Scale Development of a Social Skill Measure: An IRT Analysis

ABSTRACT: This study outlines the scale development and IRT analysis for a new social skill measure applicable to the workplace. The measure included three subscales: assertiveness, impression management, and social intuition. The assertiveness subscale demonstrated the most robust psychometric properties. Implications and future directions are discussed.

Marlowe (1986) defined social intelligence as "the ability to understand the feelings, thoughts, and behaviors of persons, including oneself, in interpersonal situations and to act appropriately upon that understanding" (p. 52). Although social intelligence, or social skill, has long been the focus of research in clinical and social psychology (e.g., Strang, 1930; Marlowe, 1986), the increasing number of job-related tasks requiring social cooperation has made social skill particularly relevant for organizational research (Ferris, Witt, & Hochwarter, 2001; Hogan & Shelton, 1998). Employees high in social skill may be more effective at achieving others' buy-in and collaboration due to their ability to effectively read and manipulate interpersonal situations. For this reason, social skill has been linked with performance, especially for highly conscientious individuals (Witt & Ferris, 2003). Social skill is even more important in teamwork settings, where this competency may allow individuals to more effectively manage conflict and coordinate work with others (Morgeson, Reider, & Campion, 2005).

Given its emerging importance, there is a need to empirically develop a measure for social skill specific to the expression of this competency in the workplace. In an initial attempt, Posthuma, Morgeson and Campion (2002) suggested that social skill can be accurately measured in an employment interview because this setting yields information regarding how an individual perceives social situations and interacts with others (Huffcutt, Conway, Roth, & Stone, 2001).

However, despite tailoring interview questions specifically to assess social skills, Morgeson et al. (2005) found that social skills assessed through the interview were significantly related to teamwork knowledge. Therefore, interview-based measures of social skill may be contaminated. Accordingly, the present study aims to address these limitations by empirically developing a self-report measure of workplace-relevant social skill.

Method

Participants

A sample of 1,954 U.S. employees voluntarily participated in an anonymous survey that included the present social skill items as well as several other measures.

Social Skill Measure

The initial 27-item pool was developed based on theory about which social behaviors and characteristics may impact an individual's ability to interact effectively with others in the workplace. Following reliability analyses, the scale was shortened to 18 items. Participants responded on a five-point scale ranging from (1) not at all to (5) very much. The complete scale had a Cronbach's α of .64, with the subscales of assertiveness (α = .81), impression management (α = .62), and social intuition (α = .65).

Results

We first assessed dimensionality using a principal components analysis. Three orthogonal factors were extracted from the remaining 18 items. Items 1-8 comprise the assertiveness scale, items 9-12 comprise the impression management scale, and items 13-18 comprise the social intuition scale. Because the response scale included five response options for each item, we used Samejima's (1997) graded-model in the IRT analyses for each subscale. Table 1 displays the A- and B- parameters for all 18 items. The A-parameter, or the discrimination parameter, tells us

how effectively an item can discriminate between adjacent levels of theta (i.e., underlying construct). The B-parameters are also known as the difficulty or threshold parameters. B-parameters for a single item are considered in tandem to determine whether an item is relatively more easy or difficult to endorse when compared to the other items.

As shown in Figures 1-8, the majority of the items for the first subscale measured better at higher levels of theta (i.e., assertive behavior). Table 1 reveals that all except one (item 8) of the items for the assertiveness factor were highly discriminating with A-parameters above one. The relatively high B-parameters for these items indicate that, although these items are relatively discriminating at all levels of theta, they provide less information about individuals lower in assertive behavior. These tendencies are also reflected in Figures 9 and 10. Overall, these items did a good job discriminating (with the first item discriminating the most; A = 2.45) among and covering a broad range of assertive behavior (although focused more on the upper end).

