Emerald Insight

European Journal of Training and Development

The status of intervention research in HRD: Assessment of an applied discipline
and potential for advancement
Lindsay Elizabeth Kalis Natalie M. Garza Thomas J. Chermack Victor A. Dzirasa Mark J. Hutt

Users who downloaded this article also downloaded:

(2016),"Analyzing data from a pretest-posttest control group design: The importance of statistical
assumptions", European Journal of Training and Development, Vol. 40 Iss 8/9 pp. 638-659 http://
dx.doi.org/10.1108/EJTD-08-2015-0066

(2016),"Contending claims to causality: a critical review of mediation research in HRD", European
Journal of Training and Development, Vol. 40 Iss 8/9 pp. 595-614 http://dx.doi.org/10.1108/
EJTD-07-2015-0056

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald
for Authors service information about how to choose which publication to write for and submission
guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company
manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as
well as providing an extensive range of online products and additional customer resources and
services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the
Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for
digital archive preservation.

*Related content and download information correct at time of download.

The status of intervention research in HRD

Assessment of an applied discipline and potential for advancement

Lindsay Elizabeth Kalis, Natalie M. Garza, Thomas J. Chermack,
Victor A. Dzirasa and Mark J. Hutt
Colorado State University, Fort Collins, Colorado, USA

Abstract

Purpose – The purpose of this study is to determine the quantity, nature and frequency of intervention research published in Human Resource Development (HRD) journals.

Design/methodology/approach – The methodology for this study was a literature review, analysis and synthesis with specific attention to locating intervention research in HRD journals.

Findings – Based on the results of this study, it seems clear that intervention research is not a fundamental research method for HRD professionals and is not being consistently conducted across the HRD field. This raises potential questions about the extent to which HRD professionals are integrating research and practice. The presence and conduct of intervention research applied to HRD-related problems may provide another means for practitioners and scholars to work together toward optimal, practical solutions with evidence to support them.

Originality/value – Creating a community of professionals who assess and/or evaluate the effectiveness of the interventions and disseminate the information that lean toward causal claims is critical. Intervention research could represent a cultural shift for the HRD discipline because it lends weight to claims of causality and practical recommendations. Under these circumstances, HRD intervention research could be used with confidence by HRD practitioners to inform, shape or evaluate the content of their management and leadership training programs, including the training and development of coaching managers and coaching leaders.

Keywords Training, Practitioners, Human resource development, Applied research,
Conducting research, Intervention research

Paper type Research paper

Human Resource Development (HRD) scholars have made use of a variety of research methodologies and methods (Bartlett, 2005; Bates, 2005; Hansen, 2005; Ruona, 2005; Russ-Eft and Hoover, 2005; Thompson, 2005). The application and dissemination of HRD research has benefited many individuals, processes, teams, organizations and even nations (McLean and McLean, 2001). The continued evolution of varying approaches to studying human phenomena as they relate to learning and change management in organizations will no doubt be of value to HRD scholars and practitioners.

Creswell (2009, p. 12) states "experimental research seeks to determine if a specific treatment influences an outcome". This influence is assessed by providing a specific treatment to one group and withholding it from another and then determining how both groups scored on an outcome. Experimental research is a sub-category of intervention research. Other subcategories of intervention research include quasi-experimental, case

study and single subject design studies, all of which have all yielded benefits to psychology, education, social work and other disciplines (Murnane and Willett, 2011). These disciplines have traditionally attempted to describe, explain and/or predict outcomes in situations related to human development and particularly to assess the effectiveness of a given intervention. Scholars in these disciplines have made it a point to try to change the systems in which they work (Thomas and Rothman, 1994). Intervention research typically involves a quantitative approach using pre- and post-tests; however, the use of qualitative inquiry or use of mixed methods around any intervention is entirely appropriate (Maxwell, 2004). Intervention research may represent an approach to inquiry that has not yet been taken full advantage of by HRD scholar-practitioners and may be well suited to the aims of HRD professionals. Further, use of intervention research strategies may provide a path for advancing the HRD discipline because they allow for causal inferences and support the ability to make recommendations for practice.

