



The Elements of Context

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1. Introduction

While the field of applied behavioral science has had much success in helping solve business and societal problems, there has been a recent wave of books and papers reflecting on the state of the field and advocating for a more nuanced approach to practicing it. Recent books like *Behavioral Science in the Wild* (Mazar and Soman, 2022) and *The Voltage Effect* (List, 2022) identify a portability problem – the idea that findings do not always translate or scale well across domains, or from smaller well-controlled laboratories and pilots into regional or national rollouts (see also Schmidt & Stenger, 2021). Indeed, a forthcoming book *What Works, What Doesn't (and When)* (Soman, in press) is replete with cases showing that sometimes, rolling out an intervention that has been successful in one setting produces no effects whatsoever in a different setting, while in other instances there is a fair degree of heterogeneity. In particular, the intervention works for a subset of the population but not for another subgroup, resulting in weak overall effects.

These translation and scaling challenges occur for a variety of reasons. Practitioners of applied behavioral science have their own hypotheses regarding why the results are not perfectly portable from one context to another (Halpern, 2015). It has long been documented that human decision-making is a function of context (cf. Huber, Payne & Puto, 1982; Simonson & Tversky, 1992). Things in the environment that should not impact decision-making often do. Thaler (2015) referred to these as supposedly irrelevant factors. When we take a finding that has worked well in some contexts and apply it in others, it is very likely that these contextual factors (CFs) will be different across applications. Hence, the effectiveness of the intervention will change. As a general principle, when an intervention works in one setting but not in another, the difference can be attributed to a difference in context. Moreover, it is also fair to say that interventions might translate and scale well if the context remains the same across multiple applications. But what exactly is context?

2. In Search of the Elements of Context

While a number of researchers have attempted to document the changes in the effectiveness of interventions as a function of a specific contextual variable (for example, the medium in which an intervention is delivered, or the exact design of communication), there has been no systematic overview of what exactly the elements of context are. When we make statements such as similarity of context or differences in contexts, could we think about developing a checklist of contextual factors (CFs) that an applied behavioral scientist could use in assessing whether an intervention might be

portable across two settings? This would also allow the practitioner to determine when to test extensively before transplanting an intervention, and when a test might be less critical. Our team set out to do exactly this in the context of seven popular interventions (Box 1).

Box 1: Seven Popular Interventions

Defaults	<p>Changing the system so that the outcomes change if people choose not to make any active choices (e.g., opt-in vs. opt-out processes)</p> <p>Example: Johnson & Goldstein, 2003; Mrkva et al., 2021</p>
Simplification	<p>Simplifying complex information by any one (or more) of: a) reducing volume, b) chunking, c) presenting visuals or presenting the same information visually (e.g., in a flowchart)</p> <p>Example: Bhargava & Manoli, 2015</p>
Social Norms	<p>Presenting information about any of a) the majority of people, b) the typical person, or c) “people like you”.</p> <p>Example: Bicchieri, 2022</p>
Reminders	<p>Sending reminders to undertake an action via letters, emails, or text messaging</p> <p>Example: Gravert, 2022</p>
Implementation Intention Prompts	<p>Getting people to make plans about how, when, and where they would get things done</p> <p>Example: Gollwitzer, 1999</p>
Fresh Starts	<p>Positioning an event at the beginning of a time period (e.g., new week / month, after a major life event) to increase motivation by generating a “fresh start”</p> <p>Example: Riis et al., 2022</p>
Matching	<p>Encouraging financial contributions (e.g., to pensions, savings, or charity) by offering to add a percentage from another source</p> <p>Example: Madrian, 2012</p>

Focusing on these interventions, we used a three-phased approach to generate a scorecard identifying the elements of context. We built on work by List (2022) suggesting that translation challenges happen because there are differences in two kinds of variables – differences in the situation in which the intervention was delivered and received, and differences in the recipient population of the intervention. We first combed through past research – published and unpublished – to identify variables that have previously been shown to weaken or strengthen the effect of interventions. We next surveyed several behavioral scientists, from academia and practice, and asked them to generate hypotheses about what elements of context matter. Finally, we conducted a workshop to analyze the qualitative and quantitative data and generate a list of the elements of context. We also sorted the comprehensive list of elements into seven dimensions of the situation (Box 2), and four dimensions of the target population (Box 3). Furthermore, we categorized the dimensions of situation into two subgroups – elements arising from the design of the content of the intervention, and dimensions arising from the implementation (where the designer might have little control).

Box 2: Dimensions to Assess Differences in Situations

Dimension of Context	Description and Possible Elements (CFs)
A: Elements of Context – Design Features	
1 Features of Intervention	<p>The specific ways in which the intervention is implemented.</p> <p>Possible CFs: Prompts to elaborate, Frequency of exposure to intervention, Opportunities to rehearse information, Transparency of the intervention, Intervention information formatting, Assortment features, Distinctiveness of the intervention, Individual vs. Group intervention, Community involvement in intervention design, Minimum level of enforcement, Training or rehearsal of intervention</p>
2 Communication and Media Choices	<p>The specific manner in which communication is structured.</p> <p>Possible CFs: Media chosen (digital, print, oral) and its effect on delivery, In-person or online engagement, Level of engagement, Complexity or simplicity of communication, Additional communication elements (visuals, audio)</p>

