NEUROSCIENCE

10. LOCUS OF CONTROL

10.1. Introduction

In personality psychology, locus of control refers to the extent to which individuals believe that they can control events that affect them. Understanding of the concept was developed by Julian B. Rotter in 1954, and has since become an aspect of personality studies. A person's "locus" (Latin for "place" or "location") is conceptualized as either internal (the person believes they can control their life) or external (meaning they believe that their decisions and life are controlled by environmental factors which they cannot influence, or by chance or fate). Individuals with a high internal locus of control believe that events in their life derive primarily from their own actions: for example, when receiving test results, people with an internal locus of control would tend to praise or blame themselves and their abilities, whereas people with an external locus of control would tend to praise or blame an external factor such as the teacher or the test.

Locus of control has generated much research in a variety of areas in psychology, and the construct is applicable to such fields as educational psychology, health psychology and clinical psychology. Debate continues about whether specific or more global measures of locus of control will prove to be more useful in practical application. Careful distinctions should also be made between locus of control (a concept linked with expectancies about the future) and attributional style (a concept linked with explanations for past outcomes), or between locus of control and concepts such as self-efficacy. Locus of control is one of the four dimensions of core self-evaluations – one's fundamental appraisal of oneself – along with neuroticism, self-efficacy, and self-esteem. The concept of core self-evaluations was first examined and since has proven to have the ability to predict several work outcomes, specifically, job satisfaction and job performance. In a follow-up study, it was argued the concepts of locus of control, neuroticism, self-efficacy and self-esteem measured the same, single factor.

Locus of control is the framework of Rotter's (1954) social-learning theory of personality. In 1966 he published an article in *Psychological Monographs* which

summarized over a decade of research (by Rotter and his students), much of it previously unpublished. In 1976, Herbert M. Lefcourt defined the perceived locus of control: "...a generalized expectancy for internal as opposed to external control of reinforcements".

Another Rotter student, William H. James (not to be confused with William James), studied two types of "expectancy shifts":

- **Typical expectancy shifts, believing that success (or failure) would be followed by a similar outcome**
- **Atypical expectancy shifts, believing that success (or failure) would be followed by a dissimilar outcome**

Additional research led to the hypothesis that typical expectancy shifts were displayed more often by those who attributed their outcomes to ability, whereas those who displayed atypical expectancy were more likely to attribute their outcomes to chance. This was interpreted that people could be divided into those who attribute to ability (an internal cause) versus those who attribute to luck (an external cause). Bernard Weiner argued that rather than ability versus luck, locus may relate to whether attributions are made to stable or unstable causes.

10.2. Personality Orientation

Rotter cautioned that internality and externality represent two ends of a continuum, not an either/or typology. Internals tend to attribute outcomes of events to their own control. People who have internal locus of control believe that the outcomes of their actions are results of their own abilities. Internals believe that their hard work would lead them to obtain positive outcomes. They also believe that every action has its consequence, which makes them accept the fact that things happen and it depends on them if they want to have control over it or not. Externals attribute outcomes of events to external circumstances. People that have external locus of control believe that many things that happen in their lives are out of their control. They believe that their own actions are a result of external factors that are beyond their control. Rotter in his study suggested that people that have external locus of control have four types of beliefs which include the following: powerful others such as doctors, nurses, fate, luck and a belief that the world is too complex to predict its outcomes. People that have external locus of control tend to blame others for the outcomes rather than themselves. It should not be thought, however, that internality is linked exclusively with attribution to effort and externality with

attribution to luck. This has obvious implications for differences between internals and externals in terms of their achievement motivation, suggesting that internal locus is linked with higher levels of need for achievement. Due to their locating control outside themselves, externals tend to feel they have less control over their fate. People with an external locus of control tend to be more stressed and prone to clinical depression.

Internals were believed by Rotter to exhibit two essential characteristics: high achievement motivation and low outer-directedness. This was the basis of the locus-of-control scale proposed by Rotter in 1966, although it was based on Rotter's belief that locus of control is a single construct. Since 1970, Rotter's assumption of uni-dimensionality has been challenged, with Levenson (for example) arguing that different dimensions of locus of control (such as beliefs that events in one's life are self-determined, or organized by powerful others and are chance-based) must be separated. Weiner's early work in the 1970s suggested that orthogonal to the internality-externality dimension, differences should be considered between those who attribute to stable and those who attribute to unstable causes.

This new, dimensional theory meant that one could now attribute outcomes to ability (an internal stable cause), effort (an internal unstable cause), task difficulty (an external stable cause) or luck (an external, unstable cause). Although this was how Weiner originally saw these four causes, he has been challenged as to whether people see luck as an external cause, whether ability is always perceived as stable, and whether effort is always seen as changing. Indeed, in more recent publications he uses different terms for these four causes (such as "objective task characteristics" instead of "task difficulty" and "chance" instead of "luck"). Psychologists since Weiner have distinguished between stable and unstable effort, knowing that in some circumstances effort could be seen as a stable cause (especially given the presence of words such as "industrious" in English).

Regarding locus of control, there is another type of control that entails a mix among the internal and external types. People that have the combination of the two types of locus of control are often referred to as Bi-locals. People that have Bi-local characteristics are known to handle stress and cope with their diseases more efficiently by having the mixture of internal and external locus of control. People that have this mix of loci of control can take personal responsibility for their actions and the consequences thereof while remaining capable of relying upon and having faith in outside resources; these characteristics correspond to the internal and external loci of control, respectively.

