



Check-All-That-Apply (CATA) with semi-trained assessors: Sensory profiles closer to descriptive analysis or consumer elicited data?



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ABSTRACT

Check-All-That-Apply (CATA) is a simple and fast sensory profiling tool. Yet, its application has been mainly focused on consumer studies; the aim of this study was to evaluate the application of CATA with semi-trained (ST) individuals (N = 37). ST individuals were consumers who underwent 1 h of training with physical references on the definition of attributes included in the CATA ballot. ST-CATA results were compared, on a panel level, to Descriptive Analysis (DA) with trained panellists (N = 8) and to CATA with consumers (N = 70). Moreover, the effect of training was examined, to uncover training vs. method-related variations in CATA profiling.

ST-CATA and DA exhibited the highest similarity in sample configurations (94%) for two Multiple Factor Analysis factors. For all 3 factors, similarity was over 95% for all method combinations; however the RV coefficient between consumers and DA was marginally significant ($P = .08$). The extent of explained sensory variations in ST-CATA was not negatively affected by the smaller panel size, compared to consumers' CATA. Training had a positive effect on attributes' citation frequency, identification of taste, flavour and complex attribute differences among samples. CATA results did not provide the same range of differences with DA, especially for texture.

Overall results support the validity of CATA with ST assessors and suggest its potential for industrial use, when a timely and cost-efficient description of products is required. Attention should be given though when a detailed quantitative profile of sample differences is required, since intensity is not well represented by CATA derived measurements due to the method constraints.

1. Introduction¹

Descriptive analysis (DA) has been the main sensory science tool to acquire detailed, reliable and reproducible data to describe the sensory profiles of food products. However, DA lacks cost- and time efficiency and therefore it can be largely unsustainable in practice for the industry in some cases (Byrne, O'Sullivan, Dijksterhuis, Bredie, & Martens, 2001; Murray, Delahunty, & Baxter, 2001; Valentin, Chollet, Lelievre, & Abdi, 2012). This led to the development of several fast sensory methods (Ares, 2015). Among them, Check-All-That-Apply (CATA) has gained popularity mainly due to its simple format, small cognitive effort requirements and rapid elicitation of sensory characteristics of the examined products from participants (Adams, Williams, Lancaster, & Foley, 2007; Ares, Varela, Rado, & Giménez, 2011;

Meyners & Castura, 2014). In addition, CATA is a non-holistic method since it does not require a simultaneous evaluation of all samples, which makes it appropriate for large product sets and/or when monadic presentation order of samples is required (Ares, 2015).

However, low discrimination ability in product sets with subtle differences has also been reported for the CATA method (Ares et al., 2015; Reinbach, Giacalone, Ribeiro, Bredie, & Frøst, 2014). This is attributed to the dichotomous nature (0/1) of the CATA responses, which can lead to incapacity to reflect intensity differences for the same sensory attribute (Lazo, Claret, & Guerrero, 2016). Combined with its simple and rapid nature, the aforementioned limitation categorized CATA mainly as a sensory consumer research tool, appropriate when applied to a large set of participants (Ares, Tárrega, Izquierdo, & Jaeger, 2014; Varela & Ares, 2012). Specifically, the minimum

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¹ TP: Trained panel; ST: Semi-trained; C: Consumer.