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Research Article

The Best Time to Offer a Course in Research Methods

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Abstract

Many master's-level counseling students may not see the relevance of outcome research to clinical practice. There is a paucity of literature examining master's level counseling students' research self-efficacy, interest in and attitudes toward research. This study examined a sample of master's level counseling students ($N = 83$) at pre and post course. Using a survey-based, pretest/posttest design, change in students' attitudes toward and interest in research, and research self-efficacy from pre to post a course in research methods was observed. Students from six counseling programs participated in the study. Research self-efficacy was the only outcome variable to reveal significant positive change from pre- to post- course. Where students were in their program was used as a covariate in analyses (i.e., early, middle, late). Significant differences between the change scores of the three points in program subgroups was observed. Surprisingly, students late in their program scored less than the early and middle subgroups across all of the outcome variables, except for interest. Findings and implications for future research is discussed.

Key Words

Attitudes • Interest • Research self-efficacy • Semester • Point in program

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Training graduate counseling students to understand and apply outcome research is important to the efficacy of counseling interventions (Myers, Sweeney, & White, 2002). Negative attitudes toward and lack of interest in research has been demonstrated among many graduate students before their first research methods course (Bard, Bieschke, Herbert, & Eberz, 2000; Bishop & Bieschke, 1998; Papanastasiou, 2005). Training of mental health practitioners was closely examined in 1949 at the Boulder Conference.

Conference leaders called for training to promote research and practitioner skills in the education of counselors, therapists, psychologists, social workers, clinical psychologists, and other professionals in mental health. The model became known as the scientist–practitioner model (Barkham & Mellor-Clark, 2003). The model’s main focus is that research creates the validity of a profession. However, negative attitudes toward and lack of interest in research has been demonstrated among many graduate students before their first research methods course (Bard, Bieschke, Herbert, & Eberz, 2000; Bishop & Bieschke, 1998; Papanastasiou, 2005).

Myers et al. (2002), suggested counselor education programs emphasize the importance of different types of research (e.g., qualitative methods, action research, and single-subject design). Different types of research could bolster students’ research self-efficacy. Students with higher levels of research self-efficacy may be more apt to conduct research, demonstrating the efficacy of counselor interventions and further validating the counseling profession (Lundervold & Belwood, 2000; Myers et al., 2002). The science-practitioner model emphasizes the importance of science-practitioners to use outcome research to select evidence-based interventions to inform clinical practice, as well as the collection and analyzing of data to evaluate clinical practices (Hays, 2010). Helping students understand the connection between outcome research and clinical application could begin with graduate training programs.

Graduate counseling programs are often students’ first exposure to education that underscores the importance of research and its relevance to clinical practice. Experiences in the research training environment can be difficult and challenging for graduate students and could influence their perception of research and their professional growth post graduate training (Lundervold & Belwood, 2000; Reisetter, Korcuska, Yexley, Bonds, Nikels, & McHenry, 2004). The Council for Accreditation of Counseling and Related Educational Programs (CACREP, 2016) requires a course in research methodology in graduate counseling programs. However, the requirements are broad and nonspecific. Therefore, programs vary in how they teach the course, as well as what point in the program they offer the course.

Researchers have posited that students may have misconceptions about research, believing that the material will directly support their clinical skills (Sizemore & Lewandowski, 2009). Reisetter et al. (2004) suggested that students “are disengaged from research” (p. 3) because they cannot comprehend the connection between clinical application and complex quantitative research designs. Further, students may not only view research as separate from their educational lives, they may view it separate from their professional lives (Reisetter et al., 2004). Graduate programs are in a position to increase students’ interest in and attitudes toward outcome research (Gelso, 2006). Programs vary in course sequence of the degree curriculum. The point in program where a course in research methods is offered could have a significant influence on students’ research self-efficacy and attitudes toward and interest in outcome research.