Figures 11- 15 display the trace lines for the four items in the second subscale, impression management. As shown here and in Table 1, the A-parameters are very high for the first two items but are below one for the last two items. In other words, these two last items (i.e., items 11 and 12) do not yield very much information about one's ability to impression manage. The B-parameters for this subscale are also considerably lower than those from the first subscale. This tendency, corroborated by the test characteristic curve in Figure 16 and the test information curve in Figure 17, indicates that this subscale does not measure impression management very well among individuals high in this construct (i.e., thetas of 1 and above).

Figures 17-22 depict the trace lines for the six items making up the social intuition subscale. With the exception of item 17, all of the items have A-parameters above one. The B-parameters for these items are skewed to the right. The test information (Figure 24) and

characteristic (Figure 23) curves indicate a fairly even distribution of information across different levels of theta, dropping off only the highest levels of social intuition.

Examining the scales of Figures 10, 16, and 24 reveals that the assertiveness subscale contributes over double the amount of information at its peak than do the impression management and social intuition subscales at their peaks.

<div align="center">Discussion</div>

In conclusion, this scale needs further refining to be a considered psychometrically sound as a whole. The preceding analyses demonstrate that items 11, 12, and 17 should be deleted as they contribute to inconsistency in their respective subscales and may actually tap into a slightly different construct than the other items. The assertiveness subscale has the best psychometric properties, and may alone be used as an indicator of straightforward tendencies. Future research should continue to refine the impression management and social intuition scales as well as provide validity evidence for all three subscales.

References

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Table 1.

A and B parameters for all 18 items.

| Item	A	B1	B2	B3	B4
1	2.45	-0.75	0.40	0.89	1.84
2	1.97	-0.70	0.28	1.07	1.90
3	1.57	-1.03	0.32	0.84	2.14
4	1.46	-1.40	0.21	1.02	2.44
5	1.37	-0.70	0.48	1.10	2.14
6	1.20	-1.42	0.16	1.06	2.49
7	1.23	-1.19	0.28	1.03	2.35
8	0.90	-2.48	-0.13	1.15	3.47
9	2.00	-2.02	-0.96	-0.28	1.24
10	2.05	-2.22	-1.20	-0.58	1.09
11	0.82	-4.21	-2.05	-0.63	1.85
12	0.90	-3.88	-1.81	-0.50	2.23
13	1.41	-3.26	-1.88	-0.59	1.42
14	1.31	-3.31	-1.83	-0.62	1.48
15	1.45	-3.27	-2.13	-1.26	0.66
16	1.03	-3.17	-1.52	-0.64	1.57
17	0.90	-4.00	-1.82	-0.61	1.65
18	1.22	-4.05	-2.65	-1.35	1.10

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Figure 1. Factor 1, Item 1 Trace Lines
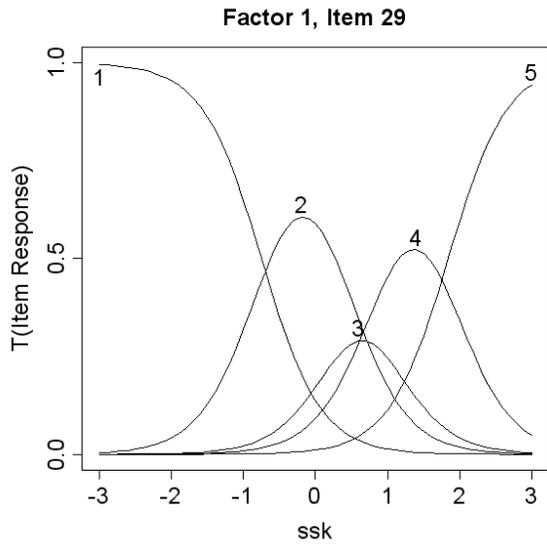
Figure 2. Factor 1, Item 2 Trace Lines

