While there is already adequate research on the correlation between positive emotion and general health benefits, little has been done to discover the link between the cognitive qualities of optimism and physiological reactivity to stress. It is widely recognized among researchers that dispositional optimists (those who expect that good events will be abundant in the future) appraise stressful situations differently and hold a multitude of coping schemas,[[1]](#footnote-1) granting them a diverse variety of functional molds to adopt effective coping strategies to a number of stressful situations. The attempt is thus to discover whether an optimist’s initial *physiological* reactivity to stressful occurrences is affected by having an optimistic outlook and utilizing these cognitive mechanisms.

The biopsychosocial model of health observes the individual as a system of biological genetic predispositions, cognitive beliefs, and sociocultural situations that cooperate to result in the health of the individual. With this in mind, the health risk of stress will be viewed in the context of one's cognitions and biology, specifically how the cognitive aspects of optimism affect the biological underpinnings of the stress response.

Humans, of all species, react to the widest range of stressors, being that we may, unlike other species, imagine them (*Killer Stress*). Physiologically and psychologically, people react the same to all kinds of stressors. The same biological symptoms of stress can occur when one fears he/she will fail a test, and if one actually does fail the test, for example. The sympathetic nervous system, necessary for automatic, non-conscious bodily functions, prepares the individual for the well-known "fight-or-flight" reaction regardless of whether the stressor is imagined or real. The brain arouses the individual, increases blood pressure, and releases stress hormones such as norepinephrine and cortisol to excite and invigorate the body for evasive actions.

While short-term, acute stress is beneficial to our survival (e.g. in the case of physically avoiding a life-threatening situation or becoming more alert for a task), chronic stressors are damaging. Robert Sapolsky, professor of biological sciences at Stanford University, explains that long-term exposure to stress hormones is corrosive tothe body and also dampens immune system effectiveness. In this way, high levels of persistent stress harmfully influences health and makes diseases such as “type 2 diabetes, gastrointestinal disorders, impaired growth in children, failure to ovulate in females, and erectile dysfunction in males” more likely (Sapolsky 96). Clearly, then, chronic stress is strongly related to overall poor health.

 Optimism, however, is a “significant predictor” of better health and less occurrences of diseases or illness (Rasmussen et. al.), and has been said to be associated with longevity (“Optimistic Women”). In addition, optimists who are diagnosed with a disease or serious illness have high instances of physical recovery (Iwanaga et. al. 1-2). When taking a pessimistic outlook, though, recovery was slow and illness developed more quickly. In another study by Reed et. al., Senior Project Officer for the World Health Organization, those who were HIV-positive who had more pessimistic expectations developed symptoms associated with the virus more rapidly and more commonly died of AIDS (360). Overall, a longitudinal study spanning 35 years by Christopher Peterson, a Psychology professor at the University of Michigan, found that pessimists at age 25 were unhealthier later in life than those who were optimists. In general, “pessimistic explanatory style predicted physical illness two and three decades later…even when initial physical health and initial emotional health [were] controlled” (Peterson et. al. 26). A clear, significant link can therefore be established between positive, optimistic thinking and immunology.

For many patients dealing with a stressful disease, optimism seems to play a role in boosting the immune system in order to lessen the reactivity to the stressors accompanying the disease. Although not all ill health is derivative of an overload of stress, these findings certainly give heed to optimism being a strong contributing factor. Yet, this leads to the issue of what aspects of optimism lead to the improvement of health.

As optimism can be described as a life orientation, it essentially comes down to the explanatory styles and coping mechanisms used by optimists in regard to stressors. An explanatory style is the “cognitive personality variable that reflects how a person habitually explains the causes of bad events.” Optimists tend to attribute the causes of bad events as “external, unstable, and specific,” while pessimists would explain bad events as having “internal, stable, and global” causes (Peterson and Avila 128). This essentially equates to optimists viewing negative situations as the result of outside forces that can be controlled. And conversely, pessimists viewing negative situations as the result of internal forces that are uncontrollable. This method of thinking is most commonly associated with learned helplessness and may explain why health declined when a pessimist was faced with a terminal illness. Yet, those who used an optimistic explanatory style more frequently “engaged in health-promoting activities” (Peterson and Avila 1).

