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Article

Transformational Leadership and Workplace Engagement in Education: Implications of a Meta-analysis for Educational Leadership Research

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Abstract

One of the major areas of research in a business setting has been the effect of the transformational leadership style on workplace engagement. Much debate has taken place on the definitions of both constructs but in recent years, general agreement appears to have been reached on the Multi-Factor Leadership Questionnaire (MLQ) (Avolio and Bass, 2004) as the measure of transformational leadership, and on workplace engagement measured by the Utrecht Work Engagement Scale (UWES) (Schaufeli et al, 2006). However, in the education setting, there is much less agreement on the definition of transformational leadership. Furthermore, there is less of a focus on workplace engagement than in the business field even though available evidence suggests that workplace engagement worldwide is in crisis. This study sought to address both the lack of agreement on the transformational leadership definition and the lack of focus on workplace engagement in educational research by means of a meta-analysis. The meta-analysis resulted in a significant pooled effect size although due recognition is given to the endogeneity problem in causal studies. The endogeneity issue together with the results of the meta-analysis are discussed with a view to furthering educational leadership research.

Keywords: transformational leadership; workplace engagement; education; meta-analysis; endogeneity; causal studies

Introduction

The study of transformational leadership and its effects has a long history. Research which began in a business context later embraced other settings including education. One of the major areas of research focus in a business setting has been the effect of the transformational leadership style on workplace engagement given that such engagement is linked to a business organization's 'bottom line' (see, for example, Harter and Mann, 2017). Examining this effect has required a degree of consensus on the definitions of the two constructs and based on extant studies, it is evident that in a business setting, agreement on the definitions have crystallized on transformational leadership measured by versions of the Multi-Factor Leadership Questionnaire (MLQ) (Avolio and Bass, 2004) and workplace engagement by the Utrecht Work Engagement Scale (UWES) (Schaufeli et al, 2006). However, in an education

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setting, despite many studies that attest to the benefits of transformational leadership there is much less agreement on its definition (Tomsett, 2017). There is also much less of a focus on workplace engagement than in the business field even though the findings of the 2020 Gallup 'State of the Global Workplace Survey' reveal that only 21% of employees in full time employment worldwide are engaged at work. This finding is sobering given that the level of workplace engagement in the world's best companies averages 70% (Gallup, 2018; Mann and Harter, 2016). The Gallup findings therefore indicate that workplace engagement is in crisis and educational organizations have no reason to feel that they are exempt from the situation. Accordingly, as is the case in the business field, the study of workplace engagement in an education context should be a major area of research.

Given this context, this paper describes a meta-analysis of those studies in education that have employed the widely agreed conceptualization of transformational leadership measured by versions of the MLQ and the generally agreed measure of workplace engagement i.e., the UWES, to examine the effect of transformational leadership on workplace engagement. This study also gives due recognition to the endogeneity problem in causal studies and the results of the meta-analysis together with endogeneity issue are discussed with a view to advancing educational leadership research. However, before describing the analysis and results, the following sections will trace the development of transformational leadership and workplace engagement constructs and their associated measures i.e., the MLQ and UWES.

Transformational Leadership

Transformational leadership has enlisted a considerable body of interest and support among scholars over many years. The key to its popularity as a leadership notion lies with the following factors (characteristics) comprising the concept:

a. *Idealized Influence*: Such leaders provide vision and a sense of mission. They extol the virtues of the vision and display total commitment to it. These leaders emphasize trust, and they are prepared to take a stand on difficult issues, They are admired as role models and generate pride, loyalty, and confidence. They 'walk their talk'.

b. *Inspirational Motivation*: Leaders who exhibit this trait communicate a vision to followers, talk optimistically and with enthusiasm and provide encouragement and meaning for what must be done. These leaders encourage subordinates to envision, and take ownership of, attractive future states. Their communication style has an emotional appeal.

