Theory Model for the Integration
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Abstract
This article develops a theory integrating psychological safety and psychological availability within the context of human resource development (HRD) objectives. While research on psychological safety, a willingness to take an interpersonal risk, has blossomed over the past two decades, no theoretical modeling has been offered with links to psychological availability as originally proposed by Kahn (1990). Through the employment of Dubin’s (1969) theory-building method, this article develops the integration of psychological safety and psychological availability with a systems framework. A literature review is conducted to define and assess the proposed operational units within the theoretical model focused on inputs, mediating processes, outputs, and feedback input. Implicit voice is proposed as a feedback input that attempts to assess the role of an individual’s prior experiences in the system process. Dubin’s (1969) remaining steps for theory construction are completed, up to the point of empirical research. Finally, implications of research, theory, and practice within the field of HRD are examined.

Keywords: psychological safety, psychological availability, Dubin, theory-building, implicit voice

A Theoretical Model for the Integration Psychological Safety and Psychological Availability

Introduction
Over the past fifty years, human resource development (HRD) has progressed through multiple stages of evolution and types of change, with further expansion and progression underway. Seo et al. (2019) argued that HRD is reaching maturity as a disciple based on an increased volume of theory-building research with the HRD literature. As HRD seeks to develop further, Ruona (2016) offered two alternative paths for HRD – professionalism and transdisciplinarity. Arguably, HRD may already be experiencing characteristics of a transdisciplinary phase as it diversifies and incorporates new fields and disciplines (Han et al., 2017). While
some incursions are into new arenas, such as globalization, others may be longer legs to Swanson’s original stool – economics, systems, and psychology (Swanson, 2001, p. 306).

Within the field of psychology, as will be outlined below, significant research has been conducted regarding the role of psychological safety at the individual and team level on outcomes, such as organizational learning and team dynamics (e.g., Edmonson, 1999; Edmonson & Nembhard, 2009). To a lesser degree, research in psychological availability has been conducted to address questions involving decisions to employ or retain personal resources toward attaining individual or team objectives (e.g., Hobfoll, 1989; Halbesleben et al., 2014). Together, these cognitive states may determine if individuals elect to engage in learning activities, yet both phenomena are not generally discussed within HRD. While a debate continues regarding a standard definition of HRD, the most cited definition (Han et al., 2017) is that of Swanson and Holton (2001), which reads as “a process of developing and unleashing expertise for the purpose of improving the organizational system, work process, team and individual performance” (p. 4). The significance of this definition likely resides in conjunction with a multi-level scope and both performance and learning objectives. The outcomes of both psychological safety and psychological availability coincide with those objectives.

The development of an integrated theory of psychological safety and psychological availability may contribute towards resolving certain stated deficiencies for HRD, specifically efficacy and return on investment (Cascio & Bourdeau, 2010). The following will define, construct, and assess a theoretical model that integrates psychological safety and psychological availability within a team context with HRD aligned outcomes. As outlined below, Dubin’s (1969) theory-building model will be used to describe the construct, allowing for both rigorous evaluation and future empirical research necessary to refine the eventual theory. Lastly, implications to HRD research, theory, and practice will be discussed.

Problem Statement

Since the publication of Edmonson’s (1999) seminal work on psychological safety, academic works on psychological safety have advanced each year, and references in popular media have increased substantially since 2013 (Edmonson, 2018). Several comprehensive reviews of the extant literature offer insight into the progression of research (Edmonson & Lei, 2014; Newman et al., 2017). Current notable research has focused on antecedents (e.g., Edmonson & Mogelof, 2006), outcomes (e.g., Nembhard & Edmonson, 2012), and potential risks (Pearsall & Ellis, 2011). Frazier et al. (2017) conducted an extensive review of the literature to form a comprehensive nomological model for the phenomenon of psychological safety, which will be employed and supplemented in the following.

Kahn’s (1990) early work on engagement found the correlation between psychological safety and psychological availability to be statistically significant. Since Kahn’s original study, a review of the literature shows a glaring lack of research investigating the role of resource decisions, specifically concerning psychological safety. To this end, Newman (2017) advocated for a deeper understanding of psychological safety through the Conservation of Resource (CoR) theory (Hofboll, 1989). While Newman (2017) offered an initial model for the inclusion of CoR, it was not constructed with the rigor demanded by generally accepted theory-building models. Overall, the inclusion of CoR and resource decisions may offer new insights into the process by which individuals choose to act within psychologically safe environments.