Furthermore, optimists cope by using more “potentially adaptive” strategies. Kenneth Hart, psychology professor at University of Windsor, and James Hittner, professor at College of Charleston, explain that optimists utilize problem-focused coping (attempts at reducing stress by attacking the source of the problem) and seeking social support, while avoiding less adaptive strategies like avoidance coping. The researchers continue by stating this phenomenon is also quite “robust” throughout most studies (835-836), showing that coping strategies are quite standard among optimists, and that one can distinguish an optimist by coping techniques.

Although one would generally expect confrontive coping strategies aimed at solving the problem causing distress would be most advantageous, coping strategies are largely dependent on the context in which they are utilized. Peacock and Wong, professors at the University of Toronto, Canada, found that cognitive appraisals of controllability significantly affect the amount and type of coping used (218). Given the propensity for optimists to often view problems as controllable and employ problem-focused coping frequently, it makes sense that optimists would be more efficiently equipped with the necessities for reducing stress. It is likely to be the case that optimists, with their more plentiful coping schemas and explanatory styles, are likely to see more situations in a controllable light than a pessimist. Or, at the very least, be more likely to recognize a controllable situation when it presents itself. On the contrary, a pessimist is passive and has a greater propensity to ignore or avoid a controllable stressful situation and relinquish chances to cope in a confrontive manner. In this way, optimism is a very effective means of understanding and controlling a problem situation producing chronic stress.

It seems natural, then, to hypothesize that these cognitive aspects allow the optimist to analyze a stressful situation as it arises, and through efficient means of mental coping, actually reduces the level of stress the body would typically undergo if coping was unorganized, ineffective, or unmatched to the situation. Hart and Hittner, for example, explain that

…both theory and research have suggested that variability in anger-reactivity is associated with different degrees of hemodynamic and neuroendocrine responsivity. Thus, it is possible that optimism may be inversely related to illness because optimists show dampened emotional arousal and concomitant low levels of physiological and neuroendocrine reactivity when provoked by stressful circumstances. (828)

Essentially, cardiovascular arousal, in addition to the interactions between the nervous system and hormonal secretions, are assumed to be affected by the consistent thinking styles of optimism. When provoked by a stressful circumstance, an optimist is expected to show less emotional arousal and activity of stress hormones, allowing him/her to be less adversely affected by typical high stress levels. If the optimist is better equipped with the techniques to solve stressful problems quickly and as efficiently as possible *cognitively*, it in turn should confirm less effort *physiologically* to attempt to cope. And this in turn produces enhanced physical health.

 Evidence for this hypothesis is mixed, however, as even Hart and Hittner admit. The researchers explain that while most research implies a link between optimistic coping strategies and dampened emotional reactivity during stressful events, only two studies actually investigated this phenomenon and found insignificant evidence (828). Yet, these studies of coping effects of Israeli adolescents amidst threats of missile attacks during the Persian Gulf War indicate that those who used optimistic coping strategies that were fitting to the situations had less negative symptoms from stress. Optimistic adolescents also had exhibited better cognitive functioning under stress (Zeidner et. al. 104). However, optimism did not significantly affect overall reactions to stress in the study, but this may have been due to the situation producing stress itself. Threats of missile attacks are in themselves “uncontrollable and frustrating” and may have rendered the controlling skills of optimists’ ineffective in the long run (Zeidner et. al. 105). It could be possible that a national crisis such as this one produces a level of stress to the individual that causes the same reaction despite one having reactivity-reducing coping mechanisms at play.

 In another similar case study of 1999 Kosovo crisis refugees, Riolli et. al. found optimism in Kosovo refugees was related to greater resilience to the stress of the crisis. Such resilient individuals “showed characteristics that seemed to aid them during and after exposure to stressors.” They also showed “higher psychological functioning” than non-resilient individuals (Riolli et. al. 1622). Although these results differ from Zeidner’s investigation, it may be that methodologies caused the apparent contradiction. The participants also differ significantly. Zeidner used only adolescents in grades 10-11 while Riolli’s participants ranged from age 17 to 65 (mean age 34). It is possible that adolescent “optimists” have not yet developed complete coping schemas consistent with optimistic thinking. Schemas take time to develop fully and rely on multiple experiences with one’s environment. In contrast, an adult has had more experiences and has had many more years to develop a variety of refined schemas. It may be possible that adult optimists during the Israeli missile crises were able to cope more efficiently than the adolescents and had significantly reduced reactivity to stress, for example.