Factor 1, Item 29
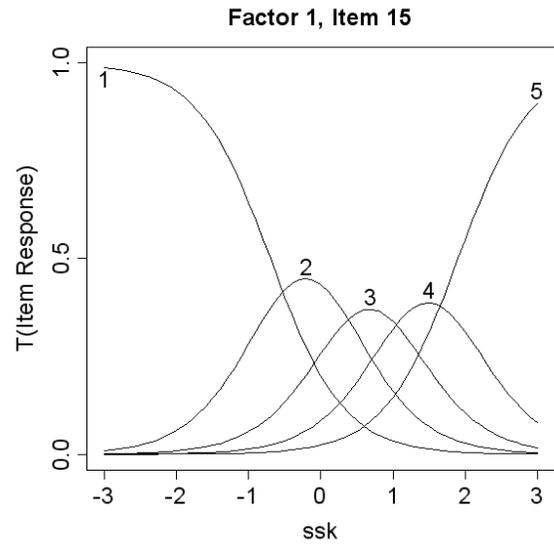
Factor 1, Item 15

Figure 3. Factor 1, Item 3 Trace Lines

*Figure 4*. Factor 1, Item 4 Trace Lines

Factor 1, Item 3
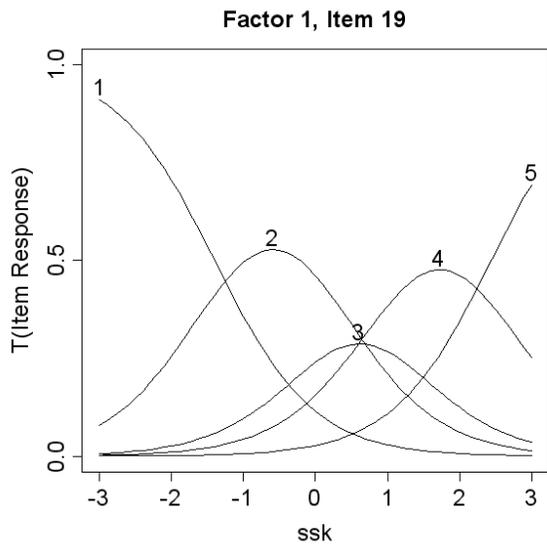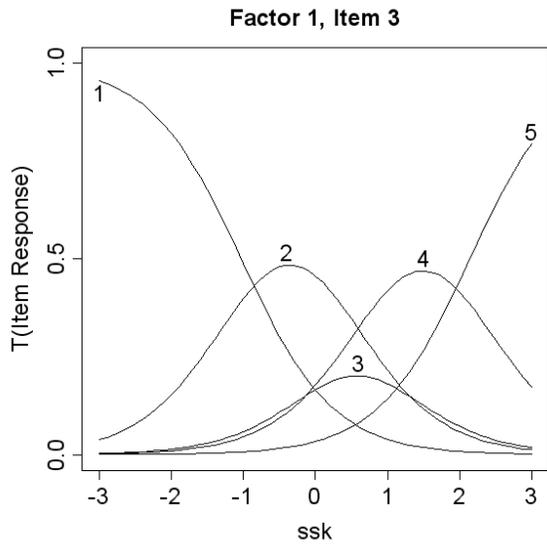
Factor 1, Item 19