While several explanations regarding the phenomenon of psychological safety have been offered (e.g. Edmonson, 1999; Newman, 2017), no explicit theoretical models have been developed using rigorous theory-building methods. These methods are needed to investigate and understand the processes by which an individual chooses to evaluate conditions for psychological safety and then act upon those conditions through the expenditure of resources to yield outcomes. Therefore, the core problem that this theory development research aims to address is:

*The problem is that there presently is no rigorously constructed theory that integrates the cognitive conditions of psychological safety and psychological availability, which result in defined outcomes relevant to HRD.*

While Kahn (1990) investigated three psychological conditions in his original research – meaningfulness,
safety, and availability—meaningfulness will not be included in the proposed theorizing. Meaningfulness, defined as the return on investment of personal energy (Kahn, 1990), is excluded for two reasons. First, it can be considered an outcome of a decision rather than a mediator of the processes. Second, as Kahn (1990) proposed, meaningfulness is situated within the context of task, role, and work interactions. While HRD is generally focused on the work/task environment, the following theory is proposed to extend beyond those environments into general team settings, including those with limited task construction and role delineation.

**Purpose of the Study**

According to Van de Ven (2007), “A theory is a pattern of conceptual organization that explains phenomena by rendering them intelligible” (p.104) and which operates “within a set of boundary conditions” (p. 112). However, to move beyond a personal inquiry of phenomena into transmitted wisdom to others, it must be constructed, rendered explicit, transferred to result in both outcome and process knowledge (Lynham, 2002). The purpose of this study is to develop a theoretical model using a generally accepted theory-building method and assessment criteria, which explains how individuals choose to engage in a psychologically safe decision and decide to employ or retain their resources in the execution of that decision. The proposed theorizing advances the research on psychological safety and psychological availability by offering a robustly constructed theoretical model that proposes laws of interactions and propositions, which could be further empirically tested and refined.

**Methodological Overview**

A theory of psychological safety and psychological availability in a team context is developed using Dubin’s (1969) theory building model and a system process paradigm (Ilgen, 2005). The proposed theorizing is best described as a research-then-theory strategy (Lynham, 2002). Accordingly, this approach derives theory based on examining and integrating existing data, substantively from available academic research focused primarily on the operationalization and confirmation phases of the General Method of Theory-Building model (Lynham, 2002; 2013; Swanson & Chermack, 2013).

Dubin’s method fits within a larger functionalist paradigm, grounded by an objectivist orientation, which starts with a thorough review of the literature and prior theorizing to define new relationships and hypotheses to make sense of observable phenomena (Holton & Lowe, 2007). Dubin’s (1969) structured quantitative theory building method was selected based on several criteria: (a) it builds upon existing research and theory to render new insight, (b) is comprehensive, methodical, and repeatable, (c) demands logical interconnectivity of all essential components, (d) offers testable propositions, and (e) demands the measurement, testing, and refinement of propositions to facilitate refinement and application of the theory. This approach has been successfully employed in HRD and other related fields (e.g., Chermack, 2004; Kang and Stewart, 2007; and Rana et al., 2014).

Dubin (1969) developed an eight-step theory building method divided into two parts (Figure 1). The first part, and focus on this paper, develops a description of the theory through the identification of specific vital components: the units of the theory, the laws of interaction (which define how the units relate within the system), the boundaries of the theory system, the system states (which define transitions within the system), and the propositions or logical consequences of the theory. The second part of the model, which is beyond the scope of this paper, outlines the steps for empirical research and testing, including the development of empirical indicators, the development of hypotheses, and empirical testing. Swanson & Chermack (2013) recognized that a theory iterates through multiple stages focused on refinement towards maturity. Throughout each step of the theory-building process, an assessment is performed to test for adherence to the standards proposed by Dubin (1969).

Dubin (1969) delivered his theory-building method specifically within the social sciences to “achieve understanding of a social system” (p. 10). As further described below, psychological safety manifests within the complex and dynamic systems of groups or teams. Ilgen (2005) proposed a framework for understanding
team dynamics that departs from traditional input-process-output (I-P-O) models (e.g., Hackman and Morris, 1975). Ilgen (2005) argued that organizational research on teams has shifted from what predicts team effectiveness to why some teams are more effective than other teams. As a result, the conventional I-P-O model is insufficient to explain team complexity in three ways. First, many why factors are not processes but are emergent cognitive or affective states acting as mediators. Secondly, these mediators are not linear single-cycle events but contain feedback loops. Lastly, there may be an interplay between the mediators, inputs, and outputs themselves. By replacing processes with mediators, including an additional input at the end of the sequence, and removing the hyphens, the Input Mediator Output Input (IMOI) model offers a broader range of variables with wider research potential. Since its initial proposal, several publications on team performance and effectiveness have leveraged IMIO (e.g., Mathieu et al., 2008; Foster et al., 2015). Consequently, the IMOI is used in this theory-building process to define the essential concepts and interactions within and throughout the system.

Theoretical Constructs

The following sections describe the first part of theory development according to Dubin (1969), as applied to theorizing about psychological safety and psychological availability. These sections include the development of the theory units, the laws of interaction, system boundaries, system states, and propositions. Each of these is described in detail and assessed.

Step 1 – Units

Theories are designed to explain phenomena by constructing and applying basic ideas or concepts, representing the “things out of which theories are built” (Dubin, 1969, p. 28). Since concepts can be a more expansive term, Dubin offers the more “neutral term” (Dubin, 1969, p. 28) of a unit to represent the essential components of a theory, which, when expanded to include relationships and propositions, complete the first part in building a theory. Dubin (1969) allows the theorist considerable freedom to select the units of the theory.

