

## Validation of French- and English-Canadian Versions of the Social Cue Recognition Test

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**Objective:** Our primary objective was to create and validate the Social Cue Recognition Test-C (SCRT-C), a Canadian test comparable with the original SCRT.

**Method:** We administered the SCRT-C and the original SCRT to 111 normal undergraduate students.

**Results:** In our sample, the reliability and validity of the SCRT-C were moderately high and similar to those found with Corrigan's SCRT. The results also suggest that the English and French versions of the Canadian SCRT are equivalent.

**Conclusions:** The SCRT-C is an appropriate instrument for assessing social cue recognition in emotional contexts.

(Can J Psychiatry 2002;47:81–85)

### Clinical Implications

- The Canadian Social Cue Recognition Test (SCRT-C) is an appropriate instrument for assessing social cue recognition in emotional contexts.
- The psychometric characteristics of the SCRT-C are highly comparable with those found on the original SCRT. At certain levels, these psychometric characteristics are superior on the SCRT-C.
- The SCRT-C could be useful in studying the deficit in emotion and social cue perception in individuals with psychiatric problems.

### Limitations

- Out of 36 items, 4 problematic ones had to be removed from each vignette to obtain acceptable internal consistency and validity.
- The internal consistency estimates for the SCRT-C and SCRT-US were only moderately high.
- The SCRT-C has not yet been tested on a sample of schizophrenia patients.

**Key Words:** Social Cue Recognition Test, emotion, social cue, recognition, schizophrenia

Schizophrenia patients frequently experience problems when attempting to identify emotions based on the expressive behaviour of others (for example, 1–3). Moreover, they have been shown to be less sensitive than the general population to interpersonal cues emitted in social situations (3,4). These difficulties may affect the quality of schizophrenia patients' social interactions. In the past decade, studies using the Social Cue Recognition Test (SCRT) (3) have contributed to our understanding of social cue perception in schizophrenia patients (4–9) by showing that they have more difficulty than do normal participants in recognizing abstract

versus concrete cues (3,10). This difficulty is even greater in contexts where emotional arousal is low (3–5).

The SCRT is frequently used to evaluate social perception in individuals with schizophrenia and has good test-retest reliability (5) and concurrent validity (3). This instrument has been available in English only, however, and for use in Canada, a bilingual version was needed. The goal of our study was to create a Canadian (French and English) version of the (SCRT-C) that is similar to the original American version (SCRT-US). We developed a bilingual test with a content

**Table 1. Comparison of vignette themes from the SCRT-US and SCRT-C**

Vignette	American SCRT	Canadian SCRT
Low emotion 1	Two people are ignoring a third person and talk behind his back about a party.	Two men share a cab from the airport; one dupes the other into paying the full fare.
Low emotion 2	Three friends are playing a game of cards, which ends when the woman wins.	A tax inspector makes a second appointment with the owner of a pet store.
Low emotion 3	An employer offers a raise to his employee because she completed an important business deal.	An employer offers a full-time job to a man who had been doing volunteer work for her.
Low emotion 4	A man and a woman are recalling old high school memories.	A nurse gives a malaria injection to a Brazilian man who would like to date her.
Moderate emotion 1	A dispute between a husband and wife over who takes better care of the kids.	A student is distracted from studying by an argument between his roommate and his roommate's wife.
Moderate emotion 2	A dispute between a man and a woman about who gets to watch his or her television show.	An athlete celebrates his win with his roommate, who is less than enthusiastic.
Moderate emotion 3	A woman is trying to comfort a man who is depressed because he finds no meaning to his life.	An athlete yells angrily at his coach in an attempt to be put back on the team.
Moderate emotion 4	A husband yells at his wife because she hit a child with her car while she was drinking and driving.	One athlete tries to calm down his friend who was cut from the team.

SCRT = Social Cue Recognition Test.

parallel to the SCRT-US, and its psychometric qualities were assessed by examining its validity and reliability in comparison with those of the SCRT-US. We also examined the equivalency between the English and the French versions.

## Method

### Subjects

Undergraduate students ( $n = 111$ ; 34 men and 77 women) were recruited at McGill University in Montreal. All subjects were French Canadian or English-speaking North American, with normal vision and no self-reported history of psychiatric disorders. The mean age of the sample was 21.7 years ( $SD 2.15$ ).