*Figure 5*. Factor 1, Item 5 Trace Lines   *Figure 6*. Factor 1, Item 6 Trace Lines
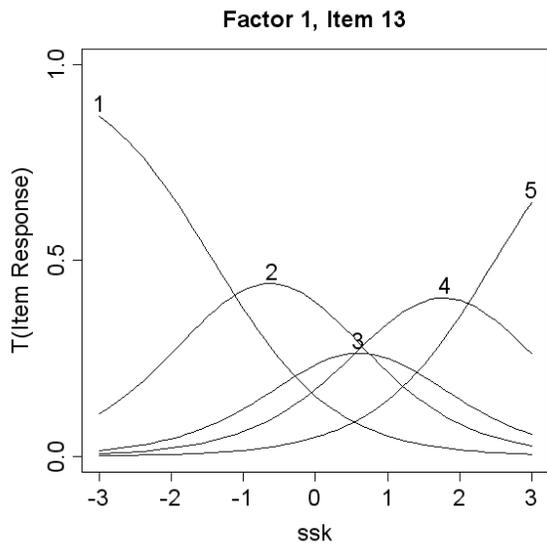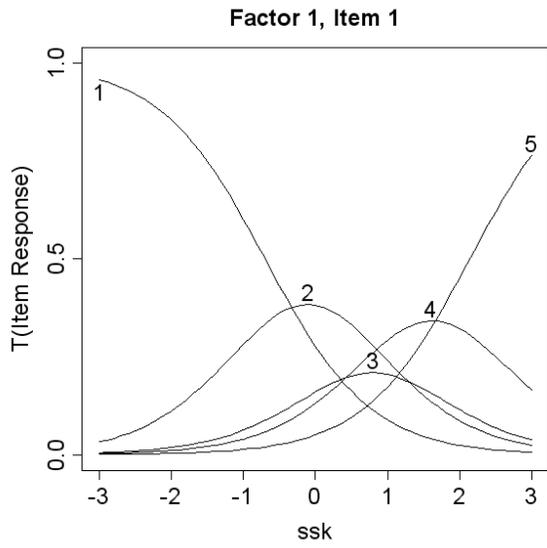
Factor 1, Item 1

Factor 1, Item 13

Figure 8. Factor 1, Item 8 Trace Lines

Factor 1, Item 11

Factor 1, Item 33
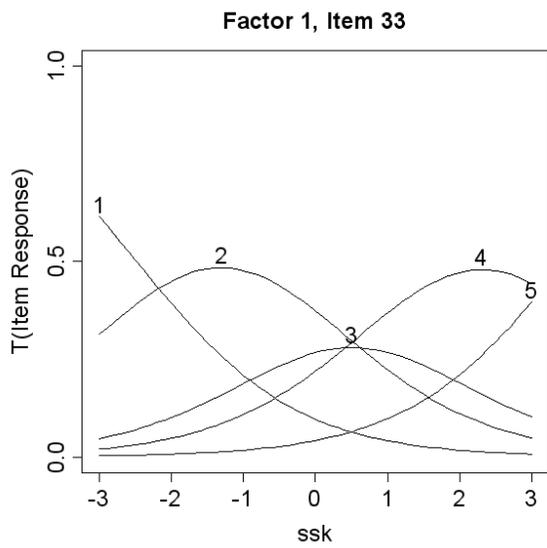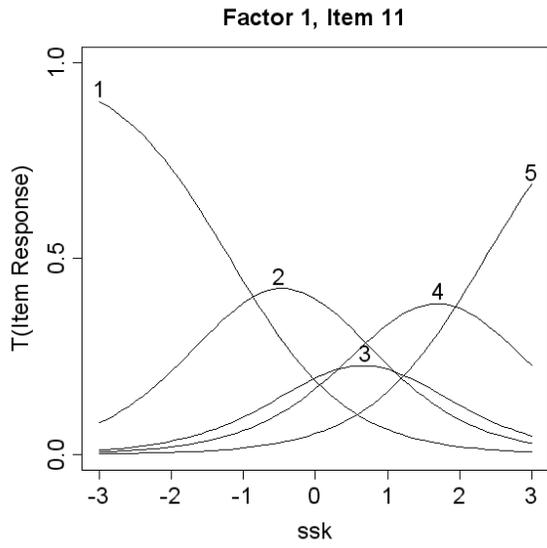
Figure 9. Factor 1 TCC   *Figure 10*. Factor 1 Test Information Curve