Attitudes

Lei (2008), argued the strongest factor that changed students' attitudes toward a research methods course was a positive correlation between interest and usefulness. Lei suggested that the strong correlation between research interest and usefulness supports a common observation of human attitudes; people have more positive attitudes toward those activities that are useful or relevant in their professional and personal lives. Wang and Guo (2011), examined two groups of master's level students and reported students who were required to complete a research project to satisfy degree requirements had more positive attitudes toward research than those who were not required the research project. The type of research methodology may have an influence students' attitudes. Reisetter et al. (2004), suggested that the open-ended nature of qualitative research is similar to the information-gathering process of the counselor–client relationship. Considering Wang and Guo (2011), Reisetter et al. (2004), and Lei (2008), students understanding the usefulness of research in their personal and professional lives appears to affect their attitudes toward research. Researchers have posited several factors that influence students' attitudes toward research. Factors such as knowledge of content, teaching method, utility/usefulness of research, feelings about research, relevance to daily life, anxiety, and difficulty of research (Ciarocco, Lewandowski, & Volkom, 2013; Papanastasiou, 2005; Sizemore & Lewandowski, 2009). Students may be engaged to learn content and do what is necessary to do well in the course; however, they may still possess low levels of interest in research and unfavorable attitudes upon completion of the course (Deemer, Martens, & Podchaski, 2007; Sizemore & Lewandowski, 2009).

Interest

Most mental health counseling students enter a program with higher interest in learning clinical skills than understanding outcome research (Gelso, 2006; Rodriguez & Toews, 2006). The construct of interest in research is based on the social cognitive model of interest development (Lent, Brown, & Hackett, 1994) and is defined as a compilation of personal inputs such as age, gender, social interests, artistic interests, and investigative interests and environmental inputs such as the research training environment. Lent et al. (1994) suggested that people form more permanent interests in those activities they do well and anticipate a positive outcome, thus it is difficult for research interest to grow if a potential outcome is perceived as negative. Students whose primary focus is on clinical training may not be interested in learning about outcome research (Wang & Guo, 2011). Although Wang and Guo (2011) investigated graduate students' attitudes toward research, they argued that responses to survey questions pertaining to students taking required and additional research methods courses revealed “a lack of interest and motivation in learning research methods” (p. 5). The type of research methods course should be considered when evaluating students' interest. According to Reisetter et al.'s (2004) phenomenological study, graduate students' attitudes were strongly positive after taking a qualitative methods course. Moreover, students perceived that skills needed to do qualitative research were consistent with skills they were learning to be effective counselors. If students can establish the connection of outcome research to the usefulness of research in clinical practice, they may develop a research identity (Reisetter et al., 2004). Participant numbers were small; however, findings support Lei (2008), who discussed a positive correlation between interest in research and its usefulness to clinical practice.

Research self-efficacy

Research self-efficacy in the counseling and education literature refers to an individual's belief in his or her ability to carry out research-oriented tasks (e.g., conduct a literature review, choose a method of data collection, present research findings orally (Bishop & Bieschke, 1998). Bandura (1977, 1986) posited that self-efficacy involves more than a person's ability to complete a given task; it involves a person's intrinsic and extrinsic motivations, choices of behavior, cognitive processes, and social-cognitive maturity, as well as their persistence of difficult experiences. Mastery of these experiences increases self-efficacy. Similar to Lambie and Vaccaro (2011); Love, Bahner, Jones, and Nilsson (2007) and Unrau and Beck (2004) examined change in research self-efficacy and its relationship with students' research experiences. Researchers reported increased levels of research self-efficacy with those students who viewed research experiences as satisfying/positive. Furthermore, students enrolled in a research methods course at the same time as a clinical/practice course revealed higher levels of research self-efficacy than those students enrolled in a clinical/practice course only (Love et al., 2007; Unrau & Beck, 2004). Students with low research self-efficacy may be uncomfortable exchanging research ideas or reluctant to ask for help in the training environment (Love et al., 2007). Researchers are concerned that many counseling, psychology, and education students do not participate in research activities post-graduation (Gelso, 2006; Love et al., 2007; Myers et al., 2002; Rodriguez & Toews, 2005), hence, a lack of contribution to the literature. Outcome research findings support the efficacy of counseling interventions and are necessary to advance the profession and help clients (Myers et al., 2002). However, if students have negative perceptions of early experiences in research training, they may become averse to research-oriented activities and lose interest altogether (Love et al., 2007). Although a number of studies have investigated undergraduate psychology; doctoral-level counseling; counseling psychology; and rehabilitation counseling, students' interest in and attitudes toward research, as well as students' research self-efficacy (Bard et al., 2000; Ciarocco, et al., 2013; Deemer et al., 2009; Lambie & Vaccaro, 2011; Lei, 2008; Love et al., 2007; Mullen et al., 2015; Oguan et al., 2014; Pappanastasio, 2005, 2014; Reissetter et al., 2004; Sizemore & Lewandowski, 2009; Wang & Guo, 2011), there is a paucity of literature examining outcome in these constructs and the point in program students take a course in research methods (Mullen et al., 2014).

