Personality changes of habitual spectacle wearers as they change to contact lens wear

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Abstract
Seventeen habitual full-time spectacle wearers who requested contact lenses at the Pacific University College of Optometry Clinic (PUCOC) were administered the California Psychological Inventory (CPI) before receiving their contact lenses. This experimental group achieved full time contact lens wear. Eight months after the initial testing the subjects were readministered the CPI. A control group of 16 PUCOC patients who had not requested contact lenses was chosen to match the experimental group by age range and sex and underwent the same CPI test-retest program. Student t-tests indicated that neither the experimental nor the control group demonstrated any statistically significant personality changes on retest. Results of questionnaires accompanying the CPI on retest indicated that 70.6% felt more attractive wearing contact lenses than spectacles, but only 29.4% felt that contact lenses had made a significant change in their social lives.

Degree Type
Thesis

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PERSONALITY CHANGES OF HABITUAL SPECTACLE WEARERS AS THEY CHANGE TO CONTACT LENS WEAR

PRESENTED TO THE FACULTY OF PACIFIC UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR RECEIPT OF THE O.D. DEGREE

BY
PAUL F. ROLINE
EDGAR P. CROCKETT
NIRA LEVINE, Ed.D.
-faculty advisor-

DECEMBER 1977
ACKNOWLEDGEMENTS

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A very special thank you goes to Nira Levine Ed.D. our faculty advisor, who found time when there wasn't any.

P.F.R.

E.P.C.
Seventeen habitual full-time spectacle wearers who requested contact lenses at the Pacific University College of Optometry Clinic (PUCOC) were administered the California Psychological Inventory (CPI) before receiving their contact lenses. This experimental group achieved full time contact lens wear. Eight months after the initial testing the subjects were readministered the CPI. A control group of 16 PUCOC patients who had not requested contact lenses was chosen to match the experimental group by age range and sex and underwent the same CPI test-retest program. Student t-tests indicated that neither the experimental nor the control group demonstrated any statistically significant personality changes on retest. Results of questionnaires accompanying the CPI on retest indicated that 70.6% felt more attractive wearing contact lenses than spectacles, but only 29.4% felt that contact lenses had made a significant change in their social lives.
Personality Changes of Habitual Spectacle Wearers As They Change to Contact Lens Wear

The interplay of personality with spectacle wear, requesting contact lenses, and successful contact lens adaptation has been studied and reported in the literature. Individuals wearing spectacles have been rated in studies\(^1\)\(^-\)\(^2\) as being more intelligent, industrious, honest, and dependable, but lower in humor and physical attractiveness\(^3\) than people without spectacles.

Some studies\(^4\)\(^-\)\(^8\) report that spectacle wear can have a negative influence on one's level of self acceptance. Gording\(^5\) mentions that spectacle wearers feel they are disfigured when they wear their spectacles. Terry and Brady\(^9\) found this group to rate their overall beauty (especially their eyes) lower than did subjects not wearing spectacles. Berk\(^6\) adds that spectacle wearers tend to possess feelings of inferiority and blame many on their psychological and social problems on their spectacles. Gyoerffy\(^8\) phrases this reaction "spectacle phobic depression" and cited an extreme case he had witnessed in his ophthalmological practice. A highly myopic young lady had twice requested contact lenses from him. Because of her poor reaction to trial lens insertion, the young woman was declined as a candidate. She attempted suicide as a result of this failure and the thought of returning to spectacles.
With the mother's urging, Gyöerffy successfully fitted the young lady with contact lenses. Positive personality changes were noted as the change was made from spectacle to contact lens wear.

Hugg employed the Personality Orientation Inventory on four groups of female college students. The groups were 1) individuals wearing contact lenses or spectacles, 2) spectacle wearers, 3) contact lens wearers, and 4) individuals not wearing corrective lenses. Results showed the four groups to be very similar in their overall level of mental health. However, on the self acceptance scale, the spectacle wearing subjects scored significantly lower than the other groups. Hugg concludes that "results indicate that wearing glasses can have some negative influence on one's level of self acceptance and contact lenses can help improve this aspect of personality adjustment".