Intervention research

Intervention research has been described as having three main types:

(1) empirical research to extend knowledge of human behavior relating to human service intervention (here referred to as Intervention Knowledge Development);

(2) the means by which the findings from Intervention Knowledge Development research may be linked to, and utilized in, practical application (referred to as Intervention Knowledge Utilization); and

(3) research directed toward developing innovative interventions (referred to as Intervention Design and Development) (Thomas and Rothman, 1994, p. 3).

All three of these activities are considered within the genre of applied research and "they have a specific intervention mission" (Thomas and Rothman, 1994, p. 4). Intervention research provides processes for analyzing social technology through designing, testing, evaluating, refining and disseminating techniques and programs to other professionals in the community (Rothman and Thomas, 1994). Intervention research is, by definition, applied to isolate and determine the effects of an intervention and make recommendations for practice. Through experimentation with a variety of interventions, applied disciplines can develop a thorough understanding of techniques and processes that maximize development for participants.

Nastasi and Schensul (2005, p. 179) state "The process of effectively describing complex phenomena is a challenge for all social scientists". However, as people and their interactions are foundational to many disciplines, it is important for social scientists to have processes to follow that allow for the replication of results and, potentially, claims of causality. Rothman proposed six phases of systematic development of interventions that are fundamental to intervention research. Phase one is to define the problem and plan the project, phase two is to gather information and synthesize the information to create a cohesive expectation of what the intervention will result in. The third phase is to design the intervention. The fourth phase is early development and pilot testing of the proposed intervention. The fifth phase is experimental analysis and advanced development of the intervention. The final phase is dissemination of the information to the community (Fraser and Galinsky, 2011).

Given the similarities among many of the HRD models and that proposed by Thomas and Rothman (1994), on the surface it seems that intervention research might be common in HRD. Further, we might expect to find many examples in the HRD research journals, given its applied nature.

"Applied disciplines are realms of study and practice that are fully understood through their use in the functioning world" (Swanson and Chermack, 2013, p. 11). Based on this definition, characteristics of applied disciplines would include evidence of study (theorizing and research), practice (consulting and professional careers) and use (forums for the exchange of ideas between both the scholars and practitioners of the discipline). On the surface, it would appear that, indeed, HRD clearly features all of these characteristics. Delving more deeply into the research of HRD yields considerable evidence. Delving into the practice of HRD does the same. However, when pushing for more definition of what it means to *use* HRD, a variety of important questions arise. Yet, it is clear that the discipline of HRD has a use and application as one of its primary aims.

Problem statement and research question
HRD scholarship is applied in nature (Chalofsky, 2007; Swanson and Chermack, 2013) and it would be appropriate to classify HRD as an applied discipline concerned with understanding and changing systems (Cummings and Worley, 2014; Rummler and Brache, 2014). However, it is not clear precisely how HRD scholars and practitioners engage in iterative cycles of theorizing, researching and practicing, and how various interventions are designed, studied, developed and refined. Further, it is not clear how claims of causality are justified in making recommendations for changing practices in organizations. The success of intervention research in disciplines such as psychology, education, social work, counseling and nursing suggests there may be a potential benefit for HRD and provide the necessary support for causal claims. As an applied discipline concerned with changing workplace learning as well as work processes and structures, HRD professionals could make good use of intervention research as another mode of inquiry. However, before simply adopting an approach that appears to have utility, an analysis is required. Therefore, the logical research question that forms the basis of this research study is:

RQ1. What is the quantity, frequency and nature of intervention research published in HRD journals?

Method
The methodology for this study was a literature review, analysis and synthesis with specific attention to locating intervention research in HRD journals. The format of the literature search followed Callahan's (2010, p. 301) structure by including the following components:

(a) *Where* the literature was found (databases and search engines), (b) *when* the search was conducted (database contents change frequently), (c) *who* conducted the search, (d) *how* the literature was found (keyword combinations), (e) *what* number of articles appeared from each combination of keywords and the final count of included articles (data set), and (f) *why* some articles were chosen for inclusion over others.

The following section describes each of Callahan's recommended structural components of a rigorous literature analysis and synthesis for this study.

