The Effect Upon the Reliability of Attitude Scales
of Using Three, Five or Seven Alternatives

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In previous studies (1 & 2) - higher reliabilities with the Thurstone Attitude Scales were obtained by using a simple method of scoring in place of the conventional Thurstone procedure. The present study was undertaken to study this simple method of scoring. The problem was to investigate the reliability of attitude scales by using three variations of this simple method of scoring.

By use of the simple scoring method, known as the 1-5 method, the responses to each item in an attitude scale were scored on a 5 point range. The instructions given to the individuals called for one of five possible responses as follows:

1. Strongly agree with the statement
2. Agree with the statement
3. Undecided
4. Disagree with the statement
5. Strongly disagree with the statement.

These responses were given the values, 1, 2, 3, 4, 5, or 5, 4, 3, 2, 1, respectively; the value of 5 always being given to that response which indicates a favorable attitude and the value of 1 for the hostile attitude. For example, this statement occurs in one scale; "I favor the early entrance of the United States into the League of Nations." A strongly agree response receives a value of 5; a strongly disagree response, a value of 1. The total score on the attitude scale was the sum of the individual values assigned to the responses to each statement.

* This study was accomplished through the cooperation of the Works Division of the Emergency Relief Bureau of New York City. The Works Division supplied workers who assisted in analyzing the data.
In this study, two additional variations of the simple method were used: a 3 point range known as the 1-3 method, and a 7 point range known as the 1-7 method. The three responses possible in the 1-3 method were simply Agree, Undecided, and Disagree. In the 1-7 method, one additional possible response was added to each extreme. The seven possible responses were, then, as follows:

1. Very strongly agree
2. Strongly agree
3. Agree
4. Undecided
5. Disagree
6. Strongly disagree
7. Very strongly disagree.

The following attitude scales were used:

1. Attitude Toward War* Ruth C. Peterson
2. Attitude Toward War** Wilke
3. Attitude Toward Distribution of Wealth Wilke
4. Attitude Toward International Relations*** Gardner Murphy and Rensis Likert

* Published by the University of Chicago Press
** The Statements in this scale were compiled by Gardner Murphy and Rensis Likert. They are:

1. I favor the early entrance of the United States into the League of Nations.
2. The United States should consult other nations in making her immigration laws.
3. The United States should give naval demonstrations in the Pacific.
4. War at present is a biological necessity.
5. The Treaty of Versailles should be reconsidered, with greater leniency given to Germany.
6. The United States should cancel a large part of the Allied war debt in return for concessions as to disarmament and economic reconstruction abroad.
7. There should be national referendum on every war.
8. I look with suspicion upon the idea of a Super-State as the future hope of international government.
9. It is an idle dream to expect to abolish war.
10. I am in sympathy with the movement for the outlawing of war.
11. The United States should enter the World Court.
12. All men who have the opportunity should enlist in the Citizens
The attitude scales were administered to students of the University College of Arts and Pure Science of New York University. These students were taking the first course in Psychology at the time. A preliminary study was made in May 1934 using the Attitude Toward War Scale - Peterson. The rest of the study was made in September and October of 1934 using the remaining scales. In administering the Attitude scales the following instructions were used.

1-3 method

If you agree with a statement put a plus (+) in the parenthesis in front of the statement.

If you disagree with a statement, put a minus (-).

If you are undecided, put a question (?).

1-5 method

If you agree with a statement, put a plus (+) in the parenthesis in front of the statement.

If you strongly agree with a statement, put a plus with a circle around it (⁺⁺).

If you disagree with a statement, put a minus (-).

If you strongly disagree with a statement, put a minus with a circle around it (⁻⁻).

If you are undecided put a question (?).

Military Training camps.

13. The United States, whether a member or not, should cooperate fully in the humanitarian and economic programs of the League of Nations.

14. In the interest of permanent peace, we should be willing to arbitrate absolutely all differences with other nations which we cannot readily settle by diplomacy.

15. A person who loves his fellow men should refuse to engage in any war, no matter how serious the consequences to his country.

16. The United States should have the largest military and naval air fleets in the world.

17. We should be willing to fight for our country whether it is in the right or in the wrong.

18. We must strive for loyalty to our country before we can afford to consider world brotherhood.

19. Our country should never declare war again under any circumstances.

20. Moving pictures showing military drill and naval manoeuvres should be exhibited to encourage patriotism.
1-7 method

If you agree with a statement, put a plus (+) in the parenthesis in front of the statement.

If you strongly agree with a statement, put a plus with a circle around it (⊕).  

If you very strongly agree with a statement, put a plus with a circle around it followed by an exclamation point (⊕!).  

If you disagree with a statement, put a minus (-).  

If you strongly disagree with a statement, put a minus with a circle around it (⊖).  

If you very strongly disagree with a statement, put a minus with a circle around it followed by an exclamation point (⊖!).  

If you are undecided, put a question (?).

In the preliminary study, the students were given six attitude scales under the 1-5 instructions. The Attitude Toward War - Peterson was administered first. After all the scales had been finished, the students were asked to take the War Scale again under the 1-7 instructions. Their previous 1-5 responses were hidden from view by folding under the margin in which these answers had been placed. The attitude scales were scored by the 1-3 method by considering either a strongly agree or agree response simple as agree; and similarly a strongly disagree and disagree response as disagree. The reliabilities given by these three scoring methods obtained by correlating form A against form B are shown in Table 1.

