

# Hard work while fatigued affects blood pressure

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Working hard when fatigued may be admired by many Americans, but it is a virtue that could be harmful to one's health, according to new research by psychologists at the University of Alabama at Birmingham (UAB). The research supports a theory which suggests that exhausted individuals' cardiovascular systems are forced to work harder when they attempt to complete tasks, such as those encountered on the job or at school.

The research, published in the July issue of the *International Journal of Psychophysiology*, found that fatigued individuals had larger blood pressure increases than rested individuals under conditions where they viewed success as both possible and worthwhile. Investigators believe the effects were determined by effort on the part of the study participants, said UAB psychologist Rex Wright, Ph.D., who led the study.

When fatigued individuals perceive a task as achievable and worth doing, they increase their effort to make up for their diminished capability due to fatigue, Wright said. As a result, blood pressure tends to rise and remain elevated until the task is completed or individuals stop trying because they think success is impossible or too difficult to be justified.

"Our findings are relevant to health because of links that have been established between cardiovascular responsiveness and negative health outcomes, including hypertension and heart disease," says Wright. "Individuals who experience chronically exaggerated cardiovascular

responses are believed to be at greater health risk than individuals who do not. Thus, the implication is that chronic fatigue may pose a health risk under some performance conditions."

In the study, 80 subjects were provided the opportunity to earn a small chance of winning a modest prize by memorizing, in two minutes, two or six nonsense trigrams. Trigrams are meaningless, three-letter sequences, such as AED.

Before the memorization period, the subjects completed a survey that included questions about how fatigued they felt. During the memorization period, the investigators monitored the subjects' heart rate and blood pressure responses.

The data indicated that subjects who reported moderate fatigue had stronger blood pressure increases than subjects who reported low fatigue in the two-trigram condition.

"Presumably this was because the moderately fatigued subjects viewed success as relatively hard, but still possible and worthwhile," Wright said. "Subjects who reported moderate fatigue had relatively reduced blood pressure increases in the six-trigram condition, presumably because they viewed success there as impossible or too difficult to be worth the effort."

Subjects who reported very high fatigue had low blood pressure increases in both task conditions. This was interpreted to suggest that even the easy task was too difficult for them.

"It might be argued that fatigue is of little concern from a health standpoint because people will tend to withdraw effort once they become fatigued," Wright said. "The problem with this view is that it fails to recognize that people do not always have the luxury of withdrawing

effort or perhaps the wisdom to do so.

"Consider, for example, a single parent with a small child who must maintain his performance level at work despite extreme and persistent fatigue, or the upwardly mobile administrator who sets increasingly difficult performance goals for herself despite the chronic fatigue that she experiences as a result of poor nutrition and sleep habits," Wright said. "To be sure, fatigue should sometimes be so compelling that it demands effort withdrawal. However, in many instances it will be below this threshold and merely amplify the effort that people expend."

Source: University of Alabama at Birmingham

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