3	Incentives	The incentive for the target user to change behavior.
<p>Possible CFs: Economic or non-financial benefits to target; Immediacy, Visibility, and Salience of benefit.</p>		
<p>B: Elements of the Context - External Factors</p>		
4	Social Environment	The effects social elements may have on user performance.
<p>Possible CFs: Presence of others (crowds, kids), Presence of the entity implementing the intervention, Personal connection with the intervention designer, Identity and nature of the intervention designer (e.g., government, for-profit enterprise, academic institute)</p>		
5	Physical Environment	Details of the physical environment in which the intervention is delivered.
<p>Possible CFs: Ambient temperature, Lighting in the environment, Noise level, Colours in the environment, Indoor or outdoor setting, Seasonal ambiance, Hours of sunshine</p>		
6	Time	The duration of, and temporal location at which the intervention is delivered.
<p>Possible CFs: Season, Day of the week, Time of day, Duration of exposure to stimulus, Timing of reminders, Time pressure, Time horizon, Level of busyness at the time of intervention, Weekday vs. weekend.</p>		
7	Competition for Attention	The ability of the target to devote attention to the intervention stimulus.
<p>Possible CFs: Presence of competing sensory experiences / stimuli, Information formatting, Time pressure, Salience of message, Stress and time-constraints</p>		

Box 3: Dimensions to Assess Differences in Target Population

Dimension	Description and Sources of Variation
<p>1 Demographics and Socio-Economic Status</p>	<p>Traditional demographics can result in heterogenous responses.</p> <p>Sources of Variation: Age, Gender, Culture, Subculture, Ethnicity, Income, Education, Religion</p>
<p>2 Communication Styles</p>	<p>Differences in the manner and nuances of communication of a target population or an individual.</p> <p>Sources of Variation: Native language, Nuance of language, Language norms, Language consistency and congruence</p>
<p>3 Psychological Factors</p>	<p>Differences in the psychology of a target population or on an individual level.</p>
<p>a) Traits</p>	<p>Differences in people’s characteristic patterns of thoughts, feelings, and behaviors</p> <p>Sources of Variation: Baseline motivation, Cognitive bandwidth, Cognitive load, Curiosity, Fatigue, Level of mental stimulation, Need for cognition, Growth mindset</p>
<p>b) States</p>	<p>Influences on user performance that are short-term or momentary and may arise, fluctuate, and conclude during or before the intervention.</p> <p>Sources of Variation: Anxiety levels, Emotions, Fatigue, Motivation, Time pressure, Busyness</p>
<p>c) Skills/Ability</p>	<p>Differences in people’s knowledge about a particular subject or topic, or their ability to perform specific tasks or activities</p> <p>Sources of Variation: Financial literacy, Metacognition of marketplace, Physical activeness, Strength of habits, Intelligence and problem-solving</p>

<p>d) Self-Regulation</p>	<p>Differences in people’s ability to manage and control their emotions and behaviors to achieve desired outcomes.</p> <p>Sources of Variation: Motivation, Anxiety levels, Attitude to change, Growth mindset, Consideration of future consequences, Discipline, Accountability, Feeling of responsibility, Goal orientation, Impulsivity vs. forward-thinking, Time management</p>
<p>e) Attitudes and Beliefs</p>	<p>Differences in people’s evaluation about an object, event, or experience.</p> <p>Sources of Variation: Belief of past performance, Perceived task complexity, Prior beliefs, Pluralistic ignorance</p>
<p>4 Composition of Group</p>	<p>Whether the targets of behavior change are primarily naïve intenders (who want to change behavior but are unable to) or opponents (who need to be convinced of the need to change behavior).</p>

Collectively, boxes 2 and 3 represent our framework that codifies differences in the situation and the target population. Our goal was modest - we wanted to sensitize practitioners to the portability problem and to caution them against simply transplanting an intervention that has been successful elsewhere into their own setting. Furthermore, our goal was to add nuance to the concept of contextual differences by decomposing a vaguely defined construct into specific dimensions. Given the lack of prior research on the relative role that each of these dimensions plays on the efficacy of interventions, our framework does not allow us to identify the relative importance of each of these dimensions, nor indeed whether different dimensions matter for different interventions. Instead, our goal is to be as comprehensive and identify as many elements of context as we could in order to offer the practitioner a laundry list to make judgments about.

3. Beware of Nudgestore Shopping

It is normal for any practitioner to want to use an intervention that has been successfully deployed elsewhere. Imitation is indeed the best form of flattery. However, we caution the practitioner from blindly imitating a previously successful intervention. As one of us

wrote elsewhere (Goodyear, Hossain & Soman, 2022), the act of simply mimicking a successful intervention from a proverbial Nudgestore can be problematic without a thorough adaptation to suit any differences in context.

We would therefore encourage the practitioner to ask two questions. First, is the situation in which they will use the intervention significantly different from the setting of the original intervention? Box 2 will allow the practitioner to go through the list of seven dimensions in order to make this assessment. In particular, Box 2 will also allow the practitioner to assess the dimension(s) on which the setting might be different, and whether these differences arise from a dimension that is in their control or something that they have little control over. Second, is the nature of their target population significantly different from the population in the original intervention? Box 3 will allow them to make that assessment.

The greater the judged difference between the target and the original contexts, the more important it is for the practitioner not only to a) potentially adapt the intervention to suit the target context, but also, to b) test the intervention in-situ (i.e., in the new setting) before deploying it at scale to ensure that elements of context will not dampen its efficacy. Accounting for context will require reflection, creativity, and rigor but stands as a necessity for maximizing the impact of behavioral interventions and advancing the field.

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