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Affective health bias in older adults: Considering positive and negative affect in a general health context

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ABSTRACT

Rationale: Because subjective health reports are a primary source of health information in a number of medical and research-based contexts, much research has been devoted to establishing the extent to which these self-reports of health correspond to health information from more objective sources. One of the key factors considered in this area is *trait affect*, with most studies emphasizing the impact of *negative affect* (negative emotions) over *positive affect* (positive emotions), and focusing on *high-arousal affect* (e.g., anger, excitement) over *moderate-* or *low-arousal affect* (e.g., relaxed, depressed).
Objectives: The present study examines the impact of both Positive and Negative Affect (PA/NA)—measured by items of both high and low arousal—on the correspondence between objective health information and subjective health reports. Another limitation of existing literature in the area is the focus on samples suffering from a particular diagnosis or on specific symptom reports; here, these effects are investigated in a sample of community-dwelling older adults representing a broader spectrum of health.
Method: 153 older adults (M_{age} = 71.2) took surveys assessing Perceived Health and Affect and underwent an objective physical health assessment. Structural equation modeling was used to investigate the extent to which the relationship between Objective Health and Perceived Health was moderated by PA or NA, which would indicate the presence of *affective health bias*.
Results: Results reveal a significant moderation effect for NA, but not for PA; PA appeared to serve a more mediational function, indicating that NA and PA operate on health perceptions in distinct ways.
Conclusions: These findings provide evidence that in our high-functioning, community-dwelling sample of older adults, a) affective health bias is present within a general health context, and not only within specific symptom or diagnostic categories; and b) that both PA and NA play important roles in the process.

Self-reported health assessments are time- and cost-efficient methods for obtaining information about participants' health in broad-based research studies, particularly for samples, such as those of older adults, who may have some difficulty or apprehension in coming into the lab for a physical health assessment. Ideally, there is an "unbiased" association between objective and subjective health, where individuals appropriately draw on accurate objective health information when reporting their perceived health; the reality is, however, that there are a number of factors that can lead individuals to rely less on objective health information and thereby *bias* subjective health reports.

One of the most studied factors influencing a given person's self-health evaluation is *trait affect*, or one's general tendency toward negative and positive emotions; higher positive affect (PA) tends to be associated with better health perceptions, whereas higher negative affect (NA) is linked with poorer perceived health (Benyamini et al., 2000; Bogaerts et al., 2005; Karsdorp et al., 2007). In addition to its direct influence on health perceptions, affect can play a moderating role, impacting the association between objective health assessments and subjective health evaluations. For example, trait negative affect may moderate the relationship between objective and perceived health, such that for those higher in NA, objective health information is not as predictive of subjective health evaluations as it is for those lower in NA; this would indicate that those high in NA are not basing their self-health perceptions on

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objective health information to the degree that those lower in NA are, perceiving themselves as less healthy or capable than objective measures would indicate. Similarly, PA may bias health perceptions by leading individuals to downplay health problems. Note that although NA and PA have opposite biasing effects, both serve to reduce the extent to which the subjective health evaluations are reflective of actual health. The focus of the present study is the extent to which this *affective health bias*—in which the presence of trait affect reduces the tie between objective health information and subjective health evaluations—is present in a community sample of older adults.

It is important to recognize that affective health bias is not always maladaptive; for example, if having higher PA leads people to focus less on health problems and thereby see themselves as healthier than they would if they were lower in PA, then they may engage in more physical activity than they would if they saw themselves as less healthy, and as a result have more optimal health and functioning later on. However, affective health bias could be a problem if, for example, having higher NA leads people to place more weight on health problems and disabilities and less on abilities, resulting in more negative self-health evaluations than they would have if they were lower in NA; they may then disengage from physical activity prematurely, resulting in accelerated functional decline. In the context of aging, these processes are especially salient, as indicators of physical function such as gait speed consistently predict morbidity and mortality outcomes in older adults (Van Kan et al., 2009).

A number of studies have compared objective health reports from physicians or medical records with self-reported health data collected directly from participants, and because they typically focus on specific diagnoses or medical procedures, they have reported fairly high agreement rates (Bergmann et al., 1998; Haapanen et al., 1997). Inaccuracy that exists in these specific contexts is likely due to lack of knowledge or information, memory issues, or overgeneralization (e.g., an individual confusing his or her malady with a diagnosis associated with a body part or anatomical function similar to, or in close proximity to, that affected by their own disease), rather than to biased perceptions (Bergmann et al., 1998; Nilsson et al., 2002). Research indicates that inaccuracy resulting from affective bias is present when symptoms are short-term, sporadic, and/or have not been labeled with a specific diagnosis, or in the case of overall ratings of general health (Haapanen et al., 1997; Powell et al., 2008).