 A further study by Donna Kennedy and Brian Hughes of the National University of Ireland, Galway investigated the influences of optimism and neuroticism on cardiovascular arousal in college women completing a mentally challenging task. The researchers found no significant influence of optimism on diastolic or systolic blood pressure responses, but that neuroticism influenced diastolic blood pressure responses (382-383). One may question whether there is a gender difference in the effects of optimism, but research serves as a good indicator that women are not excluded from the link between optimism and improved health (“Optimistic Women”), so this assumption does not seem significant. So what can be said of these results?

 This mixed evidence does not seem to elicit much confidence in concluding that one’s average physiological reactivity to stress is influenced by optimism. Yet, this seems to harbor an apparent contradiction between optimism-reactivity and optimism-health. If optimism does not have a significant effect on one’s reactivity to stress, then what can be said on how the cognitive qualities of optimism influence the biology of one’s health?

It could be possible that optimism does not change one’s reactivity at all. Instead, an optimist may react averagely to stress, but after initial reactions, homeostasis may be reached sooner than it would in other non-optimists. In this way, chronic stress would be limited and instead of one having less stress hormones secreted, the optimist would have less time with the hormones in his/her blood stream, thereby making him/her healthier in the long run. Glenn Affleck, for example, found that neither optimists nor pessimists reported cases of alleviated pain from rheumatoid arthritis and fibromyalgia, but that optimists were more consistently in higher moods and had greater frequencies of “desirable daily events” (157). Interestingly, optimistic patients also were less likely to take extra medication to alleviate the day’s symptoms, showing the optimist’s consistent preference for non-avoidance coping (Afflek et. al. 158). In this case, the optimists’ reactivity to the stress of the illness was the same as for the pessimists, but their cognitive mechanisms allowed for an improved mood, and their coping strategies allowed them to rely less on medication, which may have had a long-term effect on them being able to live more easily with their illness.

This could explain the increased likelihood of optimists seeking out the “health-promoting activities” that Peterson and Avila observed.[[2]](#footnote-2) One who is in a positive mood will be more likely to seek out activities and social support in an active effort to become better as opposed to one in a negative mood who would more likely accept passivity and learned helplessness. So, although reactivity may not be altered and the stress response is comparable to non-optimists, the coping strategies the optimist uses seems to boost psychological reactivity enough to grant him/her the strength and will to behave in ways that will ultimately improve health.

 Although much evidence seemed to point toward the optimist having both dampened emotional arousal and lowered physiological reactivity to stress, research attempting to discover truth in this assumption seems to show otherwise. It seems that optimism does not affect one’s baseline biological reactivity to stress to much of an extent. Consistent optimistic outlooks do not seem to change one’s biology to become less adversely affected by stress. Instead, unless future directed and narrowed research on the subject shows otherwise, it seems that optimistic coping strategies influence psychological, not physiological, reactivity. From there, active behavioral efforts to seek support and beneficial activities provide the well-known health improvements.

Given the evidence leading to this revised claim, this paper makes it clear that research on the link between optimism and reactivity to stress should be expanded and clarified. The significant health benefits optimists receive serve as clear evidence for the necessity of fully understanding the physiology of an optimist. In essence, “optimism per se does not have an automatic effect on health…Positive thinking is powerful only when it sets into motion a complex cascade of processes—biological, psychological, and social—that themselves lead to good health” (Peterson and Bossio 128). If it can be understood what specific processes optimism sets into motion and how this occurs, optimistic thinking can become a powerful methodology in overcoming illness and promoting physiological welfare.

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1. mental concept/model that organizes and interprets information from the world [↑](#footnote-ref-1)
2. Refer to page 3 for quote. [↑](#footnote-ref-2)