Terry and Zimmerman used the Spielberger State - Trait Anxiety Inventory (SS-TAI) to measure anxiety in four groups in a mock job interview situation. Their groups were 1) habitual contact lens wearers who wore spectacle frames during the "interview", 2) non-contact lens wearers (habitually) who wore spectacle frames, 3) habitual contact lens wearers that did not wear spectacle frames and 4) non-contact lens wearers who did not wear spectacle frames during the experiment. The group of habitual contact lens wearers who wore spectacle frames during the experiment had a much higher anxiety level, as measured by the SS-TAI, than did the other groups. The authors interpreted this to be a "reawakening of a negative self concept (spectacle image) in the habitual contact lens wearers forced to wear spectacle frames again".
Beimon and Blumenthal\textsuperscript{11} using the Minnesota Multiphasic Personality Inventory found no personality characteristics unique to contact lens patients. The Adjective Check List was employed by Harris and Messinger\textsuperscript{12} to illustrate that the personalities of patients seeking contact lenses did not differ from those seeking spectacles. These results, however, disagree with the findings of Weiner\textsuperscript{13} who administered the Cornell Index From N2 to 100 patients seeking contact lenses and 100 requesting spectacles. His results showed significantly more neurotic and psychosomatic disorders among the contact lens requesters.

There appears to be a widespread belief that individuals discarding their habitual spectacles for contact lenses undergo personality changes. Gording\textsuperscript{5} stated that the removal of glasses is an attempt to improve self image. As self image improves, the personality undergoes positive changes. Beacher\textsuperscript{7} cited examples of spectacle wearers whose neuroses and psychoses were reduced with the initiation of contact lens wear. He adds "cosmetic reasons (for requesting contact lenses) are actually psychological ones. Whether they realize it or not, these patients are mentally disturbed over the fact they have to wear spectacles". Woolf\textsuperscript{14} claims that increased self assurance and improved social relationships were apparent in children who changed from spectacle to contact lens wear. He hypothesized this to be due to "an increase of desirable out-going behavior and desirability by the opposite sex".

Gording and Match\textsuperscript{15} noted that many eye care practitioners verbalize that they "know" or "can see" changes that occur in new contact lens wearers. In a pilot study, Gording and Match administered
the House-Tree-Person test to 30 contact lens requesters. Six weeks after the initiation of contact lens wear these individuals were readministered the House-Tree-Person test. Results indicated that 70% of the new contact lens wearers had undergone "positive personality changes" but no specific areas of improvement were cited.

The majority of the literature pertaining to changes in personality after changing from spectacle wear to contact lenses either cite a few examples of dramatic change or merely mention the changes without quantitative support. Only two studies, by Hugg and Garding and Match, have attempted to quantify difference in individuals before and after contact lens fitting. Hugg, in a between subjects design, concluded that contact lenses have a positive effect on one's level of self acceptance. Garding and Match measured a "positive personality change" over a six week period in new contact lens wearers but did not differentiate specific areas of change.

The purpose of this study is to determine if there are any specific areas of personality change that occur, as measured by the California Psychological Inventory (CPI), when individuals change from habitual spectacle wear to full-time contact lens wear. Areas of particular interest are self-acceptance, sense of well being, ascendancy, poise, and self confidence. Other facets of personality, such as responsibility, socialization, intellectual efficiency, and femininity will also be examined.
The California Psychological Inventory (CPI) was constructed to measure particular characteristics of personality that are believed to be of importance for social living and social interaction. The inventory focuses on the favorable or positive aspects of personality rather than the pathological, and consists of 480 true-false items yielding scores on 18 scales. Each scale measures one important facet of interpersonal psychology, and the total 18 scales are designed to provide a comprehensive survey of an individual from the point of view of social interaction.

The scales are grouped into four broad categories that include measures of (I) social skills (poise, ascendency, self-assurance, and feelings of interpersonal adequacy); (II) socialization, responsibility, intrapersonal values; (III) achievement potential and intellectual efficiency; and (IV) intellectual and interest modes. Standard scores for the CPI are based on a sampling of over 13,000 individuals.

The CPI has been shown to be effective in a take-home situation\(^{16}\). It has also been used effectively in test-retest situations as a measure of short\(^{17}\) and long term\(^{18}\) personality change.
Method

Subjects:

The experimental group consisted of 25 subjects who were habitual full-time spectacle wearers that had come to the Pacific University College of Optometry (PUCO) clinic requesting contact lenses. The six males and 19 females ranged in age from 15 to 28 years (Mean = 20.8).

A control group of 18 patients was chosen from among PUCO clinic patients who had requested vision care other than contact lens fitting. An attempt was made to equate this group to the experimental group in age and female-male ratio. The control group (N=18) ranges in age from 18 to 30 and involved four males and fourteen females. The mean age of the control group members was 22.8 years.