Details of the literature search and process

Each HRD journal (excluding *Human Resource Development Review – HRDR*) was assigned to a member of the research team. *HRDR* was excluded because the mission, aim and scope of the journal clearly do not involve intervention research. As stated on the journal website, HRDR (2015):

> [...] publishes articles that make theoretical contributions to theory development, foundations of HRD, theory building methods, and integrative reviews of the literature, as well as addressing philosophies of HRD, historical foundations, definitions of the field, conceptual organization of the field, and ethical foundations.

The journals reviewed were *Human Resource Development Quarterly*, *Human Resource Development International*, *Advances in Developing Human Resources* and the *European Journal of Training and Development* (EJTD). The case of *EJTD* was unique in that the journal has undergone several name changes. For the purposes and scope of this review, researchers decided to limit the research of this journal to date back to 1990, as this provided 25 years of research to determine the frequency and nature of intervention research studies. These journals were chosen for the research as they encompass such a large percentage of scholarly research related to HRD practices. The search and literature analysis was conducted by a research team consisting of four members at a Western Research University. The literature was located utilizing the following keyword search combinations: "effects of", "intervention", "posttest", "pretest", "impact of", "evaluation", "waves", "time 1", "time 2" and "interaction between". The search terms were chosen as they are believed to target results which encompass intervention research.

Results

Table I shows initial search results by journal, and indicates the process used to screen article results. Review of the initial search results were refined based on duplications of articles returned. The abstracts were then reviewed by the research team to determine if an actual intervention was conducted within the organization and as part of the research study. These results were then subjected to a more in-depth analysis of the type of intervention conducted to determine the final number of articles found in each journal (indicated in Table I).

Search results indicate that articles were most often identified by the writer using the terms "effects of". The keyword "intervention" also returned a large number of results in the search, but these do not represent a large number of articles in HRD research overall.

The intervention types are shown in Table III below. Analysis of the search results shows that the primary intervention in HRD discipline is training and development,

Journal	Initial search results	Refined round 1 search results	Abstract review search results	Final review results
HRDQ	72	65	53	43
HRDI	71	64	71	6
ADHR	110	65	9	7
EJTD (JEIT)	59	48	17	7
Total	312	242	150	63

Table I.
Preliminary
intervention article
search results by
HRD journal

which should not be surprising. However, what is surprising is the number of studies that have been conducted involving interventions in the domain of Organization Development.

The research team also assessed the years in which the articles that documented interventions were published to suggest if intervention research is increasing or decreasing. The results of this analysis are listed in Table IV. These results suggest a relatively steady trend for intervention research in HRD. Intervention research has not spiked or fallen off over the past 25 years and we have no reason to expect either to occur in the future.

Finally, the research team calculated the percentage of articles that could be classified as intervention research both within each journal and overall. Only peer-reviewed articles were considered in searches for the total number of articles in each journal.

Discussion

Based on the initial review of the selected journals used in this study, it could appear that intervention research is not a fundamental research method for HRD professionals and is not being consistently conducted across the HRD field. This raises potential questions about the extent to which HRD professionals are integrating research and practice. The presence and conduct of intervention research applied to HRD-related problems may provide another means for practitioners and scholars to work together toward optimal, practical solutions with evidence to support them.

Conducting intervention research which utilizes pretests and posttests, qualitative interviews or both may open doors to further development of the field as a whole (Maxwell, 2004). For example, based on the results of this research, Management Development is the most frequently published research intervention. However, with only five published articles in 25 years, it is difficult to determine if the intervention type is the most effective form of Management Development currently used and what could be improved to increase the effectiveness of Management Development practices.

