ABSTRACT
This summary paper focuses upon personal locus of control (LOC) orientation and control beliefs in relation with the science of aging, environment, and decision-making in the context of the shibboleth construct. An original dissertation and peer-reviewed paper derivative of the dissertation explored advancement intention in Canadian power engineering. LOC operated as an independent variable (IV) in both the dissertation and the peer-reviewed paper. This summary serves to encourage future research in the area of LOC orientation related to selected aspects of aging, experience, and decision-making. 

Keywords: Locus of control; Shibboleth; Aging; Experience; Decision-making

INTRODUCTION
This summary is an extension of the peer-reviewed paper Adult Learning: Barriers and Enablers to Advancement in Canadian power Engineering [1] related to the dissertation: Factors Influencing Canadian Power Engineers’ Decision to Pursue Advanced Certification [1,2]. The peer-reviewed paper and dissertation comprised LOC (control loci) as one of the six IVs. Power engineering certification in Canada comprises a hierarchical, graduated system available to adults of all ages. The peer-reviewed paper [1] offered insight into the knowledge gap related to factors influencing Canadian power engineers’ decision to pursue advanced certification with implications for adult learning. The dissertation research methodology was quantitative correlational design in which linear and logistic regressions employing a modified Bonferroni equivalent alpha were utilized [2]. Revealed in the results were positive, statistically significant relationships between the dependent variable (DV) of advancement intention and three of the six IVs. Time commitment, responsibility, and elapsed time exerted statistically significant effects on advancement intention (DV). The three remaining IVs that did not exhibit significant relationships with the DV were educational support, LOC, and peer appraisal. This indicated that the IVs of educational support, LOC, and peer appraisal did not significantly influence the DV when compared to the significant influences of time commitment, responsibility, and elapsed time on the DV. While the LOC (control loci) variable was not statistically significant, the power engineering research revealed the potential for LOC to influence myriad behavioural substrates.

REVIEW OF LITERATURE
Locus of Control
The Canadian power engineering research study illuminated the governing influence of LOC orientations, and the capacity for LOC to impede or facilitate goal fulfilment. A large portion of the original power engineering pilot study and survey involved LOC inquiry. The original dissertation survey included LOC questions derivative of an existing validated LOC survey Sapp and Harrod with requisite permissions [3]. LOC is a pervasive personal construct with the capacity to influence behaviours and outcomes. The construct of personal control loci was initiated via Rotter’s (1954) social learning theory. Rotter’s theory postulated a continuum where scale polarities specified that individuals either held control over life’s events or whether these events are an outcome of external forces [4-13]. LOC predispositions are rarely polarized as fully internal or fully external. Individuals possess both internal and external aspects, with one aspect being dominant. Internal control loci orientations (internals) ascribe outcomes to behavior. Conversely, external control loci orientations (externals) ascribe outcomes to peripheral influences. Forces exist internal to the individual as controllable characteristics or as external uncontrollable properties such as luck, fate, or destiny. An
internal locus implies personal dominion over events whereas an external locus implies being controlled by external events.

**Shibboleth**

World views are subject to myriad influencing factors related to exposure to the environment and the temporality. Among many intervening variables, perception of the world is framed through experience in the context of an individual's perceived level of control over life's events. These perceptions may change over the course of time. A construct is therefore required to assess the impact and effect of time on the fidelity of these interpretations, both past and present. Shibboleth is employed as an interpretive mechanism to stimulate thought and motivate discussion in relation to how early experience is reinterpreted later in life through the aperture of LOC. The shibboleth construct indicates a past belief that is repeated but may be untrue or fallacious. The term is employed to reference occurrences or misconceptions regarding recollections of occurrences that are no longer valid [14,15]. For the purposes of this summary, the shibboleth lens operates as a 'Rosetta stone' to decipher the way temporal events are interpreted at different stages in life [16].

**Attribution**

Humans seek to attribute outcomes to causative factors. The influencing factor of LOC or control belief mitigates reaction to an event and how responses to events are interpreted and portrayed through behaviour or temperament. Personal predispositions are rooted in attribution theory and LOC. Attribution theory posits a connection between prior failure and success, and future motivation and goal attainment [17,18]. The individual’s confidence or uncertainty in their ability to manage external circumstances indicates how they attribute outcomes. Failure or success is either attributed to external circumstances or personal behaviour. The ascription of failure or success determines personal dispositions towards future challenges. Attributing success or failure to one’s effort or ability is a positive ascription [19]. Individuals possessing external LOC assign outcomes to uncontrollable phenomena such as fortune, change, or luck [8,20]. External LOC orientation reinforces the perception that external influences impede pursuit and achievement of personal desires and may overwhelm beliefs in personal internal control over outcomes. LOC predispositions shape human behaviour and these control beliefs are influenced by organic and social-cultural aspects including, but not limited to, aging and experience, environment, and decision making.