Factor 1 Test Characteristic Curve
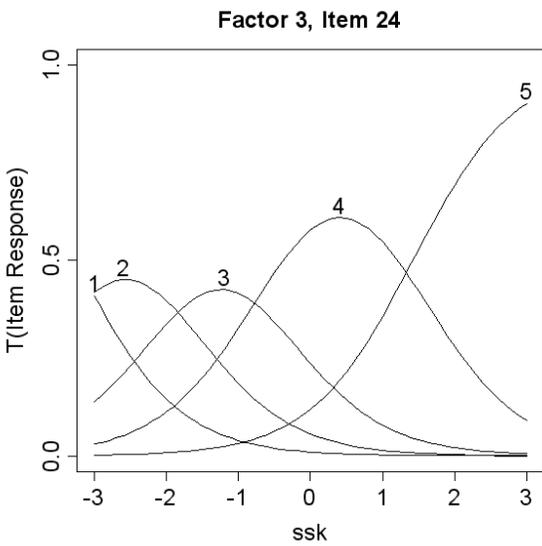
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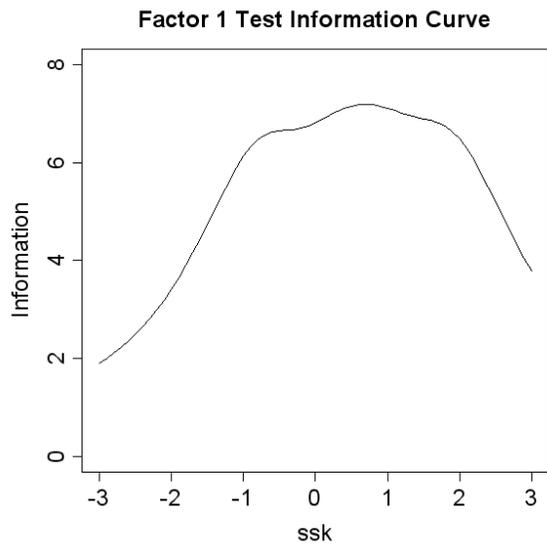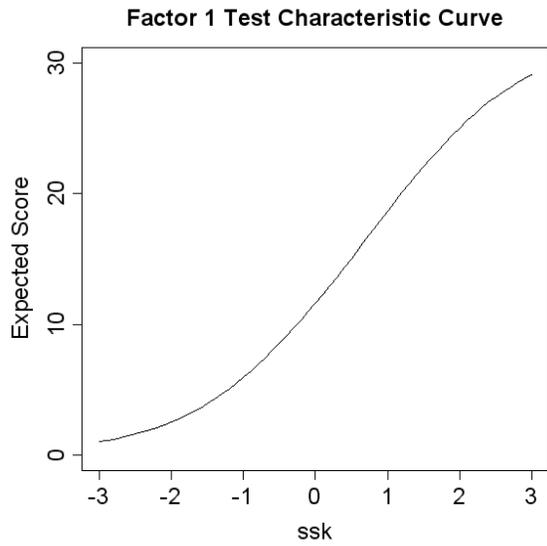
Figure 11. Factor 2, Item 9 Trace Lines

*Figure 12*. Factor 2, Item 10 Trace Lines
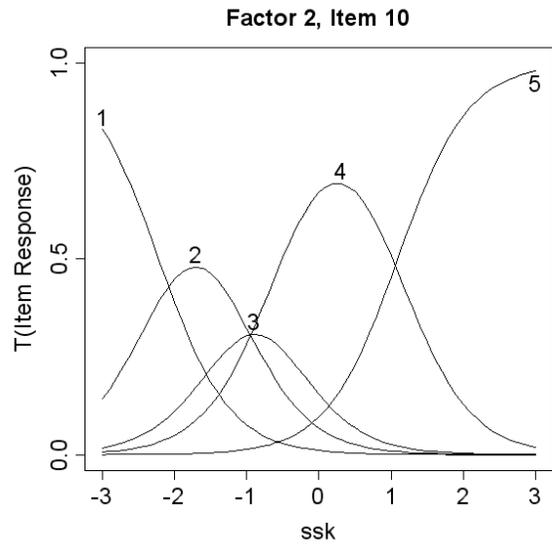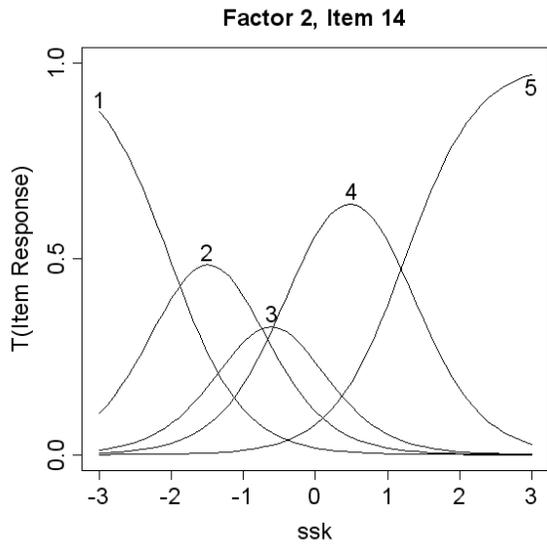
Figure 13. Factor 2, Item 11 Trace Lines