Information gathered from this study could inform educators the best time to offer a course in research methods that could be congruent with an increase in students' research self-efficacy and their interest in and attitudes toward research. If graduate students have high levels of research self-efficacy and positive attitudes toward and high levels of interest in research, they may be less averse to being consumers of research in their professional careers. .

Method

Using a one-group pretest/posttest design, this study examined change in attitudes toward research, interest in research, and research self-efficacy in master's-level counseling students. Students enrolled in a research methods course completed surveys prior to and upon completion of the course. A power analysis was completed to determine sample size needed to acquire adequate power. A series of paired *t* tests and multiple linear regressions was conducted to address the hypothesis and examine the relative contribution of covariates such as sex, race, age, point in program, and GPA to variability in pretest/posttest changes in each dependent variable. Baseline measures of each dependent variable were used to account for pretest differences between students.

This study was part of a dissertation project. Inclusive study results are not presented here. Hypothesis One is the focus of this paper; H1: Master's-level counseling students' research self-efficacy, attitudes toward research, and interest in research will improve over the course of a semester in research methods.

Participants

A request for student participation was sent to the program director or the chair of 14 master's level counseling programs located in a southern state. Six of the counseling programs agreed to participate in the study. Five of the six programs were CACREP-accredited. Two data collection procedures were offered; in the classroom and SurveyMonkey. The instructor of each research course chose the data collection method. For the in-class method, the primary investigator presented on the first and last day of class and administered the measures. For the SurveyMonkey method, the instructor forwarded an email from the researcher approximately one week prior to the first class and again the week of the last class meeting. Data collection in the classroom had the highest participant response rate ($n = 57$, 91.2%) for completed sets of pre- and post- surveys. Response rates using SurveyMonkey were low as expected ($n = 26$, 43.8%). A final convenience sample of 83 complete sets of pre- and post- surveys were available for statistical analysis.

Instruments

Revised-Attitudes Toward Research (R-ATR; Papanastasiou, 2014). The R-ATR was developed from the longer 32-item Attitudes Toward Research (ATR) measure and assesses research attitudes in three domains: Research Usefulness, Anxiety, and Positive Research Predisposition. The instrument is self-report and consists of 13 items presented on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include (a) Research is connected to my field of study and (b) Research courses make me anxious. Several researchers used the original ATR to measure attitudes of students during or after completion of research methods courses (Oguan, Bernal, & Pinca, 2014; Papanastasiou, 2005; Walker, 2010). Although internal consistency rates vary across studies, they still remain high with the lowest reported Cronbach's alpha at .80. Alpha coefficients for this study were consistent with previous studies; Useful (pre, $\alpha = .72$; post, $\alpha = .80$), Anxiety (pre, $\alpha = .84$; post, $\alpha = .85$), and Positive Research Pre-disposition (pre, $\alpha = .91$; post, $\alpha = .89$).

Interest Research Questionnaire (IRQ; Bishop, Bieschke, 1994). The instructions on the IRQ ask respondents to rate level of interest in research activities on a 5-point Likert scale ranging from 1 (*very disinterested*) to 5 (*very interested*). Sample items include (a) Discussing research ideas with my colleagues and (b) Reading a research journal article. Deemer et al. (2007) and Deemer et al. (2009) reported excellent alphas of .93 and .94 with samples of doctoral-level counseling psychology students. Counseling education doctoral students were investigated by Lambie and Vaccaro (2011) and Lambie, Hayes, Griffith, Limberg, and Mullen (2014); data analysis revealed coefficient alphas of .93 and .89. The coefficient alphas for this study were strong; pretest ($\alpha = .93$) and posttest ($\alpha = .92$).

Research Self-Efficacy Scale (RSES; Greeley et al., 1989). Thirty-eight of the 51-items included on the RSES were examined. Thirteen of the 51 items review doctoral level experiences, therefore were omitted. Respondents rated level of confidence on their ability to perform each task on a modified visual analog scale from 0 (*no confidence*) to 100 (*complete confidence*). Sample items include: (a) Follow ethical principles of research and (b) Find needed articles which are not available in your library. Other studies have supported the

psychometric soundness of the RSES with alpha coefficients from .96 to .98 (Deemer et al., 2007; Lambie et al., 2014; Lambie & Vaccaro, 2011; Love et al., 2007). Cronbach alphas for this study were very strong (pre, $\alpha = .97$; post, $\alpha = .98$).