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c. *Individualised Consideration*: These are leaders who coach and mentor, provide continuous feedback and consider their subordinates' individual needs, abilities, and aspirations. They are advisors, coaches, and mentors. Followers are developed to higher levels of potential through the provision of new learning opportunities. They care about people.

d. *Intellectual Stimulation*: These leaders stimulate followers to rethink old ways of doing things and to reassess their old values and beliefs. New ideas and creative solutions are solicited and there is a tolerance for mistakes that may occur in the search for creativity. They seek to 'stretch' performance.

(Adapted from Pounder, 2008)

During the 1980s and through to the present, transformational leadership has been at the centre of the leadership debate among scholars. Substantial claims have been made for the benefits of this style of leadership. For example, several studies have suggested that transformational leadership has a positive influence on subordinates' effort and satisfaction (e.g., Avolio et al., 1988; Barling et al., 1996; Bycio et al., 1995; Den Hartog et al., 1997; Kirkpatrick and Locke, 1996; Neumann, 1992; Parry, 2000) and team building (Corrigan and Garman, 1999). Others have indicated that transformational leadership results in enhanced subordinate learning (Coad and Berry, 1998; Farrell, 2000; Slater and Narver, 1995). Similar claims have been made for transformational leadership in terms of enhanced innovation and creativity (Al-Beraidi and Rickards, 2003; Bass and Steidlmeier, 1999; Howell and Higgins, 1990; Sosik, 1997) organisational learning (Brown and Posner, 2001) and the development of ethical conduct within an organisation (Atwater et al., 1991; Banerji and Krishnan, 2000; Carlson and Perrewe, 1995; Parry and Proctor-Thomson, 2002)

Furthermore, studies indicating that transformational leadership is effective across organisational types and cultures (Bass, 1997; Den Hartog et al., 1997; Gellis, 2001; Geyer and Steyrer, 1998; Howell and Avolio, 1993; Neumann, 1992; Pounder, 2008; House et al., 2004) imply that this style approaches a universal leadership model. However, there have been some dissenting voices. For example, some scholars (e.g., Carless, 1998; Tracey and Hinkin, 1998; Yammarino and Dubinsky, 1994) have called into question the discriminant validity of the factors comprising transformational leadership. This is based on an analysis of the Multi-Factor Leadership Questionnaire (MLQ) (Avolio and Bass, 2004) that is the common instrument of transformational-transactional (i.e., full range leadership) measurement. Consequently, they have concluded that the transformational leadership construct might best be represented by a single leadership scale. However, this view is not unanimous (see, for example, Muenjohn and Armstrong, 2008). Others have questioned whether any leadership notion, including transformational leadership, can have universal application across cultures (Egri and Herman, 2000; Hinkin and Tracey, 1999; House, 1995; Pawar, 2003; Popper and Zakkai, 1994).

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Nevertheless, despite the debate surrounding the validity of its factor structure and its universal applicability, transformational leadership continues to be viewed as the benchmark of leadership best practice (e.g., Aw et al., 2017; Andersen, 2018; Balwant, 2016; Laing, 2019) and the MLQ or one of its variations, the widely agreed measure of the construct whether it is viewed as a single or multi-dimensional scale.

Workplace Engagement

There have been numerous attempts to define the workplace engagement construct, arguably, the first attempt being that of Kahn (1990) whose statement on engagement indicates an initial definition. In the 1990s, the Gallup Organization also employed the term in describing their twelve-point questionnaire now known as the Q12 (Harter et. al., 2020). Kahn's was the scholarly contribution however and he stated that: "in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances" (1990: 694). Later, in the 1990s, Maslach and Leiter (1997) focused on job burnout and viewed engagement and burnout as the positive and negative endpoints of a single continuum. In the context of burnout, the authors defined engagement in terms of energy, involvement, and efficacy, given that they are the opposites of their three burnout dimensions, namely, exhaustion, cynicism, and lack of accomplishment. Later, Maslach, Schaufeli and Leiter (2001) refined the definition as: "a persistent positive affective state . . . characterized by high levels of activation and pleasure" (417).