Although there are many studies that have examined the presence of affective health bias within the context of specific symptoms (e.g., heart function; Karsdorp et al., 2007) or diagnoses such as asthma (Bogaerts et al., 2005) and diabetes (Schandry et al., 1996), few studies have investigated the presence of affective health bias as it impacts the association between objective and subjective measures of physical health in a more general context or sample. This is because specific symptoms make it easier to assess the degree of bias, as there is usually a very precise objective measure available against which to compare subjective assessments. For example, in the case of breathing symptoms associated with asthma, participants' perceptions of their breathing rate and depth can be directly compared to mechanical readings of his or her actual breathing rate and depth (Bogaerts et al., 2005). Similarly, heart patients' subjective reports of heart rate or arrhythmias can be compared to objective heart readings taken concurrently (Karsdorp et al., 2007). These symptom-specific methods provide important information regarding whether, and to what degree, affect impacts individuals' health perceptions within a given disease or symptom context. The specificity required by these approaches, however, also limits the generalizability of the findings, as the information one draws on when assessing one's health in these contexts is much more narrow and defined than is the case when more general health assessments (e.g., *How healthy am I?*) are made. It is therefore important to investigate the presence of affective health bias in a non-symptom-specific, general health context; this will permit the results to inform the extent to which trait affect impacts individuals' overall health perceptions in community-dwelling older adults, external of specific diagnoses or symptom schemas.

A second limitation of existing literature in the area is that studies tend to focus on the impact of *negative affect* (negative emotions) over *positive affect* (positive emotions), and on the influence of *high-arousal affect* (e.g., afraid, excited) to the exclusion of *lower-arousal affect* (e.g., relaxed, depressed). Studies of affective health bias most commonly investigate the role of negative affect, which is consistently linked with under-assessments of overall health and over-reporting of symptoms (Bogaerts et al., 2005, 2008; Karsdorp et al., 2007; Mora et al., 2007; Strigo et al., 2008). *Symptom Perception Theory* (Gijsbers van Wijk and Kolk, 1997) specifically identifies trait-level NA characteristics as the primary mechanism underlying biased health perceptions. Positive affect, although less studied in the context of health bias, also influences subjective health evaluations (Benyamini et al., 2000; Bogaerts et al., 2005; Pettit et al., 2001; Pressman and Cohen, 2005). Very few studies have considered both PA and NA, and those that have typically use measures that focus on the high-arousal affect (Watson, 1988; Weisenberg et al., 1998). Because there is evidence that lower-arousal affective experience may become more valued and/or salient in later life (Gross et al., 1997), it is important to incorporate lower-arousal terms into the conceptualization of PA and NA when studying these processes in older adults. PA and NA are operationalized here using low- *and* high-arousal terms in order to acknowledge the findings that lower-arousal affective experience may become increasingly salient with age.

The present study is designed to shed light on the extent to which trait affect influences the relationship between older adults' general health, indicated by objective physical health measures, and their overall health perceptions. Two novel components of this investigation, each of which addresses a gap in the literature identified above, are 1) the examination of both positive and negative affect—comprising both high- and low-arousal affective elements—on the presence of health bias; and 2) the exploration of these effects and processes within the context of a general health evaluation, rather than being restricted to a specific diagnosis (e.g., asthma) or symptom (e.g., heart rate), using a community sample of older adults rather than a clinical sample. Because objective and perceived health are multifaceted constructs, multiple indicators were obtained for each, using both survey and physical health data; Structural Equation Modeling (SEM) was therefore used to examine the presence of affective health bias—present when PA or NA significantly moderates (reduces) the relationship between Objective Health and Perceived Health—in our community sample of older adults.

Based on the rationale presented thus far, the hypotheses were as follows: Objective Health was expected to positively predict Perceived Health, as one's health perceptions are likely to be generally related to one's actual health. Once the affect factors were included as moderators, it was expected that a) both PA and NA would have significant direct effects on Perceived Health, with PA being associated with better subjective health ratings and NA being associated with poorer subjective health ratings; b) PA would reduce the relationship between Objective Health and Perceived Health, indicating the presence of positive affect bias; and c) NA would reduce the relationship between Objective Health and Perceived Health, indicating the presence of negative affect bias. Note that both affect variables are expected to reduce the link between Objective and Perceived health, as higher levels of either