EVALUATION OF REPLICATED PROJECTIVE MAPPING OF GRANOLA BARS

Jessica Kennedy, Symrise Inc. F&N, Sensory & Consumer Science, Teterboro, NJ

INTRODUCTION

In comparison to other consumer based methods to analyze overall product differences (sorting, similarity scaling, conventional profiling), projective mapping shows a clear benefit, especially in regards to efficiency and amount of data collected (Risvik et al. 1994). Projective mapping has been indicated to provide better product differentiation than sorting techniques, as the data collected provides an indication of how different product are (King et al. 1998).

Much of the research that has been conducted with projective mapping involves the use of a single trial of the procedure. Although previous work has demonstrated similarity in the representations obtained via projective mapping and conventional profiling, this does not necessarily indicate that these representations obtained from projective mapping are consistent and repeatable. The objective of this study was to investigate the similarity of individual maps as well as consensus configurations obtained over multiple evaluation sessions when the task is performed with consumers.

MATERIALS AND METHODS

Panelists—

Fifteen employees (4 men, 11 women) were recruited to participate in an experiment based on product acceptance. All participants had no previous experience with projective techniques or as trained panelists.

Stimuli—

A group of eight commercially available berry flavored granola bars were selected and purchased at local stores (Table 1). The product set was chosen to have similar characteristics but all products could be easily distinguished from each other.

Procedure—

Each panelist was presented with a 60 cm x 60 cm sheet of white paper. Both verbal and written instructions were provided and panelists were encouraged to ask questions to clarify the task. Three trials of projective mapping were performed with a two week break between sessions.

Statistical Analysis—

Data was collected from each map as the x- and y-coordinates from the bottom left corner of the map. Maps from each of the replications were analyzed by multifactor analysis (MFA) with variables scaled to unit variance. RV coefficients were calculated to compare individual and consensus configurations across replications. Analysis of the entire set of 45 individual maps was also conducted with hierarchical multifactor analysis (HMFA).

TABLE 1
COMMERCIAL GRANOLA BARS EVALUATED IN STUDY

Product	Code
Kraft LiveActive Chewy Granola Bar, Chocolate Raspberry	KLA
Fiber One Chewy Bar, Oats & Strawberries with Almonds	FOS
Quaker True Delights, Dark Chocolate Raspberry Almond	QTD
Kellogg's Nutri-Grain Fruit & Nut Bar, Barry & Almond	KFN
Quaker Chewy 90 Calorie Granola Bar, Strawberry Vanilla	QCS
Kashi TLC Fruit & Grain Bar, Raspberry Chocolate	TLC
Nature Valley Trail Mix Bar, Mixed Berry	NVT
Kellogg's Special K Bliss Bar, Raspberry	SKB

RESULTS

Individual Variation—

Comparison of each of the three projective maps generated by individual panelists indicated no more similarity than is seen between different panelists. For 10 of the 15 panelists, the RV coefficients between the replications were all less than 0.5. similarity over replications.

The similarity among the replications is highlighted by the RV coefficients and p-values in Table 2. All RV coefficients between replications are greater than 0.85 indicating good agreement among the multidimensional perceptual spaces and this is confirmed by the low p-values. The relatively low amount of variance explained in the first 3 dimensions of the perceptual maps, along with lower RV coefficients (range of 0.61 – 0.82) when comparing these 3-dimensional maps indicates differences in how the maps were structured. These changes may be a result of how the products were perceived, a shift in the panelists' criteria or increasing familiarity with the projective mapping technique. Although the training effect may be partly or wholly responsible for changes in individual maps across the replications, it does not appear to have an impact on the consensus space derived from each separate trial (Figure 1).

The partial points in the HMFA plot (Figure 2) depict the variation in consensus configurations over replication. However, it can also be seen that despite the variation, each bar occupies its own space with little to no overlap. The group of consumers was able to consistently differentiate among the products.