The resulting 63 journal articles over the past 25 years that might be considered intervention research have provided some degree of evidence for the applied nature of HRD. However, we expected to find more articles. It is clear that intervention research is difficult to conduct – it requires access to a willing population, design and development

Keyword combination	No. of results returned
"effects of"	26
"intervention"	17
"interaction between"	14
"impact of"	4
"posttest"	1
"evaluation"	1
"pretest"	0
"time 1"	0
"time 2"	0
"waves"	0
Total	63

Table II.
Intervention article search results by keyword combinations

588

Intervention type	No. of articles
Training program	6
Management development program	5
Development	3
Leadership development training	3
Motivational training	3
Scenario planning	3
Training intervention	3
Mentoring program	3
Post-training intervention	2
Team building	2
Training effectiveness	2
Transfer training	2
Active teaching style	1
Appraisal training	1
Assessment process	1
Decentralized training	1
Diversity training	1
Emotional intelligence and learning	1
Employee assistance program	1
Ethics training	1
Hands-on challenge	1
Human resource development	1
Leadership training program	1
Management training class	1
Organizational development	1
Performance appraisals	1
Personality tests and performance	1
Policy interventions	1
Psychological capital development	1
Questionnaire	1
Skills assessments	1
Skills development	1
Social situation	1
Training	1
Training – virtual	1
Training perception	1
Virtual training	1
Workplace incivility intervention	1
Total	63

Table III.
Intervention article search results by intervention type

Year of article	No. of articles
1990-1999	23
2000-2009	20
2010-present	20
Total	63

Table IV.
Intervention article search results by year of article

of an intervention, selection of appropriate measurement tools and time (Thomas and Rothman, 1994). When compared with the more common one-shot survey research designs (Russ-Eft and Hoover, 2005), it is clear that more is involved with intervention research.

There is little question that HRD is applied (Chalofsky, 2007; Lynham, 2002; Storberg-Walker, 2003). We might even say that HRD is "all about" application (Swanson, 2001). Yet, cases of rigorously studied examples of application are rare. In particular, when we remove references to interventions related to training and development, we found only 18 studies that documented intervention in the Organization Development and Career Development aspects of HRD (MacLagan, 1989) over the past 25 years. Again, and particularly with regard to Organization Development, there is significant opportunity for development through the detailed study of interventions. The results of these interventions could be shared with the community and may spark additional dialogue about what worked, what did not work and why the intervention was or was not successful in achieving the desired outcome. Having this information provides a path to fully engage in the cycle of research, theory and practice (Swanson and Holton, 2005).

Applied disciplines must grow and change over time, while maintaining their messy and diverse nature (Swanson and Chermack, 2013). "Messy" and "diverse" characterize the research, theory and practice of any applied discipline. This means that a variety of approaches to each would be valued and continue to advance the discipline. Limiting research methodologies, theorizing techniques and practical tools may prevent any discipline from growing and developing. Therefore, we challenge the HRD discipline and its professionals to consider an opportunity to advance the HRD discipline by engaging more purposefully in intervention research.

HRD has historically been comprised by an active community of theorists, researchers and practitioners. The HRD discipline has the opportunity to grow and expand the effectiveness of HRD tools and processes by considering another research method that may yield considerable benefits and support the advancement of the discipline, given its applied nature. Further, it seems clear HRD professionals are actively engaged in the design, conduct and evaluation of interventions. However, detailed accounts of interventions do not appear in the HRD research literature to the extent we might expect. While there is research published, the majority of the research constitutes of practitioner evaluations which is not intervention research.

Understanding the benefits of intervention research and sharing of information within the HRD community would assist theorists, researchers and practitioners to take advantage of a research strategy that has helped other disciplines grow and thrive (Weber and Mcgall, 1978). Intervention research often requires a partnership between scholars and practitioners because of the need for a willing participant group. As a

Journal	Total no. of referred articles	Final review results	(%)
HRDQ	705	43	6
HRDI	562	6	1
ADHR	638	7	1
EJTD (JEIT)	1,403	7	0.4
Total	3,408	62	1.8

Table V.
Intervention article search results by percentages

result, intervention research would push HRD scholars and practitioners to work together in increasingly innovative ways, and might underscore the importance of this relationship as well as the role of the scholar-practitioner (citations). Research teams could then engage in experiments (true or quasi) that would challenge existing theories and pave the way for new ones.