10.3. Application

Locus of control's best known application may have been in the area of health psychology, largely due to the work of Kenneth Wallston. Scales to measure locus of control in the health domain were reviewed by Furnham and Steele in 1993. The best-known are the Health Locus of Control Scale and the Multidimensional Health Locus of Control Scale, or MHLC. The latter scale is based on the idea (echoing Levenson's earlier work) that health may be attributed to three sources: internal factors (such as self-determination of a healthy lifestyle), powerful others (such as one's doctor) or luck (which is very dangerous as lifestyle advice will be ignored - these people are very difficult to help).

Empirical data on health locus of control in a number of fields was reviewed and noted that data on whether certain health-related behaviors are related to internal health locus of control have been ambiguous. They note that some studies found that internal health locus of control is linked with increased exercise, but cite other studies which found a weak (or no) relationship between exercise behaviors (such as jogging) and internal health locus of control. A similar ambiguity is noted for data on the relationship between internal health locus of control and other health-related behaviors (such as breast self-examination, weight control and preventative-health behavior). Of particular interest are the data cited on the relationship between internal health locus of control and alcohol consumption.

Norman and Bennett note that some studies that compared alcoholics with non-alcoholics suggest alcoholism is linked to increased externality for health locus of control; however, other studies have linked alcoholism with increased internality. Similar ambiguity has been found in studies of alcohol consumption in the general, non-alcoholic population. They are more optimistic in reviewing the literature on the relationship between internal health locus of control and smoking cessation, although they also point out that there are grounds for supposing that powerful-others and internal-health loci of control may be linked with this behavior.

They argue that a stronger relationship is found when health locus of control is assessed for specific domains than when general measures are taken. Overall, studies using behavior-specific health locus scales have tended to produce more positive results. These scales have been found to be more predictive of general behavior than more general scales, such as the MHLC scale. Norman and Bennett cite several studies that used health-related locus of control scales in specific domains (including smoking cessation), diabetes, tablet-treated diabetes, hypertension, arthritis, cancer, and heart and lung disease.

They also argue that health locus of control is better at predicting health-related behavior if studied in conjunction with health value (the value people attach to their health), suggesting that health value is an important moderator variable in the health locus of control relationship. For example, Weiss and Larsen (1990) found an increased relationship between internal health locus of control and health when health value was assessed. Despite the importance Norman and Bennett attach to specific measures of locus of control, there are general textbooks on personality which cite studies linking internal locus of control with improved physical health, mental health and quality of life in people with diverse conditions: HIV, migraines, diabetes, kidney disease and epilepsy.

During the 1970s and 1980s, Whyte correlated locus of control with the academic success of students enrolled in higher-education courses. Students who were more internally controlled believed that hard work and focus would result in successful academic progress, and they performed better academically. Those students who were identified as more externally controlled (believing that their future depended upon luck or fate) tended to have lower academic-performance levels. Cassandra B. Whyte researched how control tendency influenced behavioral outcomes in the academic realm by examining the effects of various modes of counseling on grade improvements and the locus of control of high-risk college students. Rotter also looked at studies regarding the correlation between gambling and either an internal or external locus of control. For internals, gambling is more reserved. When betting, they primarily focus on safe and moderate wagers. Externals, however, take more chances and, for example, bet more on a card or number that has not appeared for a certain period, under the notion that this card or number has a higher chance of occurring.

10.4. The Influence of Self-Efficacy & Stress

Self-efficacy is a person's belief that he or she can accomplish a particular activity. It is a related concept introduced by Albert Bandura, and has been measured by means of a psychometric scale. It differs from locus of control by relating to competence in circumscribed situations and activities (rather than more general cross-situational beliefs about control). Bandura has also emphasized differences between self-efficacy and self-esteem, using examples where low self-efficacy (for instance, in ballroom dancing) are unlikely to result in low self-esteem because competence in that domain is not very important to an individual. Although individuals may have a high internal health locus of control and feel in control of their own health, they may not feel efficacious in performing a specific treatment

regimen that is essential to maintaining their own health. Self-efficacy plays an important role in one's health because when people feel that they have self-efficacy over their health conditions, the effects of their health becomes less of a stressor. Smith has argued that locus of control only weakly measures self-efficacy; only a subset of items refer directly to the subject's capabilities. Smith noted that training in coping skills led to increases in self-efficacy, but did not affect locus of control as measured by Rotter's 1966 scale.

The previous section showed how self-efficacy can be related to a person's locus of control, and stress also has a relationship in these areas. Self-efficacy can be something that people use to deal with the stress that they are faced with in their everyday lives. Some findings suggest that external health-related locus of control combined with self-efficacy moderates illness-related psychological distress. In the previous section, the different types of locus of control, internal and external, were mentioned. Based on the definition of people who have an external locus of control, we can see that this can be associated with higher levels of stress. A study conducted by Bollini and others reveals that individuals who have a high external locus of control tend to have higher levels of psychological and physical problems. These people are also more vulnerable to external influences and as a result they become more responsive to stress.

Veterans of the military forces that have spinal cord injuries and post-traumatic stress are a good group to look at in regards to locus of control and stress. Ageing shows to be a very important factor that can be related to the severity of the symptoms of PTSD experienced by the patients following the trauma of the war. Research suggests that patients who suffered a spinal cord injury will benefit from knowing that they have control over their health problems and their disability, which reflects the characteristics of having internal locus of control. Another study by focused on how the responses of spinal cord injury post-traumatic stress varied depending on age. The researchers tested different age groups including young adults, middle-aged and elderly; the average age was 25, 48 and 65 for each group respectively. After the study, they concluded that age does not make a difference on how spinal cord injury patients respond to the traumatic events that happened. However, they did mention that age did play a role in the extent to which the external locus of control was used, and concluded that the young adult group demonstrated more external locus of control characteristics than the other age groups that they were being compared to.