Procedure:

During each subject's initial visual examination it was explained that the purpose of this study was to determine if there are any personality changes in new contact lens wearers. All patients approached agreed to participate in the study and were given a copy of the California Psychological Inventory (CPI) test booklet and answer sheet. Patients were informed that the test could be taken at home and mailed back to the clinic in a stamped, self-addressed envelope provided.

Eight months after the original testing, the CPI was readministered on a mail-out, mail-in basis. A one page questionnaire (Appendix A) was included in the retest packet of each experimental
group member. The questions were directed toward determining whether
the subjects had noticed changes in self confidence, self image, or
attractiveness as a result of contact lens wear. Each subject was
also asked if any major events such as a marriage, divorce, or a
death in the family had occurred since their first testing. This
was done as a precaution to eliminate the effects of such events
on CPI scores.

Results

Raw scores obtained from all CPI testing were converted to
standard scores using tables provided in the CPI Manual\textsuperscript{16}. Standard scores are based on a population mean of 50, a standard de­
viation of 10, and a sampling of 13,000 individuals.

All statistical analysis was based on converted scores,
(which are tabled in Appendix B). This allowed analysis of male
and female results collectively, as the value of a converted raw
score is sex dependant.

Of the 25 people originally in the experimental group, three
did not achieve full time contact lens wear (at least nine hours a
day), two had deaths in their families during the experimental
period, and three did not return their re-test packets. Only 16
of the original 25 control group members returned their re-test
packets. Statistical analysis is based upon the remaining 17
experimental group members (12 females, 5 males) and 16 control
group members (13 females, 3 males).
Table 1 lists the mean scores along with standard deviations for each of the 18 CPI scales. Figures 1-4 demonstrate graphically the mean scores for the experimental and control groups at two testing times. Time 1 for the experimental group occurred between the first contact lens pre-fitting examination and the time their contact lenses were dispensed. Time 1 for the control group was shortly after their visual examination at the Pacific University College of Optometry Clinic. Time 2 for both groups occurred eight months after completion of the initial CPI.

Mean scores for the experimental group increased in 14 of the 18 scales from Time 1 to Time 2. The control group mean scores increased in all but one scale (Flexibility). The control group scored higher than the experimental group in 16 of 18 CPI scales at Time 1 and in 15 of 18 in Time 2.

The difference between means were examined for statistical significance utilizing Student t-testing. The results are found in Table 2. Only three of 72 t-tests indicated statistically significant difference between means: The control group demonstrated a significant increase on the Intellectual efficiency (Ie) and Self-acceptance (Sa) scales between Time 1 and Time 2; and the control group scored significantly higher on the Communality (Cm) scale than did the experimental group at Time 2.

Questions 1-4 on the questionnaire (Appendix A) were used to limit the experimental group to individuals wearing contact lenses at least nine hours per day and who had not experienced outstanding changes in their personal lives during the 8 month
EXPERIMENTAL GROUP TIME 1 - VS - EXPERIMENTAL GROUP TIME 2

Notes:

TIME 1
(INITIAL TEST)

TIME 2
(RETEST)
CONTROL GROUP TIME 1 - VS - CONTROL GROUP TIME 2

Notes:

TIME 1
(INITIAL TEST)

TIME 2
(RETEST)

* P ≤ .05

Female Norms

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EXPERIMENTAL GROUP TIME 2 -VS- CONTROL GROUP TIME 2

Notes:

EXPERIMENTAL TIME 2
(RETEST)

CONTROL TIME 2
(RETEST)

* P ≤ .05

Female Norms

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### TABLE 1

Means and Standard Deviations of Converted Scores of California Psychological Inventory Scales At Time 1 And Time 2 For Experimental And Control Groups