In 2006, Saks took up the mantle and defined workplace engagement as: "cognitive, emotional and behavioural components that are associated with individual role performance." (2006: 602). He proposed two components; a micro component called job engagement and a macro component termed organizational engagement. Later, in 2010, Shuck and Wollard synthesized the following definition based on an extensive literature review: "Employee engagement can be defined as "an individual employee's cognitive, emotional, and behavioral state directed toward desired organizational outcomes." (2010: 103).

The differing conceptualisations of workplace engagement described above have become somewhat settled by the development of the Utrecht Work Engagement Scale (UWES) that includes three dimensions, namely, vigour, dedication, and absorption (Schaufeli, Salanova, et al., 2002). Just as the Multi-Factor Leadership Questionnaire (MLQ) (Avolio and Bass, 2004) has been generally accepted as the measure of transformational leadership, so has the UWES been generally accepted as the measure of workplace engagement. The degree of acceptance of the UWES is evidenced by Vallières et al. (2017) who noted that it has been translated

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into 23 different languages and applied in a variety of cultural contexts, including China, Finland, the United States of America and a number of countries in continental Europe.

The UWES is measured by a scale originally comprising 17 items i.e., vigor - 6 items, dedication - 5 items and absorption - 6 items. This 17-item model has been shown to possesses encouraging psychometric properties with internal consistency alpha scores exceeding 0.8 in almost all cases where the scale has been tested (Schaufeli et al., 2006). Furthermore, the three-factor structure has been confirmed as construct valid (Mills, Culbertson et al., 2012), and to be applicable across national cultures (Schaufeli, Martínez, et al., 2002; Petrovic, Vucelik et al., 2017) and racial groups (Storm and Rothmann, 2003). However, Schaufeli et al. (2006) reduced the 17-item model to 9 items without any appreciable loss in validity and reliability and perusal of the literature indicates that one of these two models is used in most workplace engagement studies.

The Method

Meta-analysis

Given the context described above, the purpose of this study was to establish the effect, in an educational organization context, of transformational leadership defined in terms of the MLQ on workplace engagement measured by the UWES. The common method for exploring an effect of this type is to employ a meta-analysis that incorporates a number of causal studies with the aim of arriving at a collective or pooled effect via correlational analysis. This section explains the meta-analysis method, its origins and the approach employed in the present study.

In the mid-20th Century, meta-analysis, originally developed in the medical field to test the efficacy of medical interventions, began to be employed in management research especially in evaluating the association between independent and dependent variables with the relevant effect size represented by a correlation coefficient. As is the case in medical research, the purpose of a meta-analysis is to examine several studies that have indicated an effect size to arrive at a pooled effect with the aim of approximating a true effect. Nevertheless, despite its promise in management, the employment of this research approach has not lived up to expectations (Sartal

et al., 2021). Sartal et al. (2021) attribute this lack of 'take up' to a 'loose' approach to its application when compared to its application in a medical context. The following is a summary of their criticisms of meta-analysis in management research:

(1) Management researchers often do not report the necessary information for a meta-analysis to be performed nor are they sufficiently transparent in describing their methodology.

(2) Primary studies tend to use sample sizes too small to yield significant results.

(3) Organization and management concepts are often ill-defined when compared to those in the medical field (Cortina, 2003). Consequently, it is difficult to establish a relationship between concepts when there is no generally agreed definition of them.

(4) There is a lack of consistency in assessing heterogeneity and therefore a lack of precision when it comes to using the fixed or random effects model.

(5) There is an inconsistency in employing and reporting tests for the accuracy of the resulting effect size especially those pertaining to publication bias.

The present study sought to avoid the above criticisms by:

(1) Including only those studies that reported a direct transformational leadership-workplace engagement correlation (r)

(2) Estimating a minimum sample size for yielding significant results when the parameters are set at a 0.05 two tailed test, a beta value of 0.10 and a correlation expectation of 0.40 (a reasonable correlation expectation based on the results of one of the most comprehensive studies of the effect of leadership styles on workplace engagement that involved a total of 37,905 responses drawn from a collection of 85 studies and produced a pooled effect size of 0.47) (Decuypere and Schaufeli (2021). The result was N-62. None of the studies included in the present meta-analysis had a sample size below 62[1].

