=26)
D - Interview, Mean, (N=20)
E - Interview, sd, (N=20)
F - t
G - p

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<tr>
<td>Psychomotor</td>
<td>5.96</td>
<td>2.74</td>
<td>5.40</td>
<td>3.25</td>
<td>.62</td>
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<td>Sensual</td>
<td>2.00</td>
<td>1.94</td>
<td>2.10</td>
<td>1.59</td>
<td>-.19</td>
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<tr>
<td>Imaginational</td>
<td>9.27</td>
<td>3.54</td>
<td>10.25</td>
<td>4.61</td>
<td>-.79</td>
<td>ns</td>
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<tr>
<td>Intellectual</td>
<td>11.12</td>
<td>8.30</td>
<td>11.55</td>
<td>5.63</td>
<td>-.25</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Emotional</td>
<td>13.81</td>
<td>6.46</td>
<td>9.75</td>
<td>5.68</td>
<td>2.26</td>
<td>.03</td>
<td></td>
</tr>
</tbody>
</table>

1 two-tailed
2 p < .05

Table 2
Multiple Analysis of Variance of Age and Gender on Overexcitabilities

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>F(1,42)</th>
<th>P</th>
<th>9-11 Year</th>
<th>12-14 year</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Olds</td>
<td>Olds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
</tr>
<tr>
<td>Age</td>
<td>Emotional</td>
<td>7.26</td>
<td>.01</td>
<td>9.71 (4.46)</td>
<td>15.06 (7.19)</td>
</tr>
</tbody>
</table>
Table 1: Overexcitability Questionnaire (Lysy & Piechowski, 1983)

<table>
<thead>
<tr>
<th>System</th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td>Intellectual</td>
<td>12.60 (3.74)</td>
<td>14.00 (7.05)</td>
</tr>
<tr>
<td>Imaginational</td>
<td>6.11 (3.91)</td>
<td>10.78 (3.02)</td>
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<tr>
<td>Sensual</td>
<td>0.21 (1.40)</td>
<td>1.83 (2.36)</td>
</tr>
<tr>
<td>Psychomotor</td>
<td>1.04 (2.41)</td>
<td>5.11 (3.16)</td>
</tr>
</tbody>
</table>

Wilks Lambda (5,38) = .69, p = .012

Table 2: Comparison of Emotional Overexcitability by Gender and Age

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>F(1,42)</th>
<th>p</th>
<th>Mean (sd)</th>
<th>Mean (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Emotional</td>
<td>5.58</td>
<td>.02</td>
<td>10.04 (4.89)</td>
<td>13.90 (7.01)</td>
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<tr>
<td></td>
<td>Intellectual</td>
<td>.22</td>
<td>.64</td>
<td>10.16 (5.68)</td>
<td>10.90 (6.34)</td>
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<tr>
<td></td>
<td>Imaginational</td>
<td>.02</td>
<td>.90</td>
<td>9.28 (4.07)</td>
<td>9.14 (3.48)</td>
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<tr>
<td></td>
<td>Sensual</td>
<td>.42</td>
<td>.52</td>
<td>1.52 (1.47)</td>
<td>1.86 (2.17)</td>
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<td></td>
<td>Psychomotor</td>
<td>.32</td>
<td>.58</td>
<td>5.88 (2.74)</td>
<td>5.43 (2.77)</td>
</tr>
</tbody>
</table>

Wilks Lambda(5,38) = .83, p = -.188

Table 3: Comparison of Emotional Overexcitability by Gender and Action

<table>
<thead>
<tr>
<th>IV</th>
<th>DV</th>
<th>F(1,42)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Emotional</td>
<td>1.74</td>
<td>.19</td>
</tr>
<tr>
<td>by Age</td>
<td>Intellectual</td>
<td>.49</td>
<td>.49</td>
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<tr>
<td>Inter-action</td>
<td>Imaginational</td>
<td>1.44</td>
<td>.24</td>
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<tr>
<td></td>
<td>Sensual</td>
<td>5.48</td>
<td>.02</td>
</tr>
<tr>
<td></td>
<td>Psychomotor</td>
<td>2.46</td>
<td>.12</td>
</tr>
</tbody>
</table>

Wilks Lambda(5,38) = .87, p = .363

Figure 1: Items of the Overexcitability Questionnaire (Lysy & Piechowski, 1983)

Do you ever feel high, ecstatic, or incredibly happy? Describe your feelings.
What has been your experience of the most intense pleasure?
What is your special kind of daydreams and fantasies?
What kinds of things get your mind going?
When do you feel the most energy and what do you do with it?
In what manner do you observe and analyze others?
How do you act when you get excited?
How precisely can you visualize events, real or imaginary?
What do you like to concentrate on the most?
What kind of physical activity (or inactivity) gives you the most satisfaction?
Is tasting something special to you? Describe in what way it is special.
Do you ever catch yourself seeing, hearing, or imagining things that aren't really there? Give examples.

Do you ever think about your own thinking? Describe.

When do you feel the greatest urge to do something?

Does it ever appear to you that the things around you may have a Fife of their own, and that plants, animals, and all things in nature have their own feelings? Give examples.

If you come across a difficult idea or concept, how does it become clear to you? Describe what goes on in your head in this case.

Are you poetically inclined? If so, give an example of what comes to mind when you are in a poetic mood.

How often do you carry on arguments in your head? About what sorts of things are these arguments?

If you ask yourself, "Who am I?" what is the answer?

When you read a book, what attracts your attention the most?

Describe what you do when you are just fooling around.

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Nancy Miller is Associate Director of the Center for Family Studies and Adjunt Professor, Department of Sociology, University of Akron.

**CORRECTION**

The following table (1A) was omitted from the article, "Assessing Developmental Potential in Gifted Children: A Comparison of Methods," by Michael Piechowski and Nancy Miller, Volume 17, No 3, pp. 176-180.

**Comparison of Mean Overexcitability Scores From Questionnaire (Group B) and Interview (Group A)**

<table>
<thead>
<tr>
<th>Overexcitability</th>
<th>Questionnaire (N=20)</th>
<th>Interview (N=26)</th>
<th>t[1]</th>
<th>p[1]</th>
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<tr>
<td></td>
<td>Mean     sd</td>
<td>Mean     sd</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychomotor</td>
<td>5.30     2.76</td>
<td>7.58     3.23</td>
<td>-2.5</td>
<td>8.01</td>
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<tr>
<td>Sensual</td>
<td>1.25     1.59</td>
<td>1.23     1.39</td>
<td>.04</td>
<td>ns</td>
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<tr>
<td>Imaginational</td>
<td>9.15     4.15</td>
<td>9.65     5.58</td>
<td>-.35</td>
<td>ns</td>
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<tr>
<td>Intellectual</td>
<td>9.70     5.59</td>
<td>13.35    8.41</td>
<td>-1.77</td>
<td>ns</td>
</tr>
<tr>
<td>Emotional</td>
<td>9.20     4.85</td>
<td>10.62    6.46</td>
<td>-.85</td>
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</tr>
</tbody>
</table>

[1] Two-tailed

[2] p < .05

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