590

The opportunity

The results of the literature search and analysis show limited examples of intervention research in HRD. Thus, there is significant opportunity to improve upon the current state and applied nature of HRD inquiry. By understanding the applicability of intervention research and taking advantage of its rigorous applied nature, HRD can continue to develop and grow as a discipline. Conducting intervention research and disseminating the results to the HRD community via its journals will support understanding of what works best and why when attempting to change workplace systems. Further, increased intervention research activity will no doubt reveal conflicting theories that provide stimulating points of view for engaging in philosophical, methodological or values debates (Funnell and Rogers, 2011). Scholars and practitioners working together will be better equipped to provide evidence-based recommendations to decision makers in organizations.

It seems appropriate to suggest that the HRD community as a whole may benefit from shared knowledge of effective intervention research. Building relationships within the community and creating support for interventions are important aspects of any group of professionals (Shabracq, 2007). Through the development of this shared responsibility, intervention research would support the development of the discipline. Intervention research could also be a vehicle for integrating HRD research, theory and practice, as well as strengthening the relationship between HRD scholars and practitioners. This set of bridges among the three islands of theory, research and practice is necessary for the future of the discipline as a whole.

In addition, we challenge HRD professionals to try something new – in this case a research strategy that has been somewhat minimally implemented. The integration of information from theorists, researchers and practitioners is necessary so that the discipline can advance. Theories must be explored and challenged with effective intervention research to determine their efficiency at achieving the desired results. Creating harmony among HRD theory, research and practice provides a platform for quickly identifying and calling out atheoretical tools, interventions and processes. As defined in our study, intervention research is used minimally in HRD. However, this type of research would give HRD professionals better indication of successful/unsuccessful research methods. This research has indicated that HRD professionals have attempted or applied minimal intervention research practices. The other possibility is that HRD journals are not publishing, using, supporting and/or requiring intervention research to support the trends, tenets, hypotheses and/or conclusions in the field.

It is possible, though, that HRD professionals may be engaged in all but the final two phases of Thomas and Rothman's model – Experimental Analysis and Intervention Development and the Dissemination phases:

Dissemination of results would seem to be a vital stage of the research process – as communication, leading to action and implementation of positive results. Given this importance, dissemination may be a relatively neglected area – in a dual sense.

Researchers and funders may not have given sufficient time or attention to the various individual projects. Allied to this, the dissemination activity itself appears to be something of a "black box" (Lynam *et al.*, 1982, p. 2).

In other words, it is possible that HRD professionals have not yet integrated research and practice to the full potential and that a focus on developing lasting partnerships between academics and industry professionals is needed to complete the cycle.

"Differing perspectives and new research topics are of very little significance if they have no venue through which to reach their audience" (Bailin and Grafstein, 2010, p. 7). For the solution to become a reality, it must be accepted by the discipline as a whole as a needed reality. This change will require researchers to work with corporations. It will require practitioners to use research. This bridge between practice and research will need to be strong so that the results may circulate on both sides of the community and allow the discipline to improve as a whole. However, the benefit to both sides will be a shared community of knowledgeable and revolutionary HRD practitioners and practices which are proven to be successful to the discipline as a whole.

By creating a shared sense of urgency to advance the HRD discipline, HRD scholars and practitioners will benefit. Any perceived lack of rigor can be overcome if the theorists, researchers and practitioners develop a shared idea and intention to support advanced HRD practices of many types for the betterment of the discipline as a whole (Werner and DeSimone, 2012, p. 204).

Implications
Creating a community of professionals who assess and/or evaluate the effectiveness of the interventions and disseminate the information that lean toward causal claims is critical.

Intervention research could represent a cultural shift for the HRD discipline because it lends weight to claims of causality and practical recommendations. Under these circumstances, HRD intervention research can be:

[…] used with confidence by HRD practitioners in order to inform, shape, or evaluate the content of their management and leadership training programs, including the training and development of coaching managers and coaching leaders. Additionally, it could be used to inform the development of competency frameworks for in-house management development and performance management systems. (Hamlin, 2004, p. 210)

Establishing causality based on intervention research is currently a missing link in the integration of HRD theory, research and practice. The final sections of this article are summaries of implications of promoting intervention research for HRD theory, research and practice, followed by a brief conclusion.