[1] https://sample-size.net/correlation-sample-size/

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(3) Confining the analysis to those studies that employed a version of the MLQ to measure transformational leadership and the 17 or 9 item UWES to measure workplace engagement to ensure that both constructs were clearly defined by generally accepted measures.

(4) Employing the random effects model on the basis that it was unreasonable to assume the studies to be samples from the same population and that all differences in observed effects to be confined to sampling error i.e., the assumptions underlying the fixed effect model. Rather the assumption was that the observed differences in effects varied because of real differences across the studies (i.e., heterogeneity) as well as sampling error. Subsequent testing for heterogeneity confirmed that the random effects model was appropriate.

(5) Reporting tests for publication bias.

Meta-Essentials (Suurmond et al., 2017) was employed because it is a user-friendly tool and considered suitable for this analysis given that it automatically calculates pooled effect sizes and is an especially versatile application that provides results based on the fixed and random effect models, calculations of heterogeneity and assessments of publication bias. The latter was viewed as especially importance in the present study given that limited number of studies included in the analysis. Furthermore, its user-friendly characteristic also facilitates replication of the present study or similar.

Despite addressing the precision aspects of meta-analysis in the study, a more fundamental problem is that of endogeneity common to causal studies in leadership and highlighted primarily by John Antonakis and colleagues (2010, 2014). The endogeneity issue is addressed later in the discussion section.

Literature Search

The first stage in a meta-analysis is to identify primary studies of interest. Studies were sought from several sources including Google, Google Scholar, ABI-Inform (ProQuest Complete), Emerald, EBSCO and ResearchGate. Nine studies in all were located

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that met the selection criteria and Table 1 below lists the studies included in the meta-analysis and the measures of transformational leadership and workplace engagement employed.

Table 1: Studies Included in the Analysis and Construct Measures

Study Name	Transformational Leadership Measure	Workplace Engagement Measure
Ahmed, 2021	MLQ - 5X (Avolio and Bass, 1997)	17 Item UWES (Schaufeli et al., 2002)
Arokiasamya, 2020	MLQ - 5X (Avolio and Bass, 1997)	17 Item UWES (Schaufeli and Bakker, 2004)
Bae et al., 2013	MLQ (Bass and Avolio, 1992)	9 Item UWES ((Schaufeli and Bakker, 2003)
Gözükara and Simsek, 2015	MLQ-5X (Bass and Avolio 1995)	17 Item UWES (Schaufeli and Bakker, 2003)
Gözükara and Simsek, 2016	MLQ-5X (Bass and Avolio 1995)	17 Item UWES (Schaufeli and Bakker, 2003)
Hoon Song et al., 2013	MLQ Short Form 6S (Bass and Avolio 1992).	9 Item UWES (Schaufeli et al., 2006)

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Jangsiriwattana, 2019	MLQ -5X (Avolio and Bass, 1997)	9 Item UWES (Schaufeli and Bakker, 2003)
Mufeed, 2018	MLQ -5X (Avolio and Bass, 1995)	9 Item UWES (Schaufeli et al., 2006)
Parveen et al., 2016	MLQ - 5X (Avolio and Bass, 1997)	17 Item UWES (Schaufeli and Bakker, 2003)

Results

The following table indicates the meta-analysis input including sample size and effect size. It also shows study weighting in the analysis. The study weightings indicate the extent to which one or more of the studies skewed results and thus biased the results unduly. This was clearly not the case in the present study.