<table>
<thead>
<tr>
<th>Scale</th>
<th>Experimental Group (N=16)</th>
<th>Control Group (N=17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do (dominance)</td>
<td>46.82 M ± 9.30 SD</td>
<td>48.38 M ± 10.47 SD</td>
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<tr>
<td>Cs (capacity for status)</td>
<td>40.08 M ± 10.48 SD</td>
<td>46.19 M ± 12.70 SD</td>
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<tr>
<td>Sy (sociability)</td>
<td>42.12 M ± 11.76 SD</td>
<td>47.94 M ± 12.80 SD</td>
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<tr>
<td>Sp (social presence)</td>
<td>48.94 M ± 13.06 SD</td>
<td>52.62 M ± 10.98 SD</td>
</tr>
<tr>
<td>Sa (self-acceptance)</td>
<td>53.06 M ± 10.95 SD</td>
<td>53.69 M ± 11.10 SD</td>
</tr>
<tr>
<td>Wb (sense of well-being)</td>
<td>43.00 M ± 8.27 SD</td>
<td>44.81 M ± 9.22 SD</td>
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<tr>
<td>Re (responsibility)</td>
<td>42.06 M ± 7.80 SD</td>
<td>41.50 M ± 8.70 SD</td>
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<tr>
<td>So (socialization)</td>
<td>49.65 M ± 8.48 SD</td>
<td>50.13 M ± 7.51 SD</td>
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<tr>
<td>Sc (self-control)</td>
<td>45.88 M ± 9.75 SD</td>
<td>46.06 M ± 6.16 SD</td>
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<tr>
<td>To (tolerance)</td>
<td>44.35 M ± 11.02 SD</td>
<td>48.88 M ± 9.66 SD</td>
</tr>
<tr>
<td>G1 (good impression)</td>
<td>40.65 M ± 7.24 SD</td>
<td>42.44 M ± 9.26 SD</td>
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<tr>
<td>Cm (communality)</td>
<td>52.94 M ± 8.64 SD</td>
<td>55.19 M ± 4.21 SD</td>
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<tr>
<td>Ac (achievement via conformance)</td>
<td>46.82 M ± 9.61 SD</td>
<td>48.37 M ± 11.55 SD</td>
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<tr>
<td>Al (achievement via independence)</td>
<td>52.29 M ± 10.97 SD</td>
<td>56.19 M ± 9.50 SD</td>
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<td>Te (intellectual efficiency)</td>
<td>46.65 M ± 12.03 SD</td>
<td>48.75 M ± 11.61 SD</td>
</tr>
<tr>
<td>Fy (psychological-mindedness)</td>
<td>51.29 M ± 11.87 SD</td>
<td>47.75 M ± 9.54 SD</td>
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<tr>
<td>Fx (flexibility)</td>
<td>54.29 M ± 10.76 SD</td>
<td>54.81 M ± 10.24 SD</td>
</tr>
<tr>
<td>Fe (femininity)</td>
<td>48.76 M ± 7.63 SD</td>
<td>50.25 M ± 9.37 SD</td>
</tr>
</tbody>
</table>
### TABLE 2

Student t-test Results Using California Psychological Inventory Converted Scores

<table>
<thead>
<tr>
<th>Scale</th>
<th>Experimental Group Time 1 vs. Experimental Group Time 2</th>
<th>Control Group Time 1 vs. Control Group Time 2</th>
<th>Control Group Time 1 vs. Experimental Group Time 1</th>
<th>Control Group Time 2 vs. Experimental Group Time 2</th>
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<tr>
<td>Po</td>
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<tr>
<td>Cs</td>
<td>1.15</td>
<td>1.45</td>
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<td>1.24</td>
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<tr>
<td>Sy</td>
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<td>1.36</td>
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<tr>
<td>Sp</td>
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<td>1.14</td>
<td>.88</td>
<td>.67</td>
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<tr>
<td>Sa</td>
<td>.29</td>
<td>2.18*</td>
<td>.16</td>
<td>.99</td>
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<tr>
<td>Wb</td>
<td>1.75</td>
<td>.72</td>
<td>.59</td>
<td>.13</td>
</tr>
<tr>
<td>Re</td>
<td>.23</td>
<td>.64</td>
<td>.06</td>
<td>.92</td>
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<tr>
<td>So</td>
<td>.10</td>
<td>1.57</td>
<td>.17</td>
<td>.97</td>
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<tr>
<td>Sc</td>
<td>.74</td>
<td>1.43</td>
<td>.06</td>
<td>.34</td>
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<tr>
<td>To</td>
<td>.72</td>
<td>.38</td>
<td>1.25</td>
<td>.78</td>
</tr>
<tr>
<td>G1</td>
<td>.14</td>
<td>1.20</td>
<td>.62</td>
<td>.68</td>
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<tr>
<td>Cm</td>
<td>1.27</td>
<td>.24</td>
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<tr>
<td>Ac</td>
<td>.08</td>
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<td>1.48</td>
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<td>Al</td>
<td>1.84</td>
<td>.83</td>
<td>1.09</td>
<td>1.02</td>
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<tr>
<td>Ie</td>
<td>.21</td>
<td>2.16*</td>
<td>.51</td>
<td>.85</td>
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<tr>
<td>Py</td>
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<td>1.41</td>
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<td>Fx</td>
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<tr>
<td>Fe</td>
<td>1.01</td>
<td>.39</td>
<td>.50</td>
<td>.08</td>
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* Significant at P=0.05 level
experimental period. Results from questions 5-8 are presented in Table 3. For the experimental group 70.6% indicated that they felt more attractive wearing contact lenses than glasses, 52.9% felt an increase in self confidence with contact lens wear, and 47.1% found it easier to meet and talk to people since they had begun contact lens wear. Only 29.4% felt that contact lenses had made a significant change in their social lives.
TABLE 3