Implications for HRD theory
Because of the nature of intervention research and its ability to support the use of causal claims, it is one clear avenue of theory testing. Intervention research would certainly allow HRD professionals to more fully engage in theory development activities, as well as to challenge existing theories. Ultimately, conversations about the status of theory in

HRD as well as what makes for "good" theory in HRD are needed to advance the discipline (Lincoln and Lynham, 2007).

Implications for HRD research
Increased use of intervention research will benefit HRD research overall through diversifying the research methods used to examine HRD-related problems and establishing legitimate support for causal claims (Muller and Young, 2014). For HRD to advance and innovate, HRD researchers need to conduct more research using and evaluating interventions as opposed to the more commonly used survey research design. It will not be easy and will require commitment to developing true partnerships between practitioners and scholars to gain the necessary access and appropriate perspectives.

Implications for HRD practice
Finally, the use of intervention research is based on the study of practice. We have already outlined the necessary partnership that is required between practitioners and scholars for the conduct of intervention research. In addition, intervention research rests on the skills of research design, intervention design and the selection of appropriate measures (Gouldner, 2014). These are necessarily practical aspects of HRD that are highlighted by intervention research.

Conclusion
The results from this literature search have not specifically been intended to argue for establishing HRD as a scientific discipline, rather to maximize the development of the field through the use of a variety of research approaches. Results indicate a significant opportunity to advance the HRD discipline through the use of intervention research. If intervention research can be an indicator of the degree to which a discipline is applied, then there is room for growth. Further, it is a vital aspect of evidence-based practice (Fraser and Galinsky, 2011). We have highlighted many benefits that would result from increased use of intervention research in HRD. In short, there is high potential utility and benefit in the use of intervention research by HRD professionals. We challenge all HRD professionals to consider the ways in which intervention research can increase the rigor of HRD inquiry and ultimately advance the discipline of HRD.

References

Bailin, A. and Grafstein, A. (2010), *The Critical Assessment of Research: Traditional and New Methods of Evaluation*, Elsevier.

Bartlett, L. (2005), "Dialogue, knowledge, and teacher-student relations: Freirean pedagogy in theory and practice", *Comparative Education Review*, Vol. 49 No. 3, pp. 344-364.

Bates, M.J. (2005), "Information and knowledge: an evolutionary framework for information science", *Information Research: An International Electronic Journal*, Vol. 10 No. 4.

Callahan, J.L. (2010), "Constructing a manuscript: distinguishing integrative literature reviews and conceptual and theory articles", *Human Resource Development Review*.

Chalofsky, N. (2007), "The seminal foundation of the discipline of HRD: people, learning, and organizations", *Human Resource Development Quarterly*, Vol. 18 No. 3, pp. 431-442.

Creswell, J.P. (2009), *Research Designs: Qualitative, Quantitative and Mixed Methods Approaches*, Sage Publications, Thousands Oaks, CA.

Cummings, T. and Worley, C. (2014), *Organization Development and Change*, Cengage Learning.

Fraser, M.W. and Galinsky, M.J. (2011), "Steps in intervention research: designing and developing social programs", *Research on Social Practice*.

Funnell, S.C. and Rogers, P.J. (2011), *Purposeful Program Theory: Effective Use of Theories of Change and Logic Models*, Jossey-Bass, San Francisco, CA.

Gouldner, A.W. (2014), "Explorations in applied social science", *Sociological Practice*, Vol. 7 No. 1, p. 5.

Hamlin, R.G. (2004), "In support of universalistic models of managerial and leadership effectiveness: implications for HRD research and practice", *Human Resource Development Quarterly*, Vol. 15 No. 2, pp. 189-215.

Hansen, H.F. (2005), "Choosing evaluation models: a discussion on evaluation design", *Evaluation*, Vol. 11 No. 4, pp. 447-462.

HRDR (2015), *Mission*, available at: http://hrd.sagepub.com

Lincoln, Y.S. and Lynham, S.A. (2007), "Criteria for assessing good theory in human resource development and other applied disciplines from an interpretive perspective", Online Submission.

Lynam, P., Slater, M. and Walker, R. (1982), *Research and the Pracitioner: Disssemination of Research Results within the Library-Information Profession*, ASLIB.

Lynham, S.A. (2002), "The general method of theory-building research in applied disciplines", *Advances in Developing Human Resources*, Vol. 4 No. 3, pp. 221-241.