Table 2: Meta-analysis Input and Weight in the Analysis

Study Name	Number of Subjects	Correlation (r)	Weight (%)
Ahmed, 2021	965	0.30	3.15
Arokiasamya, 2020	369	0.52	2.97
Bae et al., 2013	304	0.34	2.92
Gözükara and Simsek, 2015	101	0.34	2.39
Gözükara and Simsek, 2016	252	0.47	2.85
Hoon Song et al., 2013	284	0.34	2.89
Jangsiriwattana, 2019	1212	0.59	3.17

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Mufeed, 2018	127	0.51	2.53
Parveen et al., 2016	272	0.28	2.88

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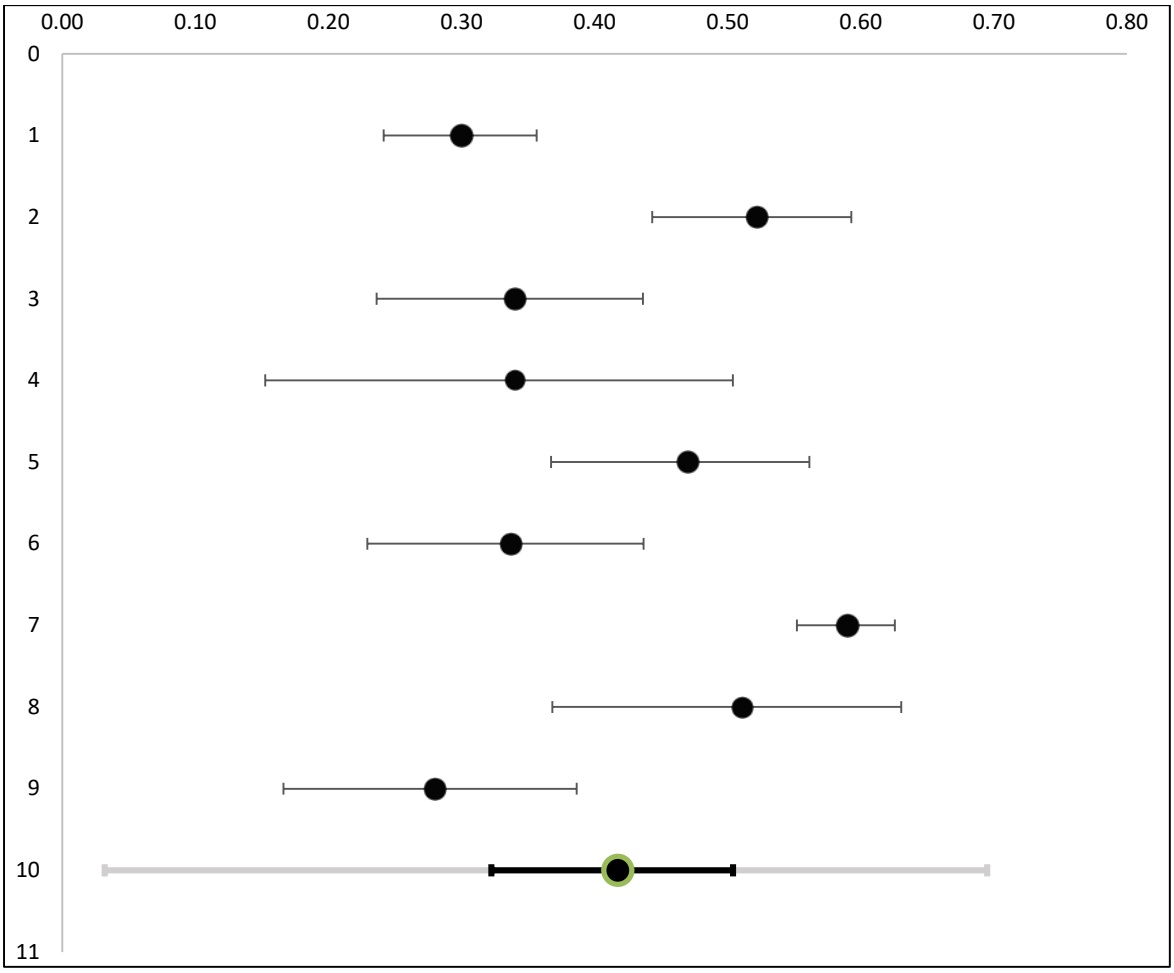
The results of the meta-analysis are shown in the following forest plot