Experimental Group Member Replies to Questionnaire

5) Do you feel more attractive wearing your contacts than your glasses?
   - Yes       70.6%
   - No        0 %
   - No Difference 29.4%

6) Have you noticed any difference in your self confidence while wearing your contacts?
   - More       52.9%
   - Less       5.9%
   - No Difference 41.2%

7) Do you find it easier to meet and talk to people since you began wearing contact lenses?
   - Yes       47.1%
   - No        17.6%
   - No Difference 35.3%

8) Do you feel that contact lenses have made a significant change in your social life?
   - Yes       29.4%
   - No        5.9%
   - No Difference 64.7%
Discussion

The results of this study, utilizing the California Psychological Inventory, do not support the hypothesis that significant personality changes occur in habitual full-time spectacle wearers who change to contact lenses. Statistical analysis of the experimental group's data, after an eight month interval, indicates that none of the 18 CPI scales showed a statistically significant change. Three CPI scales did show statistical significance: The Communality (Cm) scale results between the experimental and control groups at Time 2 and the Intellectual efficiency (Ie) and Self-acceptance (Sa) scales within the control group were all significant at the .05 level. It must be noted however, that 72 t-tests were employed. It is anticipated that three of these scales could show significance by chance.

The results of the present study support the findings of Beimon and Blumenthal\textsuperscript{11} and Harris and Messinger\textsuperscript{12} who, employing the Minnesota Multiphasic Personality Inventory and the Adjective Check List respectfully, found that the personalities of patients seeking contact lenses do not differ from those seeking spectacles. However, the present study does not necessarily dispute the results of Weiner's\textsuperscript{13} study, which employed the Cornell Index Form N2, and concluded that contact lens requesters show more psychotic and neurotic disorders than spectacle requesters. The CPI is intended primarily for use as a measure of characteristics important for social living and interaction. It may not be sensitive
instances. These conclusions could be further tested with the use of both inventory and projective tests.

Basic personality traits may be fixed in the age range represented by the members of this study. It is possible that the introduction of contact lenses to other age groups would show changes in basic personality traits. Woolf\textsuperscript{14} claims that increased self-assurance and improved social relationships were apparent in children who changed from spectacle to contact lens wear. Perhaps, individuals younger than those in the present study would demonstrate significant personality changes with the commencement of contact lens wear, as measured by a personality inventory.

It may be that an eight month period of observation is not long enough to produce basic personality changes. To test this hypothesis further investigators may choose a longer inter-test period in a new experimental design or to retest the experimental and control group members of this study at another time.
REFERENCES


References Continued...


APPENDIX A

Questionnaire Sent To Experimental Group Time 2

1) How many hours per day do you wear your contact lenses?
   a. ___ 1-4   c. ___ 9-12
   b. ___ 5-8   d. ___ 12 or more

2) How many hours per day do you wear your glasses?
   a. ___ 1-4   c. ___ 9-12
   b. ___ 5-8   d. ___ 12 or more

3) If you no longer wear contact lenses, please explain the reason for discontinuing their wear.

4) Have any major changes occurred in your life in the past eight months?
   a. ___ none
   b. ___ marriage
   c. ___ divorce
   d. ___ death in family
      e. ___ prolonged unemployment
      f. ___ other (please explain)

5) Do you feel more attractive wearing your contacts than your glasses?
   a. ___ yes   b. ___ no   c. ___ no difference

6) Have you noticed any difference in your self confidence while wearing your contacts?
   a. ___ more   b. ___ less   c. ___ no difference

7) Do you find it easier to meet and talk to people since you began wearing contact lenses?
   a. ___ yes   b. ___ no   c. ___ no difference

8) Do you feel that contact lenses have made a significant change in your social life?
   a. ___ yes   b. ___ no   c. ___ no difference

   If yes, please explain.
### CONVERSION SCORES - TIME 1 / TIME 2

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<th>Wb</th>
<th>Re</th>
<th>So</th>
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<th>Cm</th>
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</table>

*Note: The table contains raw numerical data representing conversion scores for various tests and the time periods.*