After reviewing the literature, nine units are proposed to represent the theory’s most comprehensive yet parsimonious construct. These units are derived from Kahn’s (1990) psychological conditions of engagement work, Edmonson’s (1999) research on psychological safety and subsequent inquiries, Hobfoll’s (1989) Conservation of Resources theory, and Detert & Edmonson’s (2011) research on implicit voice. Research on psychological availability is limited compared to psychological safety but is proposed to operate within the same general framework. Therefore, the below-mentioned units are intended to extend to psychological availability and the resultant propositions. This assumption is subject to future testing and refinement in the second part of Dubin’s (1969) model. The units are organized and presented below according to Ilgen’s (2005) IMIO model and are depicted in Figure 2.

Input Units

Frazier et al. (2017) constructed and tested a nomological network for understanding the antecedents to psychological safety. Their model, as supplemented below, will be primarily used to construct the initial input elements for the proposed framework. Frazier et al. built upon five primary antecedents originally offered by Kahn (1990) then tested and validated mainly through several hypotheses focused on the leader, the team context, and the individual.

(Insert Figure 2 approximately here)

Leadership Style and Relationships

Northouse (2019) defined leadership as "a process whereby an individual influences a group of individuals to achieve a common goal" (p.5). This process sets the tone of organizational culture through communication, influence, goal setting, and decision making. Inclusive leadership (what leaders say and do to foster engagement and feedback so that team members feel invited, appreciated, and valued) is a critical element in fostering a climate of psychological safety at the individual level (Beinfield & Grote, 2014; Carmeli et al.,
At the team level, coaching by the team leader (Edmonson, 1999), trust in the leader (Li & Tan, 2012; Schaubroeck et al., 2011), ethical change-oriented leadership (Li et al., 2014) have been shown to contribute to positive levels of psychological safety.

The behaviors of leaders have a mediating effect on psychological safety levels (Edmonson, 1999). Levels of psychological safety vary based on team structure and leadership behavior; team members with low levels, especially those with lesser status, are reluctant to speak up (Edmonson, 1999). Research-based on social learning theory (Bandura, 1977) argues that through active engagement and frequent interpersonal interactions, leaders model psychological safety to followers and partially mediate these effects (e.g., Walumbwa & Schaubroeck, 2009). Social exchange theory may explain why followers reciprocate leadership behaviors that contribute to a psychologically safe environment (e.g., Schaubroeck et al., 2011). The leader sets the tone of the relationship and defines, reinforces, or disrupts group norms, and encourages or discourages individual levels of psychological safety and psychological availability. As a result, leaders hold a critical place in constructing the theory.

Team Dynamics

Since psychological safety exists within a team or group context (Edmondson 1999; 2003, 2004), further investigation into team construct theories would be beneficial. A team is a social collective of individuals missioned to collaborate on a common task or towards a shared objective, where the act of an individual has some corollary or causal effect on other members of the team or the whole (London, 2013). The team’s value is in the aggregation of the distributed knowledge in team members employed to drive better outcomes but is dependent on the team members’ willingness to share their unique knowledge, and thus their power, with the team in general (Alsharo et al., 2017).

The type and quality of the networks formed within teams influence levels of psychological safety. Carmeli and Gittell (2009) argued that team members who engage in high-quality relationships within the team’s social network enjoy higher levels of psychological safety, which facilitates learning from failure to improve team outcomes. At the team level, psychological safety levels are influenced by prior engagement and familiarity (Roberto, 2002) and high-quality intra-team relationships, as indicated by levels of trust, network connections, and communal thinking (Gu et al., 2013). Positional status of the team (Nembhard & Edmonson, 2006) and within the team (Bienefeld & Grote, 2014), shared team rewards structures (Chen & Tjosvold, 2012), and levels of team boundary work (Faraj & Yan, 2009) result in higher levels of psychological safety. However, not all activities which drive psychological safety have positive results. O’Neill (2009) found that collective responsibility models for decisions may reinforce the commitment to bad team decisions, possibly an example of the “Too Much of a Good Thing” phenomenon proposed by Pierce & Aguinis (2013). The above research provides compelling justification for including team characteristics within the theoretical model.

Individual Characteristics

Psychological safety and psychological availability are cognitive states that manifest within an individual (Kahn, 1990) within a team context (Edmonson, 1999; Baer & Frese, 2003). Frazier et al. (2017) confirmed that certain previously proposed individual personality traits, such as proactive personality, emotional stability, and learning orientation, result in more robust levels of psychological safety. Individuals with proactive personalities are more likely to perceive a situation as safe despite opposing contextual factors (Chan, 2006; Detert & Burris, 2007). Similarly, May et al. (2004) found that an individual’s levels of self-consciousness affect their level of psychological safety but only when resource levels (i.e., psychological availability) are taken into account. A high level of learning orientation recognizes that making mistakes is an inherent part of the self-development process and has been shown to result in higher levels of individual psychological safety (Chiu et al., 2011). With these traits, individuals are more likely to be curious about problems and then detect and solve those problems irrespective of conditions.