Figure 1: Forest Plot



The above forest plot shows a pooled effect size of 0.42, represented by the black point at the base of the plot. The lower level of the pooled confidence interval (0.32) and the upper level (0.50) is represented by the short black line at the base of the plot. This reflects sampling error around the mean. The larger grey line at the plot base represents the prediction interval which has a lower

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level of 0.03 and an upper level of 0.69. This line represents between study differences as well as sampling error and suggests that the effect sizes of any additional studies should fall within that prediction interval. The prediction interval can also be viewed as an indicator of heterogeneity and supports the use of the random effects model in this study. Additional support for heterogeneity is found in the I^2 value (Huedo-Medina et al., 2006). In the present study, the I^2 value of 92.07% suggests considerable heterogeneity (Higgins et al., 2021).

The Meta-essentials programme also provides a few failsafe N tests for publication bias (file drawer) analysis. Quite simple, these tests calculate the number of additional studies required the nullify the significance of a study's results, in other words, the number of additional studies it would take to arrive at an insignificant effect size. In this study, Rosenthal's (1979) Failsafe N was 166, Gleser and Olkin's (1996) Failsafe N was 130, Orwin's (1983) Failsafe N, with criterion value set at 0.05 and the mean of the studies to be imputed at 0, was 72, and Fisher's (1932) Failsafe N was 92. Taken together, these Failsafe N results do not suggest significant publication bias.

In summary, the analysis employed the precision criteria recommended by Sartal et al. (2021) based on the use of meta-analysis in the medical field, to assess the direct effect of transformational leadership on employee engagement in the education field. The analysis was therefore confined to studies employing tried and tested measures of transformational leadership (i.e., the MLQ) and workplace engagement (i.e., the UWES) and resulted in a pooled effect size of 0.42. This effect size is regarded as medium (Coe, 2013; Cohen, 1992) to large (Bosco et al., 2015), it is also regarded as "substantively important" (What Works Clearing House, 2008).

Discussion

The study found that, in the field of education, the transformational style of leadership does have a prima facie positive effect on the degree of workplace engagement. However, the extent of that effect is indeterminate due to the presence of endogeneity in non-experimental causal studies such as the ones employed in this meta-analysis, a criticism that is common to meta-analyses carried out in the social sciences.

The Endogeneity Issue

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In the medical field, a common approach to determining the effect of administering a new drug is to conduct a randomised control trial involving two sets of participants i.e., an experimental group and a control group. Typically, the experimental group will have the new drug administered to them and the control group may receive a placebo or the conventional drug. Provided the participants have been randomly assigned to each of the groups, endogeneity is not an issue because this type of causal study assumes that random assignment confines the effect to that of the independent variable i.e., the administration of the drug (in statistical terms, x) on the dependent variable i.e., the relevant group of participants (y).

However, the experimental conditions available in the medical field for randomised control trials are rarely available in the social sciences such as in leadership and education studies. Rather, the situation that generally pertains in the social science field can be illustrated by following simple regression model: $y = a + Bx + u$, where x is the independent variable, y is the dependent variable, a is the constant (intercept), B is the coefficient (a measure of how much y changes for each one-unit change in x) and u is the residual, sometimes called the error term. The error term includes all possible variable that might affect y and that are not represented by x. Endogeneity exists when x correlates with u. In layman's term, in causal analysis, the effect size of x on y is rendered imprecise when the latent variables contained in u are not accounted for. For example, in the present study, the extent to which the transformational leadership style effects workplace engagement may be moderated by various unaccounted for factors such as personality, health, educational level, past-experience and so on. In addition to unaccounted for latent variables, there are other sources of endogeneity such as simultaneity (x causes y and y causes x) and common method variance where, for example, the design of the measuring instrument in a survey effects the responses rather than them being a true reflection of the views of the respondents. The gold standard for eliminating endogeneity therefore is the random trial experimental approach described above in connection with the medical field.

