BBS Comment

Article

01: Evert Van de Vliert (VDV)

02: Word Counts. Abstract 56; Main Text 991; References 201; Entire Text 1248.

03: Towards an integrated, causal, and psychological model of climato-economics.

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10: 60 Word Abstract

Van de Vliert (VDV) puts forward a model of how climate and economics interact to shape human needs, stresses, and freedoms. While we applaud the construction of this model, we suggest that more needs to be done. Specifically, by adopting a multilevel and experimental approach we can develop an integrated, causal, and psychological model of climato-economics.

11: 1000 word main text

VDV argues that climato-economic conditions influence human needs, stresses, and goals, leading to differences in freedoms. This model can be praised on many dimensions; e.g., scope, innovation, cross-disciplinary perspective. However, it contains a serious omission: evidence for a direct, causal link between climato-economics through individuals' psychology to collective freedoms. The major issue concerns the failure to measure and model individual level

processes, which ultimately means that the current approach cannot establish causality. We propose that these shortcomings can be overcome by using emerging multilevel and experimental techniques. We believe that doing so would allow the development of an integrated, causal, and psychological model of climato-economics.

VDV focuses on collective freedoms and so a collective level approach focusing on regions or nations may appear entirely justified. However, the intervening psychological processes linking environments to freedoms – needs, stresses, goals, and means – are clearly individual level attributes and should be measured as such. Further, many of the 'collective freedoms' are aggregates of individuals' behaviors (e.g., security, discrimination, longevity) rather than attributes of societies *per se*. For these two reasons, a strictly collective level approach is incomplete.

While some evidence provided by VDV is situated on the individual level, much of it relies on correlating climato-economic variables with national or group aggregates of psychological variables. Although this is certainly informative, it does not necessarily speak to how these variables affect individuals. Indeed, relationships obtained across nations or groups need not coincide with relationships found between- or within-individuals (cf. Ecological fallacy). Unfortunately, it is exactly at the between- and within-individual level that most phenomena and predictions addressed by VDV take place; for instance how (changes in) climato-economics influence (changes in) individuals' needs, stresses, and goals. This causal chain – from environments through individuals to freedoms – is critical to the theory but not tested using the current approach.

Failure to examine the individual also blinds the theory to the potentially critical divergence between the objective climato-economic environment and the *perceived* environment. As VDV notes, resource-demand theories depend on how people appraise their environment, rather than the objective environment itself. Subjectively appraised and objectively measured environments will be related, especially at the extremes; however, just as subjective socioeconomic status predicts health over objective socioeconomic status (cf. Singh-Manoux, Marmot, & Adler, 2005), understanding and measuring how individuals appraise their environment can add predictive ability to the model. Both an appreciation of within- and between-person processes and the role of perceived environments require an integrated individual-level approach.

The use of collective-level regression means that causality is frequently inferred rather than tested. While it is only somewhat true that people create their climate, people clearly create their economy; and economic conditions explain the majority of variance in freedoms either independently or via interaction. For this reason understanding the causal direction of

climato-economic effects is important for the robustness of the theory. Additionally, the causality problem undermines the series of predictions forwarded by VDV which rely on a genuine, causal relationship between the variables. If climato-economic conditions are associated with – but do not cause – differences in freedoms, climato-economic changes may not have the predicted effect.

One way to address these problems is to routinely adopt a multilevel approach which examines how climato-economics influences individuals' psychology and how that in turn influences freedoms. Inferences at the level of the individual require a multilevel approach in which between- and within-person variables are examined as a function of climato-economic factors. Such a model could move beyond noting that needs, stresses, goals, and freedoms are mutually related at the individual level to model how this relation is a function of climato-economics. It could reveal whether environments do indeed shape needs, stresses, and goals, which in turn favor specific freedoms. Further, it could easily integrate objective environments at the collective level with subjectively perceived environments at the individual level.

Within-person analysis would additionally allow researchers to test how psychological variables change across time within individuals. Climate and economics change across the era, year, and even day. The climato-economic model can be examined across a range of timespans (from decades to hours) to explore whether climato-economics change needs, stresses, and goals from one moment to the next. These time-lagged models would be better suited to establishing directional or causal relationships than models which look at 'snapshot' associations (see, Granger, 1969; Sugihara, et al., 2012). Recent work has employed multilevel and time-lagged approaches to explore the role of economics in human psychology. For example, regional differences in self-enhancement (Loughnan et al., 2011), happiness and trust (Oishi et al., 2011; 2012), and dishonesty (Neville, 2012) have been explained by economic differences across nations, regions, and time. Testing the climato-economic model in a similar way can allow for stronger inferences while accounting for between- and within- individuals effects.

The core tenets of climato-economics are increasingly tractable to experimental psychology. Recently, social and evolutionary psychologists have manipulated perceptions of environmental resource availability and examined the effects on social judgments. It is now established that changes in perceived resources cause changes in female mate selection (Hill, Rodeheffer, Griskevicius, Durante, & White, 2012) and intergroup perceptions (Rodeheffer, Hill, & Lord, *in press*). This latter finding experimentally corroborates the ingroup favoritism effects detailed by VDV, albeit without exploring the role of climate. By manipulating climatic demand and resource availability, then measuring needs, stresses, goals and freedoms, we can develop a causal model of climato-economics which complements a broader survey-based approach.

To conclude, we very much like the climato-economic model. It puts forward a coherent and powerful theory for understanding the geographic distribution of freedoms. We respectfully suggest two ways in which the model can be expanded; by integrating collective and individual-level variables and by establishing causality through the use of time-lagged and emerging experimental techniques. Adopting these two future directions will enhance our ability to both understand and predict differences in freedoms across regions and individuals. We believe that by doing so the climato-economic model can be expanded to reflect an integrated, casual, and psychological account.

12: References

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