In addition to traits, individuals also approach an interaction based on prior experiences (Deter & Edmonson, 2011). To varying degrees, prior experiences create implicit voices within the individual, influencing attitudes
and resource decisions. Implicit voice is defined as "taken-for-granted beliefs about when and why speaking up at work is risky or inappropriate" (Deter & Edmonson, 2011, p. 461). Their study found that implicit voice, along with traditional attributes of individual disposition and demographics, help explain why presumptions about leadership behavior may be more potent than explicit leadership behaviors. Implicit voices may act as filters, if not limiters, to how an individual assesses whether it is psychologically safe to engage (Deter & Edmonson, 2011) and whether they are willing to take the risk to invest or retain resources. Within this theoretical framework, implicit voice is proposed to have a meaningful impact on the system by acting as feedback input within the IMIO model.

Mediator Units

Several proposed mediating variables are postulated as a potentially novel contribution to this theorizing. These are a) psychological safety and b) psychological availability. These variables represent the core of the theorizing proposed in this research.

Psychological Safety

Psychological safety is grounded in the work of Schein & Bennis (1965), which reasoned that it is an essential component of an individual’s ability to navigate organizational change and uncertainty. Kahn (1990) was the first to explore psychological safety in a work setting by investigating the role of meaningfulness, safety, and psychological availability on employee engagement. Recent advancements in the study of psychological safety can be attributed to Edmondson (1999), which determined that psychological safety manifests primarily in a team context. For this research, Edmonson’s (1999) definition of psychological safety, as "the belief that the work environment is safe for interpersonal risk-taking," provides the basis for further theorizing (p. 354). Edmonson et al. (2004) advocated for an essential distinction between trust and psychological safety. In part, trust is focused on a didactic relationship with the “other” while psychological safety is focused on the “self” within a team environment (Edmonson, 2004). While both share the common intent of managing risk and uncertainty, these differences may drive essential distinctions in the underlying theories and models.

An analysis of literature indicated that the theoretical foundations of psychological safety could be grounded in the theories of Social Exchange, Social Identity, and Social Learning (Newman et al., 2017). Social Exchange theory posits that group members will reciprocate a leader’s supportive behavior furthering knowledge exchange when operating in a safe environment (Chen & Tjosvold, 2014). Singh et al. (2013) argued that psychological safety is fostered through diverse group composition, nurturing employee social identification. Social Learning Theory (Bandura, 1997) posits that inclusive leaders who model an environment defined by listening, support, trust, and respect will foster higher psychological safety levels within their group (Hirak et al., 2012). The above research results show that high levels of psychological safety lower the risk of interpersonal interactions, increase co-worker collaboration and confidence in communication, and further increase the likelihood of lateral and upward communications. As a mediator between inputs and outcomes, psychological safety is proposed as one of two essential cognitive states determining an individual’s decision to act in a team situation.

Psychological Availability

Like psychological safety, the concept of psychological availability is originally grounded in Kahn (1990). Kahn defined psychological availability as “the sense of having the physical, emotional or psychological resources to personally engage at a particular moment. It measures how ready people are to engage, given the distractions they experience as a member of a social system.” (p.714). Within an organizational setting, interpersonal relationships are defined further by the individual, team, and organization’s objectives. These interpersonal engagements can be inherently risky, exposing resources, such as knowledge, power, and position, to loss. Hobfoll (1989) offered a theory of motivation to predict the variables associated with these stressful encounters.

Definitions of the major elements of CoR theory would be beneficial. Halbesleben et al. (2014) defined a resource as "anything perceived by the individual to help attain his or her goals." (p. 5). Within the
CoR framework, Halbesleben et al. (2014) further segment resources into objects, conditions, personal characteristics, and energies. Objects have a physical presence, such as a home or an automobile, and may be linked to social-economic status. Conditions are valued as structures that are sought after, e.g., social status. Personal characteristics are individual traits or coping skills that increase or decrease the sense of self and generally aid in stress resistance. Lastly, energies are skills and abilities exchanged for other resources, including time, money, and knowledge. Energies are unique in that they are generally not valued for their intrinsic worth but for their ability to acquire the other three types of resources. These groups generally align with those initially offered by Kahn but with the addition of energies. May et al. (2004) further supported Kahn’s original findings, in that cognitive, emotional, and physical resources have a meaningful impact on psychological availability.

CoR theory postulates that individuals are motivated to protect their current resources and strive to acquire new resources by operating under two significant beliefs – protection and investment (Hobfoll, 1989). First, Hobfoll (1989) argued that resource loss is the primary motivating tenet mediating engagement risk. Further, he argues that the potentiality of loss may be more harmful than the actual loss or the reacquiring of previously lost resources. The second tenet of CoR maintains that individuals invest in resources to protect against future losses, regain what was previously lost, or gain new resources (Hobfoll, 1989).