Figure 14. Factor 2, Item 12 Trace Lines

Factor 2, Item 18

Factor 2, Item 28
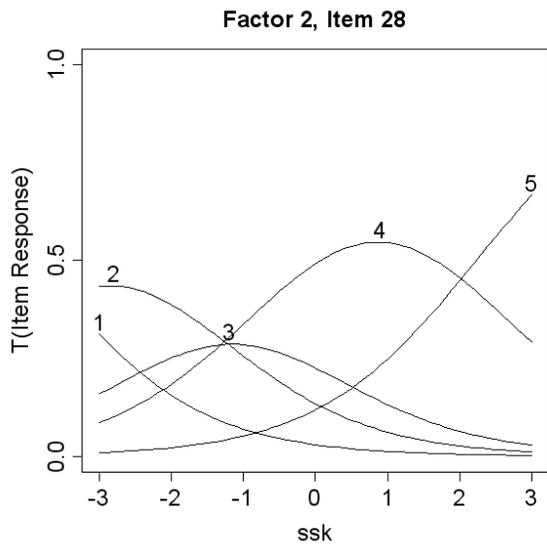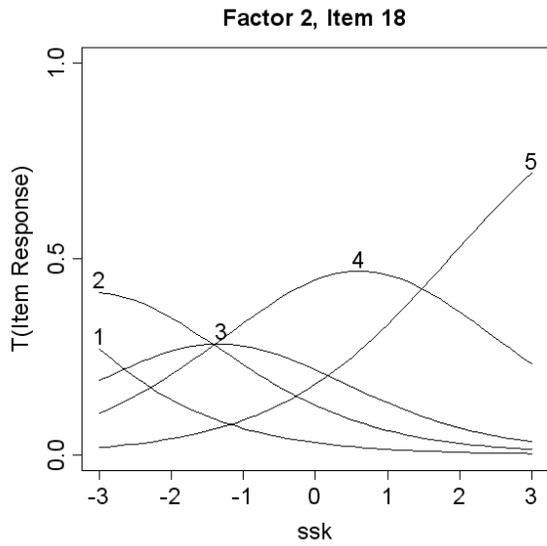
Figure 15. Factor 2 TCC