### Materials

The French and English versions of the SCRT-C were constructed parallel to the SCRT-US, with a total of 8 videotaped vignettes of approximately 2 minutes' length each and a set of 36 "true or false" items for each vignette. All vignettes were selected from 3 Canadian movies, that are also available dubbed in French (that is, *Next Stop Wonderland*, *Rowing Through*, and *Exotica*). Of the 8 vignettes, 4 depict moderately arousing emotional events, and 4 depict low-arousing emotional events. Table 1 describes the content of the 8 vignettes for both the SCRT-US and SCRT-C.

Although the SCRT-US was developed by selecting the best items from a much larger pool of potential items, based on

difficulty levels and variance, our approach was to attempt as close a match as possible to the SCRT-US items in terms of form and content. Thus, the questions on the SCRT-C were formulated to parallel the questions of the SCRT-US, with each question corresponding to the type of cue (abstract vs concrete) and the answer (true or false) found on the SCRT-US. The SCRT-C has a total of 144 items (73 items referring to concrete cues and 71 to abstract cues) for both low- and moderate-emotion conditions. Concrete cues refer to cues that can be seen or heard directly (for example, "Tiff is wearing red running shoes"), whereas abstract cues refer to underlying affect and goals (for example, "Kevin wants to hurt Ally"). We used a back-translation procedure to assure high equivalency between French and English versions of the SCRT-C test items.

### Procedure

We assigned the participants to 1 of the following groups: English low-emotion vignettes of the SCRT-US and SCRT-C ( $n = 42$ ), English moderate-emotion vignettes of the SCRT-US and SCRT-C ( $n = 41$ ), and French low- and moderate-emotion vignettes of the SCRT-C ( $n = 28$ ). More specifically, English-speaking participants were randomly assigned to view either low- or moderate-emotion vignettes from both the SCRT-US and the English version of the SCRT-C-Eng, whereas French-speaking participants all viewed the 8 vignettes of the French version of the SCRT-C-Fr. Participants viewed the videos in groups ranging in size from 1 to 6

persons. After viewing each vignette, each participant answered a set of 36 items evaluating the perception of concrete and abstract cues.

## Results

For both low- and moderate-emotion conditions of the SCRT-C-Eng and the SCRT-US, we computed the average number of correct answers. In the low-emotion condition, the mean of items answered correctly was 128.29 (SD 5.55) for the SCRT-US and 123.19 (SD 5.04) for the SCRT-C-Eng. On the moderate-emotion condition, the mean of correct answers was 131.00 (SD 6.16) for the SCRT-US, and 124.02 (SD 4.82) for the SCRT-C-Eng. The average number of items answered correctly on the SCRT-C-Fr was 124.00 (SD 4.90) for the low-emotion condition and 125.36 (SD 6.13) for the moderate-emotion condition. Moreover, we tested the significance of any differences between the SCRT-C-Eng and the SCRT-C-Fr by conducting independent sample *t*-tests that compared the average number of correct answers separately for both low- and moderate-emotion vignettes. We found no statistically significant differences for both low- ( $t = 0.67$ ,  $df = 68$ ,  $P = 0.64$ ) and moderate- ( $t = 1.01$ ,  $df = 67$ ,  $P = 0.32$ ) emotion conditions, suggesting that the 2 versions are equivalent.

### Reliability

We assessed the internal consistency of both the SCRT-C and the SCRT-US by computing Cronbach's alpha coefficients separately for low- and moderate-emotion conditions. Based on initial analyses, 4 items of each vignette of the SCRT-C were removed because of their low correlations with the total score, leaving 32 items per vignette. Table 2 presents the Cronbach's alpha coefficients for the SCRT-C and the SCRT-US as a function of emotion conditions (low or moderate) and type of cues (concrete or abstract). Globally, these results suggest that the internal consistency of the SCRT-C-Eng and SCRT-US are comparable, except for the items measuring the ability to detect concrete cues in the low-emotion condition. Hence, the SCRT-C-Eng is somewhat more reliable than the SCRT-US. Moreover, as Table 2 shows, the alpha coefficients found on both SCRT-C-Eng and SCRT-C-Fr are comparable.