Halbesleben et al. (2014) further delineated resource loss’s corollary effects by arguing that individuals who have lost resources or have fewer resources are more likely to continue to experience loss. The continual loss of resources or “loss spiral” (Hobfoll, 1989), real or perceived, may lead to defensive actions taken to retain remaining resources. Alvaro et al. (2010) argued that the constant threat to resources might lead to employee burnout and negatively impact job performance in healthcare providers. Similar results have been offered in other professional settings, such as correctional officers (Neveu, 2007), education (Alarcon et al., 2011), and nursing (Prapanjaroensin et al., 2017).

This theoretical construct proposes that while an individual may determine that it is safe to engage in interpersonal risk (i.e., psychologically safe), that same individual may or may not have the requisite resources to deploy to that decision. Levels of physical, emotional, or status resources may mediate that decision to act. For that reason, psychological availability is proposed as the second essential meditator unit within the current theory construction.

Output Units

Based again on the IMOI model, defining and describing the critical output variables for the proposed theorizing is critical. The principal output variables include a) safety and error reporting as proxies for organizational effectiveness, b) organizational learning, and c) team development.

Safety and Error Reporting

During the intervening years between when Schein and Bennis (1965) coined the term "psychological safety" and Edmonson’s (1999) study identifying psychological safety as a team dynamic, several industries and organizations embarked on understanding the nature of effective teams. Early practical investigations focused on capital-intensive, high-risk industries like aviation, hospitals, and mining to understand and affect team safety. Beginning with Cockpit then Crew Resource Management (CRM) programs in 1979, the aviation industry attempted to define the critical team structures and relationships necessary to improve safety (Helmreich et al., 1999). Edmonson (1999) extended this research to consider the impact of psychological safety on error reporting and quality initiatives within the hospital environment. This early research argued that teams with high psychological safety levels reported errors at higher rates but experienced lower actual error than teams with low psychological safety levels. This finding was supported by Nembhard and Edmonson (2006), who examined neo-natal units in multiple hospital environments. These findings have been further repeated and supported in several industries, such as construction (Shen et al., 2015) and aviation (Bienefeld & Grote, 2014).
A cross-industry analysis performed by Probst and Estrada (2010) effectively summarized the mediating effect of psychological safety on error reporting and safety. The authors investigated five industries with an above-average risk for employee injury and found that a weak safety climate resulted in the under-reporting of incidents by over 40%. The authors argued that the difference in reporting can be partially explained by the experience of nearly two-thirds of the employees who reported negative consequences by management due to reporting errors. With higher levels of psychological safety, as enabled by sufficient levels of psychological availability, this theory argues that error reporting will increase, safety levels will improve, and *ceteris paribus* organizations will become more effective.

Organizational Learning

Research proceeded next to investigate psychological safety’s impact on team activities such as organizational learning, creativity, and innovation (e.g., Edmonson, 1999; Edmonson & Nemhard, 2009). Organizational learning is defined as how knowledge is created and shared within an organization (Nonaka & Takeuchi, 1995). Research by Edmonson (1999), Edmonson and Nemhard (2009), Chandrasekaran and Mishra (2012), and Gu et al. (2013) identified the mediating role of psychological safety in organizational learning. Knowledge sharing and learning-from-mistakes (LFM). Similarly, psychological safety encourages dynamic multi-dimensional teams through reinforcing learning behaviors (Carmeli, 2007). Edmonson (1999) determined that individuals within a group may act in ways that obstruct learning to preserve resources, such as personal reputation or psychological availability.

Chandrasekaran and Mishra (2012) further found that creative team performance is subject to the competing moderating effects of exploration and project organization. Where priority is exploration, team autonomy levels are high, and authority relationships are weak, a command-style leadership can make interpersonal relationships unpredictable and drive individual isolation, resulting in low psychological safety levels (Chandrasekaran and Mishra, 2012). Individual isolation can create micro-climates of reinforcing a behavior or "loss spirals" that continuously undermine psychological safety and psychological availability levels and, thus, organizational learning and creativity within groups. Team and individual members with higher levels of psychological safety and psychological availability will generate more creative solutions through superior levels of organizational learning (Chandrasekaran and Mishra, 2012).

Team Development

Psychological safety is developed over time through frequent interpersonal engagement between the leader and the team (Edmonson, 1999). Through a longitudinal study of team formation, Schulte et al. (2012) demonstrated that teams with high psychological safety show strong evidence of prospective action (building of relationship) and the convergence of perceptions over time (assimilation). Sought after advisors, or spanners, develop and reinforce higher psychological safety levels in a repetitive and self-reinforcing process (Schulte et al., 2012). Alternatively, those who are not sought after may develop low levels of psychological safety, resulting in the emergence of subgroups who disengage or compete in unfriendly ways to undermine psychological safety within the larger team.