Figure 16. Factor 2 Test Information Curve

Factor 2 Test Characteristic Curve

Factor 2 Test Information Curve
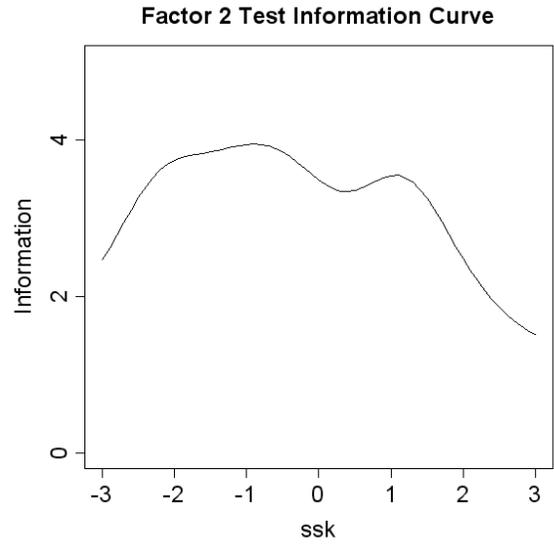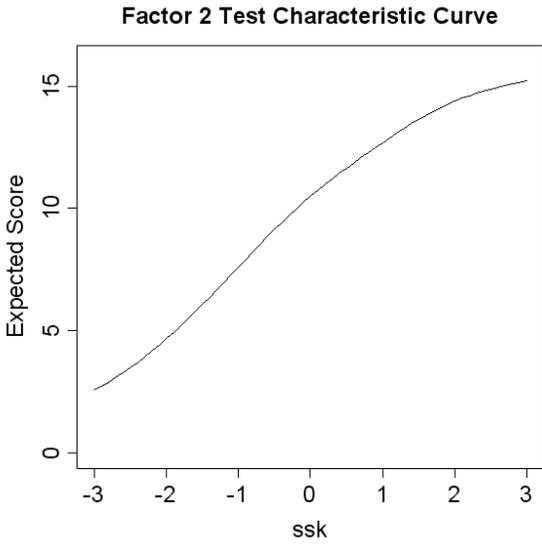
Figure 17. Factor 3, Item 13 Trace Lines

Figure 18. Factor 3, Item 14 Trace Lines

Factor 3, Item 24
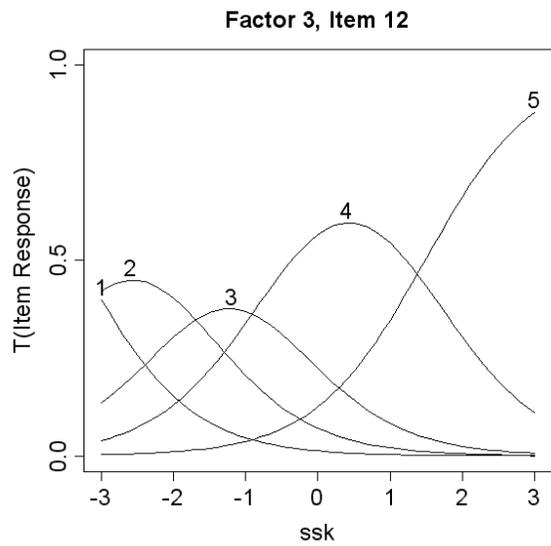
Factor 3, Item 12

Figure 19. Factor 3, Item 15 Trace Lines

Figure 20. Factor 3, Item 16 Trace Lines

Factor 3, Item 22
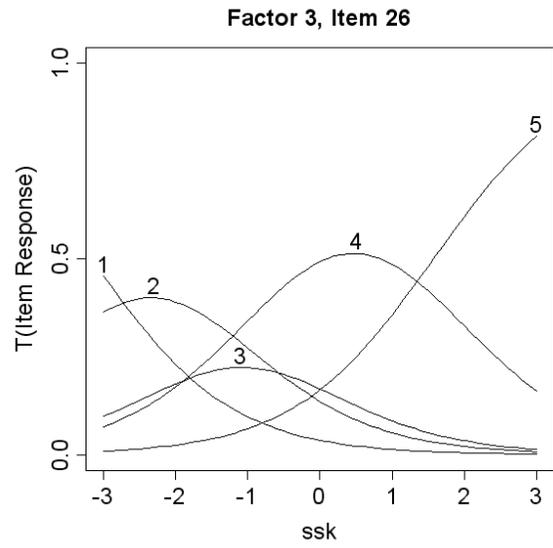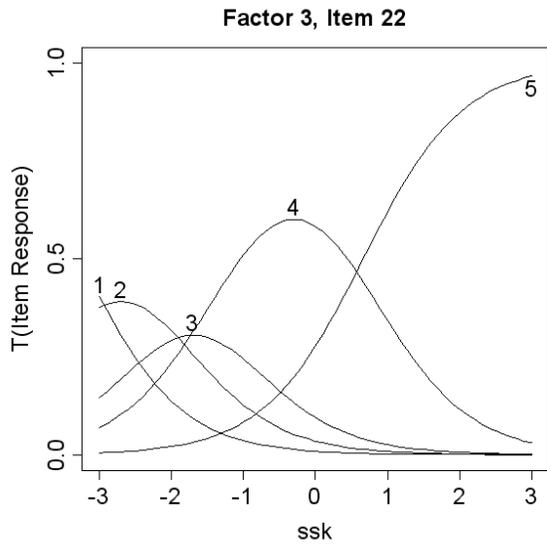
Factor 3, Item 26