What then are the implications for research in education especially research that seeks to address the effect of a specific style of leadership on level of engagement. One promising area is that of instructor transformational classroom leadership that has yielded positive results so far in terms of student engagement (Balwant, 2016; Pounder, 2008). This research could be further pursued by adopting the random trial experimental approach common in the medical field. For example, suppose one wanted to investigate the effect of the transformational instructor style on student engagement and contrast this with the effect of the transactional style. Assuming that students have been randomly assigned to classes, a faculty member teaching the same course (or part of it) to two classes of students, could employ the transformational behaviourally examples contained in a modified version of the MLQ[2] in one class and the transaction behavioural examples in the other. This is equivalent to a random trial experiment in the medical fields in

[2] Available from the author

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which the experimental group is given the new medication and the control group is given the conventional medication and the effect compared. After the faculty member has completed the teaching of the course or part of it, the two classes of students could complete an engagement questionnaire and the resulting comparison of the mean results would produce an effect size for instructor transformational leadership on student engagement. The finding of such a random trial experiment should not be dismissed as insignificant given the view that a university classroom can be considered as a small organization (Pounder, 2008; Weaver and Qi, 2005). Even though this view has not received unqualified endorsement (Balwant, 2016) its similarity to a small organisation may offer an indication of the effect of transformational leadership on engagement beyond the confines of the classroom.

Aside from the above, things become more problematic when causal studies move to the organisation level where random trials at that level are seldom possible. One approach is to attempt to identify the latent variables embedded in the error term and, of course, the more that are identified, the more likely it is that the effect of an endogenous regressor can be isolated. However, the very fact that the variables being sought are latent renders the search to identify all difficult if not impossible. Consequently, borrowing from the field of econometrics, social scientists are turning to two stage least squared regression to solve the endogeneity problem in non-experimental studies. This is not the place to provide a technical description of the approach that requires Stata[3] software but central to two stage least squared regression is the identification of an instrumental variable that has no effect on the dependent variable except through its effect on the independent endogenous variable (the regressor) and is not correlated with the error term. In other words, it is an exogenous variable. In the first stage, the effect of the instrumental variable on the regressor is computed and the result is used in the second stage to confirm the actual effect of the regressor on the dependent variable. Nevertheless, identification of instrumental variables that meet the conditions to employ in two stage least squared regression is not an easy task. Along with the identification of relevant latent variables, selecting appropriate instrumental variables are an important area of research for causal studies in the education area, specifically those that seek to gauge the effect of the transformational leadership style on workplace engagement.

Clearly, none of this can be conducted at the level of meta-analysis that use the results of non-experimental causal studies as input to the analysis. Nonetheless, this author is of the view that the results of this study, and other meta-analyses in the social sciences, should not be totally discounted. For example, the meta-analysis presented in this paper comprised nine studies with a collective sample of close to 4000 individuals indicating a positive effect of transformational leadership on workplace engagement. Although the exact degree of this effect is compromised by endogeneity issues, the sheer force of numbers indicates the likelihood that an

[3]https://www.stata.com

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actual effect does exist, and this finding should be viewed in the context of seeking solutions to the worldwide crisis in workplace engagement alluded to at beginning of this paper.

Conclusion

In conclusion, the meta-analysis presented in this paper indicates that, in an educational setting, the transformational leadership style has an effect on the level of workplace engagement, but endogeneity issues render the effect size uncertain. However, in a classroom context, it is possible to replicate the random trial conditions common in the medical field to establish the effect of, for example, the instructor transformational leadership style on student engagement. The results of such an experiment may be of broader organisational significance considering the argument that a university classroom can be regarded as a quasi-organization. Accordingly, there may be other causal studies that can be explored in the classroom context that also have significance beyond the classroom.

At the same time, researchers in education concerned with moving causal studies forward should focus on uncovering the latent variables that are contained within the error term represented as u in a basic regression analysis and identification of instrumental variables suitable for use in two stage least squared regression.

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