Edmonson (1999, 2003) showed that psychological safety mediates status and speaking up, but only within the team and not across teams. Bienefeld and Grote (2014) extended this analysis to ad hoc teams. Differences in ad hoc teams, such as sub-group homogeneity, cross-group heterogeneity, homophily within status, can lead to less communication, more conflict, and biases. These conditions may drive lower collective identification as a basis for psychological safety. However, Edmonson (2003) and Bienefeld and Grote (2014) identified the mediating effect of boundary-spanning activities, such as within or across a social network, encouraged by psychological safety when the home team provides a safe harbor for the pursuer. This research leads to the speculation that team development may be helped or hindered by levels of psychological safety when combined with sufficient levels of psychological availability.

Assessing the Units

Dubin (1969) specified six types of units: (1) enumerative with property characteristics in all conditions, (2)
associative with property characteristic in certain conditions, (3) relational with characteristics concerning another unit, (4) statistical as measured by the distribution of properties, (5) summative as a global unit representing totality, and (6) complex as a combination of multiple classes at the same time. The theorist is free to employ the different types of units to represent different potential data sets, but Dubin’s (1969) specifies four restrictions for selecting and combining’s unit types within the theory to maintain the logical consistency of the model. The proposed theory does not violate Dubin’s (1969) four restrictions by employing and combining only enumerative units; consequently, the theory meets the established criteria.

Step 2 – Laws of Interaction

Laws of interaction define the relationships between two or more specified and defined concepts or units within the theory (Dubin, 1969). Three types of laws of interaction are specified in Dubin: categoric, sequential, and determinant. Categoric laws, the most common form of laws according to Dubin (1969), state that the value of a unit affects the value of another unit within the boundary. Typically, these laws employ “a greater-than-chance probability that the units are related” (Dubin, 1969, p. 96). Sequential laws apply a temporal ordering to the units and are common in social and behavioral sciences (Dubin, 1969), but do. It is critical to understand that sequential laws do not create or imply causality. The third category is a determinant law where the value of one unit specifically and directly determines the value of another unit within the boundary (Dubin, 1969). The proposed theoretical model offers two categoric laws, two sequential laws, and two determinant laws.

Categoric Laws

There is a greater-than-chance probability that leadership style and relationships, team characteristics, and individual characteristics are associated with individual levels of psychological safety and psychological availability.

There is a greater-than-chance probability that the combination of psychological safety and psychological availability levels affects safety and error reporting, organizational learning, and team development.

Sequential Laws

Leadership style and relationships, team characteristics, and individual characteristics precede psychological safety and psychological availability cognitive states.

States of psychological safety and psychological availability precede outcome effects of levels of safety and error reporting, organizational learning, and team development.

Determinant Laws

Individual implicit voice beliefs determine psychological safety and psychological availability levels before affecting safety and error reporting, organizational learning, and team development.

The effects of safety and error reporting, organizational learning, and team development determine individual implicit voice beliefs.

Assessing the Laws of Interaction

Dubin (1969) recommended parsimony as the primary criteria for evaluating the laws of interaction. Cher- mack (2004) advised that parsimony can be achieved by minimizing the number of relationships within the proposed theoretical model. All laws of interaction have been specified categorically and directionally but within the system offered by IMIO to simplify the relationships and achieve parsimony. The interaction between psychological safety and psychological availability (together with the feedback loop of implicit voice) is essential to the theoretical framework and thus, meets the demands of parsimony to the extent possible.

Step 3 – The boundaries of the theoretical model

For a theory to explain a phenomenon, it must operate within defined boundaries (Dubin, 1969) or the “real-world limits of the theory” (Lynham, 2002, p. 253). Boundaries can be either open or closed, and
theorist is free to define those boundaries, but only in a logically consistent manner (Lynham, 2002). Since psychological safety (Edmonson, 1999) and psychological availability (Kahn, 1990) operate as cognitive states within individuals operating within a team construct, two boundaries have been defined (Figure 2). The closed boundary represents the larger organizational context within which the team operates. For example, the closed boundary might be described as a corporate, legal, or governmental structure with a defined purpose and targeted outcomes. The open boundary operates within the closed boundary and describes the team construct in which inputs and mediators determine outcomes and feedback. The open system interacts within the closed boundary through environmental factors.

Assessing the Boundaries

These boundaries were “derived either from the characteristics of the units themselves or form the characteristics of the laws by which the units interact” (Dubin, 1969, p. 127). The organizational system of the closed boundary and the team context of the open boundary are described by certain environmental factors, such as the social, technological, environmental, economic, political, legal, ethical, and demographic factors which may influence the macro- and micro-environments within which the theory operates.

Several environmental factors have been demonstrated to influence the cognitive states of psychological safety and psychological availability. Examples such as human resource (HR) practices (Binyamin & Carnelli, 2010), virtuality (Edmonson, 2004), ethics (Walumbwa & Schaubroeck, 2009), diversity practices (Singh et al., 2013), political pressure towards group norms (May et al., 2004) combine to create the environment within the boundaries.