McLean, G.N. and McLean, L. (2001), "If we can't define HRD in one country, how can we define it in an international context?", *HumanResource Development International*, Vol. 4 No. 3, pp. 313-316.

Maclagan, P. (1989), "Methodology choice and consulting ethics in management science", *Omega*, Vol. 17 No. 5, pp. 397-407.

Maxwell, J.A. (2004), "Causal explanation, qualitative research, and scientific inquiry in education", *Educational Researcher*, Vol. 33 No. 2, pp. 3-11.

Muller, J. and Young, M. (2014), "Disciplines, skills and the university", *Higher Education*, Vol. 67 No. 2, pp. 127-140.

Murnane, R. and Willett, J. (2011), "Methods matter", *Improving Causal Inference in Educational and Social Science Research*, Vol. 414.

Nastasi, B.K. and Schensul, S.L. (2005), "Contributions of qualitative research to the validity of intervention research", *Journal of School Psychology*, Vol. 43 No. 3, pp. 177-195.

Rothman, J. and Thomas, E.J. (1994), *Intervetion Research: Design and Development for Human Service*, The Haworth Press, Binghampton, NY.

Rummler, G.A. and Brache, A.P. (2012), *Improving Performance: How to Manage the White Space on the Organization Chart*, John Wiley & Sons.

Ruona, W.E. (2005), "Analyzing qualitative data", *Research in Organizations: Foundations and Methods of Inquiry*, pp. 223-263.

Russ-Eft, D. and Hoover, A.L. (2005), "Experimental and quasi-experimental designs", *Research in Organizations: Foundations and Methods of Inquiry*, pp. 75-95.

Shabracq, M. (2007), *Changing Organizational Culture: The Change Agent's Guidebook*, John Wiley and Sons Limited, West Sussex.

Storberg-Walker, J. (2003), "Comparison of the Dubin, Lynham, and Van de Ven theory-building research methods and implications for HRD", *Human Resource Development Review*, Vol. 2 No. 2, pp. 211-222.

593

Swanson, R.A. (2001), "Human resource development and its underlying theory", *Human Resource Development International*, Vol. 4 No. 3, pp. 299-312.

Swanson, R.A. and Chermack, T.J. (2013), *Theory Building in Applied Disciplines*, Berrett-Koehler Publishers, San Francisco, CA.

Swanson, R.A. and Holton, E.F. (2005), *Research in Organizations: Foundations and Methods in Inquiry*, Berrett-Koehler Publishers.

Thomas, E.J. and Rothman, J. (1994), "An integrative perspective on intervention research", *Intervention Research: Design and Development for Human Service*, pp. 3-24.

Thompson, J.A. (2005), "Proactive personality and job performance: a social capital perspective", *Journal of Applied Psychology*, Vol. 90 No. 5, p. 1011.

Weber, G.H. and McCall, G.J. (Eds) (1978), *Social Scientists as Advocates: Views from the Applied Disciplines*, Sage Publications, Vol. 4.

Werner, J.M. and DeSimone, R.L. (2012), *Human Resource Development*, South-Western Cengage Learning, Mason, OH.

Further reading

Curran, P.J. and Muthen, B.O. (1999), "The application of latent curve analysis to testing developmental theories in intervention research", *American Journal of Community Psychology*, Vol. 27 No. 4, pp. 567-595.

Leavitt, H.J. (1989), *Readings in Managerial Psychology*, The University of Chicago Press, Chicago, IL.

Rao, T.V. (2014), *HRD Audit: Evaluating the Human Resource Function for Business Improvement*, SAGE Publications.

Rueschemeyer, D. (2009), *Usable Theory: Analytical Tools for Social and Political Research*, Princeton University Press, Princeton, NJ.

Wallerstein, N. and Duran, B. (2010), "Community-based participatory research contributions to intervention research: the intersection of science and practice to improve health equity", *American Journal of Public Health*, Vol. 100 No. S1, pp. S40-S46.

Corresponding author
Lindsay Elizabeth Kalis can be contacted at: lindsay.kalis@colostate.edu