Measuring tobacco product experience: CROM adapted from the mCEQ for the assessment of new tobacco products N. Mainy¹; M. Bajec²; M. Alves Favaro³; T. Salzberger⁴; J. Rose⁵

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RESULTS

INTRODUCTION AND OBJECTIVES

The modified Cigarette Evaluation Questionnaire (mCEQ) assesses the reinforcing effects of smoking cigarettes^[1,2]. Like other legacy instruments, it has been adapted per regulatory recommendations for measures of Tobacco Product Perception and Intention (TPPI) study constructs^[3] to evaluate new tobacco product (NTP). We investigated the development pathway of the mCEQ along with the reported psychometric properties of adapted Consumer Reported Outcome Measures (CROM) for oral nicotine products (ONP), heated tobacco products (HTP), and electronic nicotine delivery systems (ENDS). METHODS

Concepts/domains, items, and measurement properties of the mCEQ, the Product Evaluation Scale (PES), the Adapted mCEQ or Tobacco and Nicotine Product Experience Questionnaire (ToNiPEQ; aka the ABOUT-Product Experience), the mCEQ-C, the mCEQ-E, the mCEQ-N, the mCEQ 'chews', the mCEQ 'test products', the modified PES (mPES), and the Modified E-Cigarette Evaluation Questionnaire (MECEQ) were extracted and reviewed (Figure 1)[2-12].



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DISCUSSION

"enjoy" item

added to SEI,

2006

first mention

of the mCEC

2007

five-factor

structure

CROM adapted from the mCEQ offer a broad range of options that have inherited strengths and limitations from the evolution of this legacy instrument. Ensuring rationale-based changes and systematic reporting (items, response scale, participant instructions, scoring) would further contribute to data comparability and potential bridging. Instruments to measure NTP use experience would benefit from the addition of items to single-items domains, coupled with further empirical research on the dimensionality in support of a meaningful conceptual model for sound data interpretation. In the harm reduction context, psychometric CROM have the potential to capture critical insights concerning the consumer journey (stages, moments). Further characterizing the elements that play a role in delivering a fulfilling and genuinely satisfying product experience could further contribute to evidence generation for regulatory engagement.

REFERENCES



See attached document

Concepts captured in experimental studies and clinical interventions provided evidence (i.e., self-reported outcomes) for smoking cessation research and treatments by characterizing subjective effects of smoking (e.g., Liking/Satisfaction; Taste/Sensory effects; Reinforcing Effects; Craving; Withdrawal symptoms) (Figure 2)^[1,2,13-26]. In this particular context, the SEI/mCEQ was validated to substantiate claims and labeling statements (Figure 3).

The mCEQ was adapted with changes relating to NTP ("using"/"vaping"; "it"/"<Product>"; respiratory tract sensation) (Table 1), and a modified frame of reference for the MECEQ.

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Table 1. Adaptations of the mCEQ for NTP.									
Modifications	mCEQ	PES	Adapted mCEQ [‡]	mCEQ-C	mCEQ-E	mCEQ-N; mCEQ- chews	mCEQ- test products	mPES	MECEQ
Substantial* changes									
Product category				- shuh	I	I			
Cigarette	•		•	•**					
					-			•	
Interchangeability		•							
Specific									
Generic			•						
Verb tenses			1	l					
Past								•	
Present									
Personal pronoun			1						
"you"									
Concerted leastion									
"throat and chest"									
"mouth"	•					•		•	
Feeling sick/nausea								-	
"nauseous"	•	•		•	•	•	•	•	•
"nauseated"			•**						
Craving reduction									
"for a cigarette"	•	•	•	•	•	•			
"for <product>"</product>		Due du et		* ^ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~					
‡Adapted mCEQ / IONIPE modifications ^[27] – potential	W / ABOU I modificati	-Product	Experience	. "According) to classific sponse opti	ations pertai	ning to the e	IV reported	KOM d or
clarified; **Minor modificati	ons: "smok	king cigare	ettes" vs. "sr	noking", and	d "nauseate	d" to better r	eflect the cor	ncept of inf	terest ^[5,24] .
Assumption based on put	blications	for mCEQ	-chews ^[9] , m	CEQ-test p	roducts ^[8,10] ,	, and mPES ^l			
The PES extended the concepts measured, and the Adapted mCEQ captures									
craving reduction for another product. While the structure of the multi-item									
domains was broadly confirmed using the Rasch model ^[5] , alternative four-									
dimensional structures were derived using factor analysis suggesting different									

dimensional structures were derived using factor analysis suggesting different dimensionality^[8,12,13] (Table 2). However, the empirical confirmation of the multidimensional conceptual model is complicated due to single-item domains^[5].

Table 2. Reported psyc		homet ceq	ric pro mCEQ	perti PES	es of a Adapted mCEQ [‡]	dapted mCEQ-E; mCEQ-N; mCEQ-C	CROM. mCEQ- chews; mCEQ-test products	mPES	MECEQ
Reliability									
Internal consistency*									
Test-retest reliability**									
Construct Validity									
Item-scale relationships***			●§		(●)^	•			•
Concurrent/Convergent validity			●§	●§§					
Known group validity****			●§	●§§					
Responsiveness****			●§	•					
Number of Items		11	12	21	12	12	12	20	12
Number of	Multi-item	3	3	4	3	3	3^^	4	4
Domains	Single-item	2	2	3	2	1	2^^	2	0
[‡] Adapted mCEQ / ToNiPEQ / ABOUT–Product Experience; *Based on Cronbach's alpha coefficient; **Based on Pearson's correlation coefficient; ***Factor-analysis / Multitrait analysis / Floor-Ceiling effect; ****Product and/or People; ****Ability to									



detect change; §^[5,28-38]; §§^[39,40]; Based on expert consensus; Assumption based on publications.

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