Step 4 – System states of the theoretical model

Dubin (1969) stated that a system state has distinctive features which are only understood by deterministically knowing the distinct values of all units in the system. Dubin (1969) offered three criteria: “(1) all units of the system have characteristic values, (2) the characteristic values of all units are deterministic, and (3) this constellation of unit values persists through time” (p. 147-148). The values of all units within the boundary conditions must be known to determine the collective system state unless the system is in a state of transition. The state life is defined as the time during which all values of the units are known (Dubin, 1969) and may vary considerably in duration, based on the nature of the system.

By examining the laws of interaction, the following systems states are proposed using Dubin’s (1969) recommended “if. . . . then. . . . under conditions of. . . .” (p. 158) formula. Coding of (0,1) is employed to signify a change in the system state.

1. If leadership style and relationships, team characteristics, and individual characteristics exist and operate within a team construct, then the value of the psychological safety mediator unit transitions from 0 to 1 under the conditions that the individual feels safe to take an interpersonal risk.
2. If leadership style and relationships, team characteristics, and individual characteristics exist and operate within a team construct, then the value of the psychological availability mediator unit transitions from 0 to 1 under the conditions that the individual possesses sufficient resources and is willing to employ or risk the loss of those resources.
3. If psychological safety and psychological availability units are present in the system, then safety and error reporting, organizational learning, and team development transition from 0 to 1 under the conditions that psychological safety and psychological availability are both at a value of 1.
4. If psychological safety and psychological availability units are present in the system, then safety and error reporting, organizational learning, and team development transition will not transition from 0 to 1 under the conditions that either psychological safety or psychological availability are at a value of 0.
5. If outcomes of safety and error reporting, organizational learning, and team development occurred, the levels of implicit voice would transition closer to 1 if the experience was positive or closer to 0 if the experience was negative.

Assessing the System States
Dubin (1969) prescribed three standards for assessing the laws of interaction: (1) inclusiveness, (2) determinacy, and (3) persistence. Inclusiveness (a) specifies that “all units of the system have a value or distinctive ranges of values in that state” (Dubin, 1969, p. 151), and (b) is designed to maintain the focus on the whole system. Determinacy requires that laws be measured in a specific state that is distinctive to that state. Lastly, these laws must persist through some period or state life (Dubin, 1969). The proposed theory meets these criteria in all five system states. First, inclusivity is met by including all units within the model. Second, all units have distinctive values at their respective states and as they transition. Last, the relationships between the units persist over the state life, including feedback loops.

**Step 5 – Propositions of the theoretical model**

Propositions are the final step of part one to Dubin’s (1969) approach to constructing a theoretical model. A proposition is a “truth statement about a model that is fully specified in its units, laws of interactions, boundary, and system states” (Dubin, 1969, p. 166). Propositions are designed to represent the “logical consequence” or outcome (Dubin, p. 166) of theory systems and are subject to future empirical testing, the second part of Dubin’s theory-building process. Dubin (1969) specifies three types of propositions: (1) propositions about the value of a single unit, (2) propositions about the continuity of the system’s state, and (3) propositions that predict the oscillations of the system from one state to another. Propositions are generally constructed using “if...then” statements to limit the range of variables.

The number of potential propositions is a function of the units and laws of interaction within the theory systems. Dubin (1969) noted that “The number of propositions is the sum of the different ways the values of all the units in the model may be combined with the values of all other units with which they are lawfully related” (p. 174). Since this principle could result in an excessive number of propositions with limited incremental value to the theory, Dubin (1969) recommends a smaller set of strategic propositions. Strategic propositions “are those that state critical or limiting values for one of the units involved” (Dubin, 1969, p. 175). Accordingly, seven sets of strategic propositions are proposed. For simplicity of presentation, the (a), (b), and (c) indicate independent subsets of the propositions.

P1. If (a) leadership style and relationships, (b) team characteristics, and (c) individual characteristics are positively associated with psychological safety, then psychological safety will increase when an individual feels safe to take an interpersonal risk. P2. If (a) leadership style and relationships, (b) team characteristics, and (c) individual characteristics are positively associated with psychological availability, then psychological availability will increase when the individual possesses sufficient resources and is willing to employ or risk those resources. P3. If (a) psychological safety and (b) psychological availability are positively associated with psychological availability, then psychological availability will increase when the individual possesses sufficient resources and is willing to employ or risk those resources. P4. If (a) psychological safety and (b) psychological availability are positively associated with safety and error reporting, then the safety levels and error reporting will improve, resulting in greater organizational effectiveness. P5. If (a) psychological safety and (b) psychological availability are positively associated with organizational learning, then team shared knowledge will increase. P6. If (a) psychological safety and (b) psychological availability are positively associated with team development, then prospective action and assimilation will increase within the team. P7. If either (a) psychological safety and (b) psychological availability are independently insufficient, then individuals will not act or act in a constrained manner limiting actions to improve (c) safety and error reporting, (d) organizational learning, and (e) team development. P7a. If an implicit voice is positively associated with (a) psychological safety and (b) psychological availability, then (c) safety and error reporting, (d) organizational learning, and (e) team development outcomes will positively impact implicit voice. P7b. If an implicit voice is positively associated with (a) psychological safety and (b) psychological availability, then positive experiences with (c) leadership style and relationships, (d) team characteristics, and (e) individual characteristics will positively impact implicit voice in advance of the next cycle.