Procedures

Data was collected at pre and post a research methods course over three semesters; Summer 2015, Fall 2015, and Spring 2016. Data collection was one week prior to the first class meeting and within a week of the last class meeting. Course structure varied across graduate programs; most participating programs operated on a traditional 14- to 15- week semester with class meeting for 2-3 hours once per week. However, one institution's semester structure was six weeks with class meeting for approximately six hours, once per week.

Power analyses were conducted using the software package G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the number of participants needed to attain a power level of $\alpha = .80$. An Analysis of Variance (ANOVA) was implemented to explore differences between semester groups (early, middle, late). Paired, dependent *t* tests were used to review change in students' research self-efficacy, attitudes toward research, and interest in research from pretest to posttest..

Findings

Procedure and Participants

Clinical mental health (51.8%, $n = 43$) and marriage and family (41.6%, $n = 34$) represented the majority of participant specialization (see Table 1). The age range of participants varied between 22 to 58 years old with the majority of respondents between 22 to 34 years old and identified as female (80.7%, $n = 67$) and Caucasian (83.1%, $n = 69$). Data collection in the classroom had the highest participant response rate ($n = 57$, 91.2%) with 26 responses (43.8%) for Survey Monkey. Pretest, posttest means, standard deviations, and alphas were acceptable across the outcome measures (see Table 2).

Table 1

Graduate Program Information (N = 83).

Variable	<i>n</i>	%
Program type		
Private faith-based		
1	45	19.3
2	16	54.2
Public		
3*	9	10.8
4	3	3.6
5	1	1.2
Private secular		
6	14	10.8
Specialization		
Clinical Mental Health Counseling	43	52.1
Marriage and Family Therapy/Counseling	34	41.6
School Counseling	3	3.1
Psychology	3	3.1
Point in program		
Semester 1	13	15.7
Semester 2	12	14.5

Semester 3	4	4.8
Semester 4	21	25.3
Semester 5	14	16.9
Semester 6	12	14.5
Semester 7	2	2.4
Semester 8	5	6.0

Note. *Not CACREP-accredited.

Table 2

Pretest and Posttest Means, Standard Deviations, and Alphas for All Measures.

Scale	<i>M</i>	Pretest <i>SD</i>	α	<i>M</i>	Posttest <i>SD</i>	α
R-ATR						
Useful	5.66	.89	.72	5.82	.83	.80
Anxiety	3.71	1.11	.84	3.71	1.09	.85
Research predisposition	4.06	1.27	.91	4.09	1.27	.89
IRQ	2.91	.83	.93	2.89	.81	.92
RSES	62.57	18.19	.97	7.95	18.42	.98

Note. R-ATR = Revised Attitudes Toward Research scale; IRQ = Interest in Research Questionnaire; and RSES = Research Self-Efficacy Scale.

The statistical software SPSS (Version 23) was used for statistical analyses including ANOVA, *t*-tests, and bivariate analyses. Power analyses were conducted to determine the number of subjects needed to attain a power level of $\alpha = .80$. The type of power analysis implemented was A priori: Compute required sample size - given α , power, and effect size. The statistical test was Means: Difference between two dependent means (matched pairs). Input parameters were set for *t* test (two tails) and .05 effect size. Output parameters suggested a sample size of 54 matched pairs. A final convenience sample of 83 complete sets was available for statistical analysis. A series of bivariate analyses was conducted to examine covariates and the dependent variables; age, sex, race, GPA, years since bachelor's degree, graduate program, specialization, instructor, and point in program (i.e., semester). Significant differences were not observed for covariates except for point in program. Point in program was organized into three subgroups. Groups included early (Semesters 1, 2, 3), middle (Semesters 4 & 5), and late (Semesters 6, 7, 8). Pretest, posttest, and difference mean scores were used for the outcome variables. Tukey's post hoc comparisons revealed significant differences between the early, middle, and late subgroups for several of the pretest and posttest outcome variables (see Table 3). Pretest scores across semester groups revealed students differ in their pretest levels and of the outcome variables dependent on where they were in their point in program. Furthermore, significant difference between groups was observed for the difference scores of attitudes positive research predisposition and research self-efficacy.