Figure 21. Factor 3, Item 17 Trace Lines

Figure 22. Factor 3, Item 18 Trace Lines

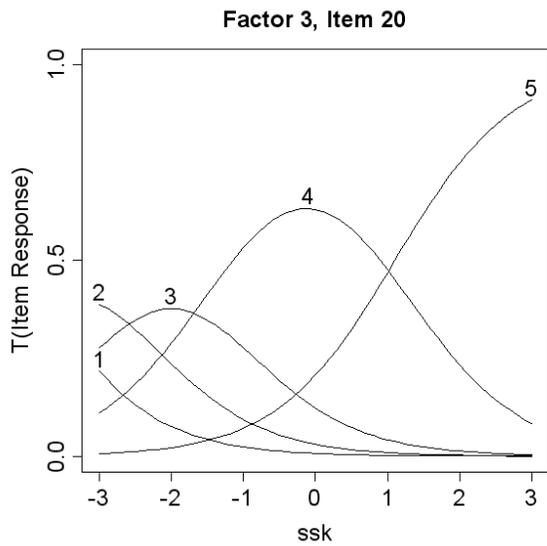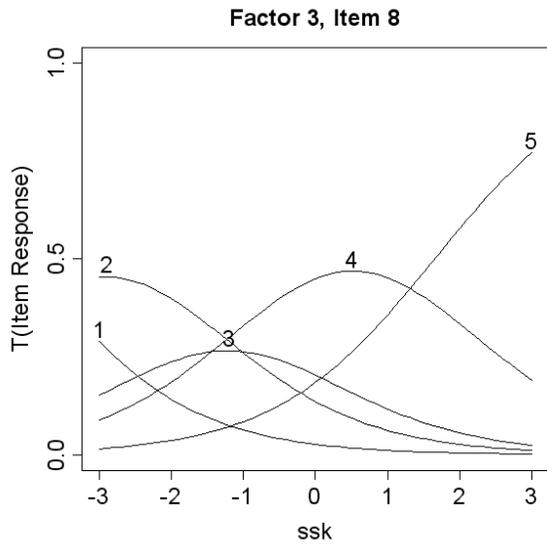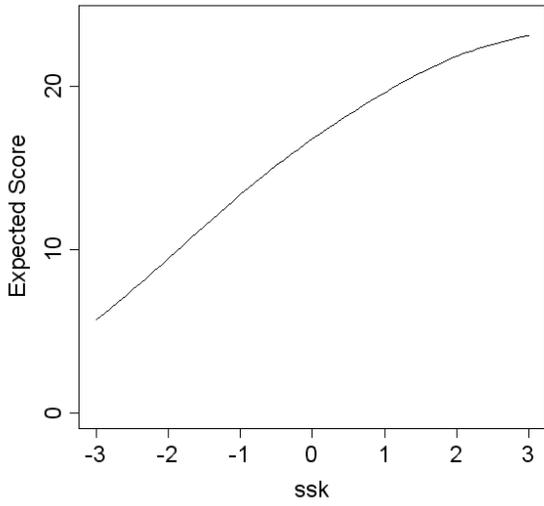**Factor 3, Item 8**

Factor 3, Item 20

Figure 23. Factor 3 TCC

Figure 24. Factor 3 Test Information Curve

Factor 3 Test Characteristic Curve

Factor 3 Test Information Curve