Assessing the Propositions

Dubin (1969) proposes only one criterion for assessing propositions in that “their truth be established by reference to only one system of logic for all the propositions set forth in the model” (p. 166). The propositions offered in this theoretical model are consistent in that they logically flow from all units in relation to the
laws of interaction within defined system boundaries, and each proposition reflects the minimum number of determinant systems states. In combination, this construct is a parsimonious and consistent representation of the system theory.

Conclusion and Implications

As HRD research, theory, and practice evolve into new domains, the importance of psychological safety and psychological availability has significant potential implications. At the field’s core is a concern with optimal workplace learning, performance, and change. The proposed theorizing is intended to support advancements toward a healthier workplace environment regardless of industry. As such, suggestions for the implications of this theorizing related to HRD theory, research, and practice are provided. These suggestions (along with the proposed theoretical framework) create a plan for exploring, understanding, and documenting the roles of psychological safety and psychological availability in the modern workplace.

Implications for HRD Theory

While this theory may be best described as a “modifier” rather than that of a more novel “builder” (Seo et al., 2019), it contributes to knowledge in three ways. This theoretical model (a) provides testable propositions constructed for the first time using a generally accepted theory-building method, (b) integrates psychological safety, psychological availability, and implicit voice for the first time under a theoretical model, both inside and outside of the field of HRD, and (c) links this model with the core objectives of HRD. While reasons for choosing Dubin (1969) have been provided above, the underlying theory construction may benefit from other approaches, such as grounded theory (Glaser & Strauss, 1968; Egan, 2002), simulation development (Jaccard & Jacoby, 2010), and case study analysis (Dooley, 2002). These methods offer alternative approaches and presuppositions to the underlying research used to build this theory and may provide critical insights necessary to understand these cognitive states better.

Implications for HRD Research

As noted above, this effort completed the theory-building process only through the first phase of Dubin’s (1969) model. The next logical step is to embark on the second phase of research (Figure 1), consisting of empirical indicators, hypotheses development, and empirical testing (Dubin, 1969). The primary objective of this activity would be assessing the validity and utility of the model (Van de Ven, 1989), and the research-theory (Lynham, 2002) foundation of this model provides the scaffolding for this work. Several instruments are provided in the literature for psychological safety (Edmonson, 1999), psychological availability (e.g., Byrne et al., 2016), and implicit voice (Detert & Edmonson, 2011). These instruments have yet to be combined and tested under a systems-based theoretical framework linked to HRD aligned outcomes. Once tested and refined, this integrated theory may offer deeper insights into how and when individuals decide to engage or avoid personal learning opportunities, group engagement, social networking and spanning behaviors, or other learning and performance activities. However, it may also be determined that the combination of these mediators does not sufficiently explain such decisions, which would demand further investigation into as-of-yet undefined cognitive states or conditions.

Research on diversity, equity, and inclusion may benefit directly from this theoretical construct. This model attempts to understand how individuals decide to take an interpersonal risk and deploy or reserve resources to execute that decision. These dynamic decisions may vary materially based on role, racial, social, economic, and power distance factors. The inclusion of implicit voice may provide powerful insights into how individuals approach and respond to interventions and change. Finally, individual responsibility to understand and adapt implicit voice should be explored and developed further under this model.

Implications for HRD Practice

Earlier in this paper, the challenges to HRD’s effectiveness and return on investment were noted. As this theory is tested, invalidated, or refined, new data could be made available to improve the outcomes of HRD interventions. Psychological safety is becoming a more common feature of organizational training. Both directly and indirectly, levels and types of personal resources are often discussed, whether it be time
and personnel energy required to support change activities or personal resources of status, finances, or education. Little consideration is paid to the role of individual implicit voice and how that may enable or constrain adaptation and learning. With a deeper understanding of participant levels of psychological safety, psychological availability, and implicit voice, practitioners could be more attuned to the factors limiting the effectiveness of programs. While return on investment may still be challenging to quantify, the outcomes noted in this theoretical model could be quantified so that the role and mission of HRD within an organization becomes better recognized and valued.

Conclusion

The purpose of this research was to develop and assess a theory that integrates the cognitive conditions of psychological safety, and psychological availability focused on outcomes that resonate within the field of HRD. Dubin’s (1969) theory-building model was employed to construct a systems-based theory predicated on existing research within the relevant fields. Concluding with clear propositions, this theory is well-positioned for empirical testing and refinement. Implications of this theory may help advance understanding and further validate the role of HRD within organizations. This theory aspires to explain better how individuals decide to participate in interpersonal risk-taking and resource deployment and strengthens our understanding of participants and practitioners of HRD activities to drive more effective outcomes. Through this theory, it is hoped that scholars and practitioners alike may contribute to the maturation process of HRD.

References