The reliability of the SCRT-C was further assessed by evaluating the correlations between the scores obtained for each vignette and the scores obtained for the total of the 3 other vignettes of the same emotion arousal condition (low or moderate). More specifically, for items measuring the ability to detect concrete and abstract cues, we analyzed the total number of hits (that is, answering "true" to items that are in fact true) and false alarms (that is, answering "true" to items for which the correct answer is "false") for each vignette separately. Table 3 shows the correlations between hits or false alarms for each vignette and the total of the 3 other vignettes of the same emotion arousal level for the SCRT-C-Eng and the SCRT-US. Compared with the SCRT-US, the SCRT-C-Eng has overall a lower number of significant correlations for items referring to abstract cues. However, the number of significant correlations is comparable for the SCRT-C-Eng and SCRT-US on items concerning concrete cues.

### Concurrent Validity

To examine the concurrent validity of the SCRT-C, we computed the correlations between the scores obtained on the SCRT-C-Eng and the SCRT-US. More specifically, we computed correlations between versions for hit and false alarm rates for both concrete and abstract cues (Table 4). Overall, the scores on the SCRT-C-Eng and SCRT-US were significantly, if only moderately, correlated. Out of the 8 correlations, only 2 did not reach statistical significance. These nonsignificant correlations were obtained for false alarms in the low-emotion-concrete cue and moderate-emotion-abstract cue conditions.

## Conclusion

This study shows that the validity and reliability of the SCRT-C is comparable to that of the original SCRT for both low- and moderate-emotional arousal conditions when both are administered to Canadian undergraduate students. Although we found fewer significant correlations on the SCRT-C-Eng than on the SCRT-US between hit or false alarm rates on each vignette and the rates for the sum of the remaining 3 vignettes, the Canadian version shows slightly higher internal consistency when we evaluate Cronbach's alpha coefficients. Moreover, compared with the original

**Table 2. Cronbach's alpha coefficients**

Emotion condition	Type of cue	SCRT-US	SCRT-C (English)	SCRT-C (French)
Low-emotion	Concrete	0.31	0.55	0.51
	Abstract	0.67	0.62	0.65
Moderate-emotion	Concrete	0.54	0.64	0.68
	Abstract	0.73	0.73	0.62

SCRT-US and SCRT-C administered to 111 normal Canadian undergraduates.

**Table 3. Correlations between hit or false alarm rates on each vignette and the rates for the sum of the remaining 3 vignettes for concrete and abstract cues**

Emotion condition	Hit or false alarm rate	Vignette number	Concrete items		Abstract items	
			Total hit or false alarm rate SCRT-US	Total hit or false alarm rate SCRT-C (English)	Total hit or false alarm rate SCRT-US	Total hit or false alarm rate SCRT-C (English)
Low Emotion <i>n</i> = 42	Hit	1	0.11	-0.05	0.40 <sup>b</sup>	0.13
		2	0.06	0.28	0.40 <sup>b</sup>	0.33 <sup>a</sup>
		3	0.33 <sup>a</sup>	0.18	0.36 <sup>a</sup>	0.24
		4	0.39 <sup>a</sup>	0.00	0.49 <sup>b</sup>	0.29
	False alarm	1	0.18	0.62 <sup>b</sup>	0.19	0.15
		2	0.18	0.24	0.57 <sup>b</sup>	0.32 <sup>a</sup>
		3	0.12	0.47 <sup>b</sup>	0.33 <sup>a</sup>	0.25
		4	0.35 <sup>a</sup>	0.30	0.31 <sup>a</sup>	0.26
Moderate Emotion <i>n</i> = 41	Hit	5	0.52 <sup>b</sup>	0.27	0.37 <sup>a</sup>	0.34 <sup>a</sup>
		6	0.37 <sup>a</sup>	0.19	0.30	0.47 <sup>b</sup>
		7	0.29	0.29	0.54 <sup>b</sup>	0.48 <sup>b</sup>
		8	0.37 <sup>a</sup>	0.23	0.44 <sup>b</sup>	0.38 <sup>a</sup>
	False alarm	5	0.22	0.56 <sup>b</sup>	0.31 <sup>a</sup>	0.24
		6	0.12	0.09	0.30	0.27
		7	-0.16	0.42 <sup>b</sup>	0.21	0.20
		8	-0.14	0.28	0.30	0.05