**Aging Science**

Processes such as aging are complex and influenced by multivariate factors. For example, dispositions in elderly individuals are a product of experience and control orientations. Rubio, et al. explored the affect of stress-inducing prior events and LOC beliefs in the context of managing the external environment to obtain preferred outcomes related to life satisfaction [21]. The study found that stressful episodes and LOC orientation were factors affecting life satisfaction and potentially negative dispositions in older individuals. The influence of LOC and past occurrences on attitude and life satisfaction have implications for how individuals interpret and manage the environment. The effects of stressful events earlier in life may be associated with negative affect and domain-specific life satisfaction [21]. However, the degree of fidelity with respect to recalling the past event is subjective. It is unclear as to whether adverse outcomes later in life are related to direct recall or to subjective and skewed perception of an event or events, as posited through the shibboleth view. Further questions exist concerning the fidelity of reinterpreted episodic memories [22]. Control orientations or beliefs are moderating weigh stations between the past event and the latter reinterpreted memory of the past event. The shibboleth concept may further assist inquiry in terms of perceptual validity related to recalling past events and the individual control belief orientation. Further inquiry is required regarding whether life experience shapes LOC over time or vice versa.

**Experience**

Aging and life experience are integrated phenomena. The occurrence of events during life shape attitudinal predispositions and manifest in the degree of satisfaction with life. Individual LOC perceptions, though situationally and contextually dependent, are generalized across comparable cues and circumstances [4,11]. Akin to reflections on aging supra, experience predicated upon events may be subjective and contingent upon interpretation and memory. Renaud, et al. advocated the importance of understanding methods for increasing optimism during maturation into adulthood [11]. Individuals navigating this life phase are confronted with myriad concurrent psychosocial demands. The framing of life events through personal control beliefs segregates emotional outcomes stemming from these events into either optimistic or pessimistic dispositional dispositions. The ‘dispositional residue’ of a past event infuses future emotional and attitudinal states in accordance with the shibboleth perspective. Literature related to LOC strongly supports the assertion that perceived internal LOC reinforces positive outcomes. Perception of internal control over events is positively associated with greater psychological well-being and dispositional optimism [11]. Interlinkages between aging and experience are mutually reinforcing when mitigated through control beliefs. Zahodne, et al. suggested that bolstering internal control beliefs (internal loci) find decision-making problematic due to lack of consistent or requisite information. Literature related to decision-making capacity or requires facilitated control belief reassignment.

**Decision-Making**

The quality of decision-making is proportional to the degree of available information. Individuals with external control beliefs (external loci) find decision-making problematic due to lack of consistent or requisite information. Literature related to decision-making processes supports the assertion that career-
related decisions are impeded by negative beliefs such as educational choice in conjunction with both individual and environmental characteristics [8]. Internally control-oriented people take responsibility for their decisions and own the decision-making processes. Those individuals with external control orientations may not engage in decision-making given their belief in subjugating external control over their lives through constructs such as fate or destiny [5,8]. ‘Externals’ feel that failure or success exists external to their sphere of control, thus they cannot control outcomes. Kirdök, et al. found that an individual’s level of external LOC was proportionate to their degree of indecisiveness [8]. A threat to personal control is a mitigating factor related to information-driven decision-making. In the presence of a threat, internally controlled individuals will strive to restore control. This attempt at restoration may further affect linear decision-making processes. This threat component has implications for recollection and interpretation of prior events. A stress-inducing event is perceived as a threat. If future recollections of this event are interpreted as threatening, or stimulate threat responses in the absence of mitigation via internal control mechanisms, the initial and recalled event may lead to negative dispositions.

CONCLUSION
The construct of LOC offers fertile ground for research, application, and insight. LOC investigations related to aging science, experience, and decision-making represent only a small fraction of opportunities for future research and knowledge. Pattern recognition, apophenia and symmetry extractions in random data are interesting aspects for exploration and discourse, given that these phenomena contemplate both organic and abstract elements of human cognition and behavior [23]. The original power engineering research provided abundant foundation for further study.

REFERENCES