

**A Scale for Measuring Agricultural Students' Affective Empathy: Results from an  
Exploratory Factor Analysis**

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## Introduction

Affective empathy, or one's ability to feel concern toward others (Leshem & Schober, 2020), is important for agricultural communicators who are often engaged in civil discourse about contentious public issues (Baker et al., 2021). Affective empathy skills can improve conversational efficiency by helping people relate to one another (Corder & Irlbeck, 2018; Müller, 2016). Because empathy development is an agricultural communications curricula priority (Easterly et al., 2017; Martinez, 2004), a valid and reliable instrument designed to measure agricultural communications students' affective empathy is needed to determine the effectiveness of such curricula. Our study's purpose was to further investigate the construct validity of the affective empathy scale developed by Reniers et al.'s (2011). Although this scale has been widely implemented in other disciplines (e.g., psychology, medicine, law), no studies have established construct validity of the scale using an agricultural student population. By doing so, we can propose modifications to increase the scale's ability to measure affective empathy of agricultural communications students more accurately.

## Framework

Hair et al. (2018) explained that "a strong conceptual foundation needs to support the assumption that a structure does exist before the exploratory factor analysis is performed" (p. 137). Therefore, Reniers et al.'s (2011) affective empathy scale served as our framework. Reniers et al. (2011) developed the affective empathy scale by first collecting affective empathy-related items from pre-existing and validated scales. Using a sample of students and employees from two universities in the United Kingdom, Reniers et al. conducted two studies and established construct validity of the scale by conducting a principal components analysis and a confirmatory factor analysis. The 12-item affective empathy scale has three subscales of its own: 1) emotion contagion "assesses the automatic mirroring of the feelings of others" (4 items); 2) proximal responsivity "addresses the responsiveness aspect of empathic behavior, illustrated by the affective response when witnessing the mood of others in a close social context" (4 items); and 3) peripheral responsivity is similar to proximal responsivity but in a detached context rather than a close social context (4 items; Reniers et al., 2011, p. 90).

## Methods

As part of a larger project, the current study's methods may appear similar elsewhere. We collected 106 responses using Reniers et al.'s (2011) affective empathy scale from Texas A&M University students enrolled in two agricultural communications and journalism courses during Fall 2021 and Spring 2022 semesters. Most respondents were seniors ( $f = 32$ , 60.38%), identifying as 22 or 23-year-old ( $f = 29$ , 54.72%) females ( $f = 42$ , 79.25%). We used Bartlett's Test of Sphericity to examine interrelationships between factors (Bartlett, 1950) and then conducted an exploratory factor analysis and extracted factors via the principal components analysis method (cut-off value = .30; Field, 2017). Because we tested the existing, hypothesized constructs (i.e., affective empathy subscales), we used the a priori criterion and directly loaded factors onto these three constructs (Hair et al., 2018). We used the orthogonal rotation method because the three constructs did not correlate.

## Results

Our data met the necessary criteria to conduct a principle components analysis because Bartlett's Test of Sphericity was significant ( $\chi^2(66) = 330.84, p < .001$ ). Factor one consisted of 5 items

with factor loadings ranging from .51 to .77 and explained 28.59% of the total variance (see Table 1). Factor two consisted of 4 items with factor loadings ranging from .47 and .78 and explained 13.24% of the total variance. Factor 3 consisted of 3 items with factor loadings ranging from -.75 and .78 and explained 11.86% of the total variance. The items loaded onto each factor in a manner that is consistent with the original scale.

**Table 1**

*Factors and Items of Students' Affective Empathy after Factor Rotation*

Affective Empathy Items	Factor		
	1	2	3
It worries me when others are worrying and panicky.	.77		
I am inclined to get nervous when others around me seem to be nervous.	.77		
I am happy when I am with a cheerful group and sad when the others are glum.	.74		
People I am with have a strong influence on my mood.	.66		.40
I get very upset when I see someone cry.	.51	.47	
Friends talk to me about their problems as they say that I am very understanding.		.78	
I often get emotionally involved with my friends' problems.		.73	
It affects me very much when one of my friends seems upset.	.40	.66	
I usually stay emotionally detached when watching a film.			
I am usually objective when I watch a film or play, and I don't often get completely caught up in it.			.78
It is hard for me to see why some things upset people so much.			-.75
I often get deeply involved with the feelings of a character in a film, play, or novel.			.41

### Conclusions and Recommendations

The item *I usually stay emotionally detached when watching a film* did not load onto any of the three factors. Therefore, we recommend deleting this item from Reniers et al.'s (2011) affective empathy scale when using it to collect data from agricultural communications students. In addition, three items should be revised to eliminate cross-loading. We recommend revising the statement *I get very upset when I see someone cry* to read *I feel like crying when I see someone else cry*. The revised item could more precisely measure factor one—emotion contagion—by emphasizing the mirroring of feelings. For the same reason, we recommend revising the item *People I am with have a strong influence on my mood* to read *My mood is influenced by the moods of people around me*. Finally, we recommend revising the item *It affects me very much when one of my friends seems upset* to read *I get emotional on behalf of my friends when they are upset*. The revised items could more precisely measure factor two—proximal responsivity—by specifying the type of empathetic response that may occur in the close social context implied. By using the modified scale, instructors can better prepare agricultural communications students by developing educational interventions targeting the development of affective empathy skills.

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