TABLE 2
RV COEFFICIENTS BETWEEN REPLICATIONS AND DESCRIPTORS WITH CORRESPONDING P-VALUES IN PARENTHESIS

	Rep 1	Rep 2	Rep 3	Descriptors
Rep 2	0.8601 (0.0343)			
Rep 3	0.8547 (0.0176)	0.9208 (0.0007)		
Descriptors	0.6464 (0.1108)	0.7915 (0.0030)	0.8086 (0.0066)	
Global	0.9163 (0.0005)	0.9656 (0.0001)	0.9654 (0.0004)	0.8611 (0.0008)

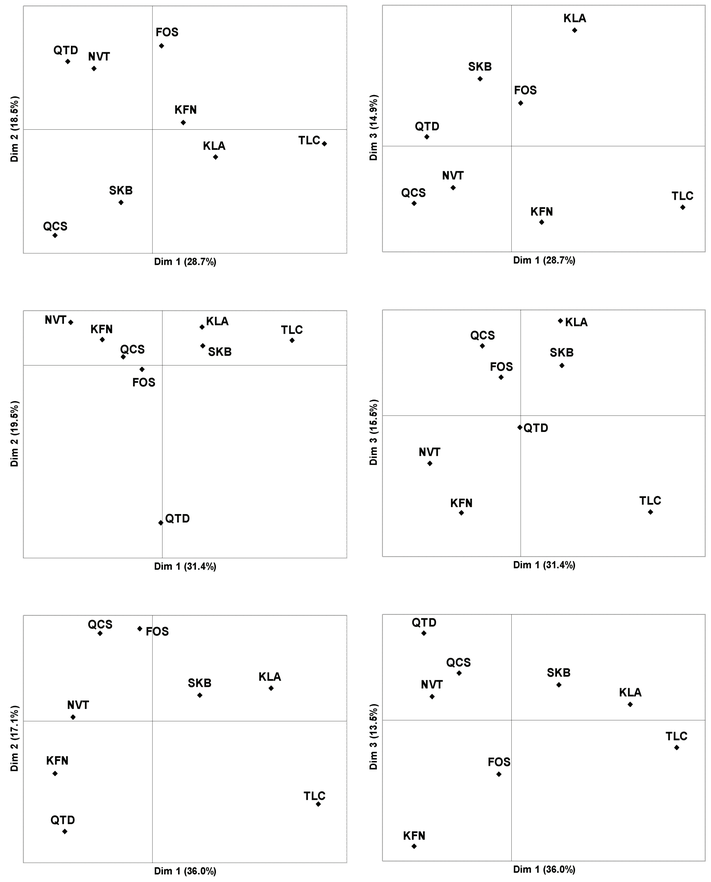

FIGURE 1

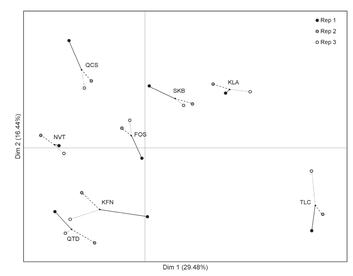

FIGURE 2

DISCUSSION

The lack of individual repeatability indicates that judges may have changed the criteria they were using to construct the maps from one session to the next. There may also be some degree of learning involved in the task, or recollection from previous sessions. During the second and third sessions, there was a noticeable decrease in the amount of time required, with all participants completing their maps within fifteen minutes, compared to as much as thirty minutes in the first session.

Despite the large variation within and between the individual maps, the consensus configurations remained more stable. The high RV coefficients indicate the consistency of using projective mapping with consumers. The low variance explained by the primary dimensions could indicate a large amount of variation in overall perception of the products or a complex solution. This is not surprising given the nature of the task (allowing panelists to select their own criteria) and the variety of ways in which the products differed. Further, the similarity among the replications agrees with previous research indicating the technique is repeatable (Nestrud and Lawless 2008; Kennedy and Heymann 2009).

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