<sup>a</sup>*P* < 0.05; <sup>b</sup>*P* < 0.01

**Table 4. Correlations between hit or false alarm rates obtained on the SCRT-C (English) and SCRT-US for concrete and abstract cues**

Emotion condition	Type of response	Type of cue	
		Concrete	Abstract
Low emotion	Hits	0.52 <sup>b</sup>	0.51 <sup>b</sup>
	False alarms	0.43 <sup>b</sup>	0.11
Moderate emotion	Hits	0.38 <sup>a</sup>	0.59 <sup>b</sup>
	False alarms	0.29	0.55 <sup>b</sup>

<sup>a</sup>*P* < 0.05; <sup>b</sup>*P* < 0.01

SCRT, the SCRT-C has 3 advantages. First, the SCRT-US depicts “home-made” vignettes in which the people interacting are not professional actors. In comparison, the vignettes of the SCRT-C depict interactions between professional actors that seem more natural and more comparable with real-life social situations. Second, the SCRT-C is available in both English and French versions and can now be used by Canadian researchers studying schizophrenia. The high equivalence between the French and English versions of the SCRT-C will allow researchers to employ samples composed of both English and French native speakers. Third, following the notion that negative affective content in interpersonal stimuli is instrumental in decreasing patients’ cue recognition, it has been suggested that future studies should

determine whether moderately arousing situations with positive content increase cue perception (3). In contrast to the SCRT-US, which contains no vignettes depicting moderately arousing situations with positive content, the SCRT-C includes 1 scene of this type (an athlete who is selected for a competition). The SCRT-C will enable future studies to address this issue.

In our study, normal subjects with no history of psychiatric disorders completed the Canadian and the original versions of the SCRT. The results show that the overall internal consistency is comparable for both versions. Although the SCRT-US was conceived to compare normal control subjects with schizophrenia patients, the reliability and validity of the

SCRT-US was initially evaluated on a sample of patients diagnosed with schizophrenia (3). In our study of normal students, we found that the reliability of the SCRT-US was lower than initially reported by Corrigan's study of schizophrenia patients (3). Our correlations on the SCRT-US between hit or false alarm rates on each vignette and the rates for the sum of the remaining 3 vignettes range between  $-0.16$  and  $0.57$ , whereas in Corrigan's study, the correlations range between  $0.45$  and  $0.98$  (3). It can be hypothesized, however, that a sample of schizophrenia patients would likely yield superior psychometric characteristics for the SCRT-C, due to the greater variation of test scores among patients than among control subjects. In conclusion, the SCRT-C is a potentially useful tool for studying populations with impaired social skills and dysfunctional social perception, such as those with schizophrenia.

### Acknowledgements

This project was supported in part by a grant from the Fonds de recherche en santé du Québec–Conseil Québécois de Recherche Sociale joint program, awarded to Suzanne King, J-Bruno Debruille, and Ursula Hess, as well as by a senior research fellowship awarded to S. King from the FRSQ.

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Manuscript received May 2001 and accepted August 2001.

Previously presented as a poster at the 23rd annual conference of the Société Québécoise pour la recherche en Psychologie; October 27–29, 2000; Hull (QC).

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## Résumé : Validation des versions canadienne française et canadienne anglaise du test de reconnaissance des indices sociaux

**Objectif :** Notre principal objectif consistait à créer et à valider le test de reconnaissance des indices sociaux-C (SCRT-C), un test canadien comparable à la version originale.

**Méthode :** Nous avons administré le SCRT-C et le SCRT original à 111 étudiants de premier cycle normaux.

**Résultats :** Dans notre échantillon, la fiabilité et la validité du SCRT-C étaient modérément élevées et semblables à celles constatées dans le SCRT de Corrigan. Les résultats indiquent également que les versions anglaise et française du SCRT canadien sont équivalentes.

**Conclusions :** Le SCRT-C est un instrument approprié pour évaluer la reconnaissance des indices sociaux dans des contextes émotionnels.