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Opinion Piece

Towards an end of measurement misspecification in tourism research: Grammar of theoretical constructs, focus of thought and mind traps

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ABSTRACT

This article introduces a new perspective on theoretical constructs to help minimizing confusion regarding measurement mode choice in tourism research. In particular, this article uses the grammatical structure of theoretical constructs as contextual framework to explain various mind traps that may mislead proper measurement specification. On the one hand, it is argued that awareness about the precise grammatical structure of constructs may help the researcher to keep the initial focus of thought, which, in turn, helps to avoid reflective *versus* formative misspecification when modeling theoretical constructs. On the other hand, it is further argued that some constructs, in fact, leave the realm of psychological assessments, which is why a direct reflective approach no longer applies. The suggested guidelines are rather simple, but may help clarifying several misconceptions and misunderstandings regarding formative *versus* reflective measurement specification for a range of popular tourism constructs.

1. Introduction

The reflective *versus* formative measurement debate, which is taking place within the area of marketing, management and psychology research during the past decade, has yielded valuable insight that helps researchers obtaining more reliable and valid operationalizations of theoretical constructs (e.g. Baxter, 2009; Becker, Klein, & Wetzels, 2012; Coltman, Devinney, Midgley, & Venaik, 2008; Diamantopoulos, Riefler, & Roth, 2008). To date, several guidelines have been established to assist decision-making about the appropriate measurement mode, involving criteria like e.g. mandatory indicator correlation in reflective mode or flow-of-causality assessments. Works dealing with this issue have appeared in research outlets ranging from *Annals of Tourism Research* (Murphy, Olaru, & Hofacker, 2009) to even *Nature* recently (Kruis & Maris, 2016).

As evidenced by a large number of contemporary tourism studies which rely on latent variable modeling, researchers seem however still to struggle with proper measurement specification. Persistence of the problem is likely associated with the fact that existing guidelines and checklists leave large space for subjective evaluations. For example, whether a manifest indicator is regarded as *causing* a latent variable (formatively identified by the indicator) or as a consequence of the latent variable (reflectively identified by the indicator), remains *a confusing* issue among many tourism researchers. In particular, today there is an abundance of studies that unconsciously force indicators which are obviously formative by nature into a reflective measurement mode. Consequently, results and implications of such studies are highly doubtful while measurement misspecification is further nurtured to appear in future research studies.

The objective of the present article is to clarify this particular issue, which is at the nucleus of measurement misspecifications, and to make a step towards firmer guidelines for the choice of measurement mode in tourism research. To achieve this goal the grammatical structure of theoretical constructs is introduced as contextual framework to discuss and explain various *mind traps* that may mislead proper measurement specification. This article further portrays the situation when tourism research in fact steps outside the realm of classical psychometric theory, which is the major supporting pillar of reflective measurement mode advocates. As this article will show, in such a situation theoretical constructs become inherently formative at second (or highest) level.

The remainder of this article is structured as follows. Section 2 illustrates the grammatical structure of theoretical constructs and portrays situations when the researcher's initial focus of thought may unintentionally shift. This in turn may subsequently lead to reflective *versus* formative confusion. Section 3 portrays the situation when measurements actually leave the realm of classical psychometric approaches and when reflective *versus* formative debates in fact no longer apply. Section 4 provides a set of guidelines for four distinct measurement scenarios which emerge from the discussions. The article concludes with three rather simple but important implications for future research.

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Table 1
Grammatical structure of popular theoretical constructs.

Construct name	Subject	Subject's attribute	Preposition	Object
1. Tourist satisfaction	Tourist's	level of satisfaction	with	product/service/brand/destination
2. Destination loyalty	Tourist's	level of loyalty	towards	destination
3. Brand trust	Customer's	level of trust	towards	brand
4. Affective commitment	Customer's	level of affective commitment	towards	product/service/brand
5. Market orientation	Organization's	level of orientation	towards	market
6. Technology readiness	Organization's	level of readiness	towards	(new) technologies
7. Service quality	Service's	level of quality	none	none
8. Supply chain agility	Supply chain's	level of agility	none	none

2. Grammar of theoretical constructs and focus of thought

Table 1 portrays a list of popular theoretical constructs decomposed into their subject, attribute (with preposition) and object, where applicable, which reveals their full spelling and meaning.

This set of illustrative example constructs can be divided into two broad categories. Constructs 1 to 4 are oriented towards customers, while constructs 5 to 8 are oriented to non-living entities. Moreover, the last two examples portray that not every theoretical construct necessarily contains an object.

