

Supplementary material for manuscript entitled “Components of patient satisfaction with a dental restorative visit: results from The Dental Practice-Based Research Network”

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Expanded methods and results for the exploratory and confirmatory factor analysis

Methods for exploratory factor analysis.

To determine the initial dimensions, two factor extraction and two rotation algorithms were used to allow for replication of factor structures across different methodologies. One criticism of exploratory factor solutions has been that the final solution differs across factoring methodology. We chose Principal Axis (based on matrix factoring) and Maximum Likelihood methods (based on factor fitting by statistical functions) for factor extraction and Oblimin and Promax factor rotational techniques were used (Gorsuch, 1983). Item-factor loading matrices were examined from the four factor analyses. Items with factor primary or secondary loadings of ≥ 0.30 were included in the confirmatory model (see Table 1). The sample was randomly divided using a 50/50 split so that different samples were used for the exploratory and confirmatory factor procedures. This allowed us to test the validity of the satisfaction dimensions in an independent sample and addresses the concerns about sample specific factor structure.

Methods for confirmatory factor analysis.

The factor models evidenced in the previous step were further tested using confirmatory factor analysis, a factor analytic methodology that fits a data set to a fixed *a priori* model and is a test of model stability. We used bootstrap sampling to study the distribution of factor loadings and standard error for each factor using Prelis 2 (Joreskog, 1996a). This technique involved sampling with replacement from the hold out sample to generate replicate samples of equal size ($n = 150$). Factor analyses using LISREL were run on each of 100 bootstrap re-samples (Joreskog, 1996b). These repeated samples provide a sampling distribution for each factor loading, and based on the central limit theorem should have desirable distributional characteristics. Mean factor loadings of ≥ 0.30 were retained in a final model. Weighted factor scores were then calculated using mean factor loadings from the bootstrap procedure and converted to z-scores (mean of 0 and a standard deviation of 1.0).

Results for exploratory and confirmatory factor analysis (CFA).

All four sets of exploratory methodologies resulted in the same factor loading matrix using the decision rule that primary or secondary loadings of ≥ 0.30 are retained. The primary loadings on Factor 1 consisted of items describing the perceived interpersonal relationship with the dentist and questions related to comfort during the treatment. This factor was labeled “Interpersonal relationship-comfort”. The second factor involved items about patient involvement in treatment decisions and perceived value of the procedure. This factor was labeled “Material choice-value”. The highest loadings on the third factor described sensory aspects of the restoration following the procedure. This factor was labeled “Sensory-evaluative”. The three factors accounted for 56% of the variance with eigenvalues of 10.4, 1.7 and 1.4. Rotated sums of squared loadings ranged as follows: Factor 1, 9.92-9.69; Factor 2, 8.06-6.83; Factor 3, 8.31-7.30. Tables 1 presents the tested factor structure and mean bootstrap loadings from the CFA.

References

Gorsuch, RL. Factor Analysis. Hillsdale, NJ: Erlbaum; 1983.

Joreskog KG, Sorbom D. PRELIS 2 User's Reference Guide. Chicago, IL: Scientific Software International; 1996a.

Joreskog KG, Sorbom D. LISREL 8: A Guide to the Program and Applications. Chicago, IL: Scientific Software International; 1996b.

Table 1. Mean bootstrap factor loading and standard deviation.

		Relationship- comfort	Material- value	Sensory- evaluative
How satisfied were you with	Item Mean (SD)	Mean factor loading (SE)	Mean factor loading (SE)	Mean factor loading (SE)
The friendliness of my dentist.	4.8 (0.5)	.89 (.05)		
How friendly and courteous the staff was.	4.8 (0.5)	.86 (.06)		
How much my dentist cares about me as a person.	4.6 (0.6)	.85 (.07)		
How my dentist tried to limit my fear and anxiety.	4.6 (0.7)	.73 (.07)		
The skill of my dentist.	4.7 (0.5)	.72 (.08)		
How my dentist limited pain during the procedure.	4.7 (0.7)	.69 (.08)		
The amount of trust that I can place in my dentist.	4.6 (0.6)	.66 (.09)		
How gentle my dentist was when working in my mouth.	4.5 (0.6)	.63 (.09)		
How clean and organized the office was.	4.6 (0.6)	.49 (.10)		
How long I had to wait in the waiting room.	4.3 (0.7)	.45 (.10)		
My dentist gave me a choice between different materials to fix my tooth.	3.9 (1.1)		.87 (.05)	
How long I expect the filling to last.	4.2 (0.8)		.66 (.07)	
That my dental fee was reasonable for the work done.	4.1 (1.0)		.65 (.08)	
The dental procedure was explained before it was started.	4.4 (0.8)	.36 (.12)	.57 (.08)	
I was able to ask questions about the dental procedure.	4.5 (0.6)	.35 (.13)	.56 (.10)	
How the filling feels with hot or cold foods or drink.	4.5 (0.7)			.89 (.06)
That the filling was not sensitive when I bit down on it.	4.6 (0.6)			.74 (.07)
The quality of the dental work.	4.6 (0.6)	.34 (.13)		.56 (.09)
The filling feels smooth when I tough it with my tongue.	4.5 (0.7)			.48 (.11)
How the filling looks.	4.5 (0.7)		.35 (.11)	.47 (.13)

Survey instructions. We want to know how satisfied you were with different aspects of your dental treatment and visit. Please circle the number that best indicates how much you agree or disagree with that statement. Response choices were: Strongly disagree=1, Disagree=2, Neither agree nor disagree=3, Agree=4, Strongly agree=5. Factor loadings are correlations between items and the factor. Factor loadings of 0.50 and greater are typically used in interpreting a factor, with higher loadings designating greater contributions to the factor.