In the final study, a carefully controlled procedure was used. The attempt was made to overcome inadequacies and criticisms of the preliminary study. At the first administration of the attitude scales, 2 of the 3 methods were used. The same procedure of covering the first responses was observed as in the preliminary study. These three scales
TABLE I

Reliabilities Obtained by Scoring by the 1-3, 1-5 & 1-7 Methods
Preliminary Study

<table>
<thead>
<tr>
<th>Method of Scoring</th>
<th>N</th>
<th>Obtained r A vs B</th>
<th>P.E.</th>
<th>Corrected r*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>185</td>
<td>.841</td>
<td>.014</td>
<td>.913</td>
</tr>
<tr>
<td>1-5</td>
<td>185</td>
<td>.868</td>
<td>.012</td>
<td>.924</td>
</tr>
<tr>
<td>1-7</td>
<td>182</td>
<td>.867</td>
<td>.013</td>
<td>.924</td>
</tr>
</tbody>
</table>

* Spearman-Brown Prophecy formula for doubling the length of the test.

were given: Attitude Toward War - Wilke, Attitude Toward Distribution of Wealth - Wilke, and Attitude Toward International Relations - Likert.

One month later the scales were again administered under the remaining method. The students were divided into 6 groups. The following plan of administration was adopted.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>First Method</th>
<th>Second Method</th>
<th>N</th>
<th>Third Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44</td>
<td>1-3</td>
<td>1-5</td>
<td>43</td>
<td>1-7</td>
</tr>
<tr>
<td>2</td>
<td>49</td>
<td>1-5</td>
<td>1-7</td>
<td>49</td>
<td>1-3</td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>1-7</td>
<td>1-3</td>
<td>37</td>
<td>1-5</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>1-5</td>
<td>1-3</td>
<td>27</td>
<td>1-7</td>
</tr>
<tr>
<td>5</td>
<td>27</td>
<td>1-7</td>
<td>1-5</td>
<td>23</td>
<td>1-3</td>
</tr>
<tr>
<td>6</td>
<td>31</td>
<td>1-3</td>
<td>1-7</td>
<td>30</td>
<td>1-5</td>
</tr>
</tbody>
</table>

The split half reliabilities were obtained for each method of scoring, separately for the first administration and for the second administration one month later. These results are shown in Table II.
<table>
<thead>
<tr>
<th></th>
<th><strong>Distribution of Wealth</strong></th>
<th><strong>International Relations</strong></th>
<th><strong>War</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Administration of Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1-3 Method</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Groups 1, 3, 4, 6 N = 140)</td>
<td>Distribution of Wealth:</td>
<td>International Relations:</td>
<td>War:</td>
</tr>
<tr>
<td></td>
<td>Obtained r* P.E. Predicted r**</td>
<td>Obtained r P.E. Predicted r</td>
<td></td>
</tr>
<tr>
<td>Distribution of Wealth</td>
<td>.780 .022 .876</td>
<td>.863 .020 .925</td>
<td></td>
</tr>
<tr>
<td>International Relations</td>
<td>.668 .032 .795</td>
<td>.727 .038 .843</td>
<td></td>
</tr>
<tr>
<td>War</td>
<td>.764 .024 .864</td>
<td>.798 .032 .888</td>
<td></td>
</tr>
<tr>
<td><strong>Second Administration One Month Later</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1-5 Method</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Groups 1, 2, 4, 5 N = 146)</td>
<td>Distribution of Wealth:</td>
<td>International Relations:</td>
<td>War:</td>
</tr>
<tr>
<td></td>
<td>Obtained r P.E. Predicted r**</td>
<td>Obtained r P.E. Predicted r</td>
<td></td>
</tr>
<tr>
<td>Distribution of Wealth</td>
<td>.830 .018 .907</td>
<td>.899 .015 .947</td>
<td></td>
</tr>
<tr>
<td>International Relations</td>
<td>.684 .030 .809</td>
<td>.783 .032 .876</td>
<td></td>
</tr>
<tr>
<td>War</td>
<td>.832 .018 .907</td>
<td>.883 .018 .936</td>
<td></td>
</tr>
<tr>
<td><strong>1-7 Method</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Groups 2, 3, 5, 6 N = 146)</td>
<td>Distribution of Wealth:</td>
<td>International Relations:</td>
<td>War:</td>
</tr>
<tr>
<td></td>
<td>Obtained r P.E. Predicted r**</td>
<td>Obtained r P.E. Predicted r</td>
<td></td>
</tr>
<tr>
<td>Distribution of Wealth</td>
<td>.827 .019 .901</td>
<td>.855 .021 .919</td>
<td></td>
</tr>
<tr>
<td>International Relations</td>
<td>.700 .029 .823</td>
<td>.647 .048 .787</td>
<td></td>
</tr>
<tr>
<td>War</td>
<td>.773 .024 .870</td>
<td>.861 .021 .925</td>
<td></td>
</tr>
</tbody>
</table>

* This coefficient was obtained by correlating the sum of the odd items vs. the sum of the even items.

** Spearman-Brown Prophecy formula for doubling the length of the test
In every instance the 1-5 method yielded a higher reliability than the 1-3 method, and in all but one, a higher reliability than the 1-7 method. The differences were not large. However, the superiority of the 1-5 method appeared consistently. It is interesting to note how favorably the 1-3 method compared with the other methods. It is probable that the 1-7 method did not yield higher reliabilities because of the difficulty in differentiating a strongly agree feeling from a very strongly agree, and similarly for the disagree extremes.

Summary

Three variations of the simple method of scoring have been compared, 1-3, 1-5, and 1-7 methods. The 1-5 method consistently yielded slightly higher reliabilities than either of the others.
Bibliography


2. Likert, R., Roslow, S., & Murphy, G. A Simple and Reliable Method of Scoring the Thurstone Attitude Scales, J. Soc. Psychol.