Following the grammatical structure of theoretical constructs like those in Table 1, is the researcher's focus directed towards the subject, the attribute, or the object? Usually the primary focus is on the attribute. Accordingly, the questions researchers typically aim to answer are how does the *subject's* attribute affect subsequent behaviors or reactions of the subject (i.e. what are the consequences of the attribute), on the one hand, and/or how is the *subject's* attribute being influenced by *something*, on the other hand (i.e. what are the antecedents of the attribute)?

In this regard, the perspective is aligned with the perspective of psychological theory where assessments are focused on psychological attributes of individuals (i.e. of subjects; Cronbach, 1957). Here an attribute of a subject (e.g. an individual) may generally take two distinct forms. In the specific case that a subject's attribute is being conceived as consisting only of a component that is stable regardless of situational effects and/or interactional effects the attribute can be referred to as a *trait* (Steyer, Ferring, & Schmitt, 1992). Conversely, "attributes of individuals that are relatively changeable in nature" could be referred to as *states*. In this latter case, the subject's attribute is a much more dynamic concept that may significantly vary due to and across different stimuli (i.e. due to various situational effects and/or interactional effects). Following these definitions, an attribute of an individual may theoretically take the form of both a trait and a state. Consider the illustrative example of satisfaction as an attribute of a person (i.e. of the subject in our theoretical construct).

2.1. Subject-oriented measurement of attributes

Hypothetically one could think of a person as being generally more or less satisfied regardless of situational and/or interactional effects. In this instance, the attribute (i.e. satisfaction) could be regarded as a trait of the person (i.e. of the subject). If taking a classical, reflective measurement approach an operationalization of this construct should involve measures/indicators that represent observable consequences of satisfaction and, ideally, they should be *object-free*. In case of self-assessments using Likert-type scales such indicators may involve general states and reactions of the subject caused by the trait like e.g. "Generally, I feel fine", "I am rarely sad", "I laugh a lot", or similar.

However, why should one avoid any objects in indicators? The reason is that including objects in indicators may imply introducing some object to the construct, which in turn would *force* measurements into formative mode. Consider the examples of indicators like e.g. "Generally, I am pleased with my partner" or "Generally, I feel fine about my job". Both indicators appear reasonable indicators of a person's general satisfaction and both indicators bear objects in themselves (i.e. partner and job, respectively). Here the object, which has been implicitly introduced to the construct, is a concept that could be referred to as e.g. *life*, whereby job and partner represent relevant aspects of a person's life. However, while these are certainly important aspects of a person's life, these are certainly not the only important aspects. Accordingly, besides the initial requirement to assure validity and measurement reliability for the subject's attribute (i.e. satisfaction) which is in the actual focus, with inclusion of objects to indicators like above one would further have to assure content validity for the implicitly introduced grammatical object (i.e. life), as a precondition for that measurements of the subject's attribute could be reliable and valid. This in turn would require to somehow define *everything* a person (i.e. the subject) can be more or less satisfied with since leaving out an important aspect of life would "… *make the measurement deficient by restricting the domain of the construct*" (Churchill, 1979). Theoretically, covering the complete conceptual domain of *life* in an exhaustive way is possible but is a hard task to fulfill. However, by using indicators like e.g. "Generally, I feel fine about my job" it becomes in fact impossible to assure measurement reliability and content validity for the subject's attribute in a classical test theory manner, as would be indicated by a high Cronbach alpha. The reason is that indicators like these just merge a reflection of the attribute (i.e. I feel fine←satisfaction) with part of the object (i.e. Life←Job) into one indicator. Thus even if content validity of *life* had been assured somehow (i.e. for the object), this would still not imply that validity and reliability for *satisfaction* (i.e. attribute) has been assured. This was however the departing requirement to fulfill *and* in fact the reason for using a reflective measurement approach in the first place! Before taking the discussion further, let us consider an example of object-oriented measurement of a subject's attribute which is far more common in tourism research.

2.2. Object-oriented measurement of attributes

A person may be generally more or less satisfied but also more or less satisfied with e.g. a hotel. The object provides the context for thinking about the subject's attribute thus creating a nomological network (Cronbach & Meehl, 1955). In this instance the focus of thought becomes necessarily object-oriented and the attribute in fact a state, because of the interactional effect with the hotel. In measurement operationalizations, indicators now necessarily have to be object-oriented or otherwise conjunction to the object of the construct (i.e. the context) is lost.

A classical reflective measurement approach would imply assuring reliability and validity at the levels of both the attribute and the object. If the object is however not an abstract concept from the perspective of the subject (who is also the rater in self-assessments), there is in fact no real need to assure content validity for the object (i.e. the object is valid