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***One small step beyond prospect and refuge: Incorporating anxiety-related variables in
models of environmental safety perception***

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One barrier in studying environmental safety perception is that the concept of sense of
safety is ill-understood and defined differently by different authors. Sense of safety is
often equated with fear of crime. Fear requires the perception of an identifiable threat in
the immediate environment, but in most pedestrian situations threats are largely unseen
and dormant. Sense of safety thus, in our opinion, is best defined in terms of anxiety
which results from the perception of potential threats. With dormant and potential unseen
threats, a person must judge the safety of a situation on the basis of the available, but often
ambiguous, information in the environment. Research aimed at identifying the relevant
physical cues that make an environment to be judged as safe have mostly been based on
Kaplan and Kaplan's preference-matrix model, or Appleton's prospect-refuge theory; the
latter of which in general provide most consistent results. This research demonstrates
that environmental qualities that increase prospect, and / or reduce concealment
and entrapment increase a pedestrian's sense of safety. Models based on Appleton's
functionalist theory, however, do not link safety-related information processing to the
concept of anxiety, although recent studies have demonstrated that trait anxiety moderates
how heavily people weigh prospect-related information. In the present study, we made a
first but small step to extend models based on Appleton's theory with two psychological
concepts linked to anxiety: predictability and perceived control. We expect environments
that are perceived to be unpredictable (e.g., because prospect is low) or that offer little
control over current or impending social situations (e.g., because entrapment is high) to be
perceived as less safe (and thus more prone to elicit anxiety).

The aims of the present study were (a) to develop and test a brief 6-item self-report
instrument to assess the predictability and perceived control of urban environments, and
(b) to test whether the effects of prospect, concealment and entrapment on perceived
environmental safety are mediated by predictability and perceived control. For this
purpose, a convenience sample of 45 participants rated 100 photographs of nocturnal
urban environments on predictability and control. These evaluations were subsequently
combined with an existing dataset containing evaluations of the same stimuli on prospect,
concealment, entrapment, and safety.

Confirmatory factor analysis using structural equation modelling revealed that we did
not succeed in clearly differentiating between the two variables, with the control items
also loading on the predictability variable. In addition, we found an unexpected high
correlation between the two latent variables of $r = .91$ despite these being evaluated by two
different groups of participants. In a second series of structural equation models, we tested
whether the effect of prospect, concealment and entrapment on safety was mediated by
predictability and perceived control. Despite limitations in the measurement of the various
environmental appraisals, the results provided preliminary evidence of full mediation.