Table 3

Significant differences between semester subgroups for pretest, posttest, and difference mean scores.

Dependent variable	subgroup	subgroup	Mean difference	Std.Error	Sig.
Attitudes					
Anxiety					
pretest	1	3	.77*	.32	.04
posttest	2	3	.93*	.29	.01
posttest	1	3	.93*	.30	.01

Research predisposition					
pretest	2	3	.95*	.34	.02
posttest	1	2	-.47*	.20	.05
difference	2	3	.55*	.22	.04
Research self-efficacy					
pretest	1	3	17.21*	4.98	.01
posttest	2	3	18.01*	4.76	.01
difference	2	3	10.99*	4.0	.02
Interest					
pretest	1	3	.77*	.23	.01
pretest	2	3	.56*	.22	.03
Interest					
posttest	1	3	.68*	.23	.01
posttest	2	3	-.53*	.22	.05

Semester subgroups; 1 = early, 2 = middle, 3 = late. * = $p < .05$.

Hypothesis One predicted that there would be significant positive change in students' attitudes, interests, and research self-efficacy from pre to post a course in research methods. Research self-efficacy was the only outcome variable to demonstrate significant positive change from pretest to posttest; $t(82) = -3.31$, $p < .01$, therefore the null hypothesis was rejected for this outcome variable. Significant differences between semester groups in pretest, posttest and change scores are observed in Table 4.

Table 4

Pretest, Posttest, and Change Scores by Semester.

Variable	Pretest M (SD)	Posttest M (SD)	Change M (SD)
Attitudes Usefulness			
Semesters 1-3	5.73 (.96)	5.90 (.84)	+17 (.88)
Semesters 4-5	5.64 (.84)	5.84 (.79)	+20 (.80)
Semesters 6-8	5.60 (.90)	5.66 (.91)	+06 (.79)
All semesters	5.66 (.89)	5.82 (.83)	+16 (.82)
Anxiety			
Semesters 1-3	4.12 (1.13)	3.94 (1.06)	-.19 (1.07)
Semesters 4-5	3.58 (1.09)	3.94 (1.04)	+36 (1.14)
Semesters 6-8	3.35 (.98)	3.01 (.97)	-.34 (1.10)
All semesters	3.71 (1.11)	3.71 (1.09)	0 (1.14)
Predisposition			
Semesters 1-3	4.32 (1.57)	4.17 (1.41)	-.15 (.83)
Semesters 4-5	4.07 (1.11)	4.40 (1.08)	+33 (.71)
Semesters 6-8	3.68 (1.00)	3.45 (1.18)	-.23 (.81)
All semesters	4.06 (1.27)	4.09 (1.27)	+03 (.81)
Interest			
Semesters 1-3	3.18 (.82)	3.12 (.73)	-.06 (.54)
Semesters 4-5	2.98 (.71)	2.97 (.71)	-.01 (.49)
Semesters 6-8	2.41 (.87)	2.44 (.94)	+03 (.39)
All semesters	2.91 (.83)	2.89 (.81)	-.02 (.48)
Research Self-efficacy			
Semesters 1-3	67.52 (12.90)	71.76 (12.21)	+4.24 (12.20)
Semesters 4-5	62.62 (19.88)	72.57 (16.89)	+9.95 (13.63)
Semesters 6-8	55.59 (19.91)	54.55 (22.16)	-1.03 (17.81)
All semesters	62.57 (18.19)	67.95 (18.42)	+5.38* (14.80)

Note. * $p < .01$.

Discussion

The focus of this study was to explore change in students' research self-efficacy, attitudes toward and interest in research from pre to post a research methods course. It was a surprising finding that students' interest in research did not move in either direction. The lack of movement could indicate a couple of things; first, perhaps the IRQ did not fully capture student interest for this sample. Secondly, there could be extraneous factors that were not considered, such as the potential influence of the instructor or students' perception of the research environment (e.g., the classroom and the graduate program). If the instructor and other instructors in the graduate program collectively have a low interest in research, this could be projected in the atmosphere of the classroom and the program overall. Unlike research self-efficacy and attitudes, the lack of movement in student interest scores was consistent across semester groups. Significant change was not observed for attitudes when viewing all semesters as one sample. However, when viewing the results by semester group, significant differences were observed between semester groups for attitudes' anxiety and positive research predisposition. It is unclear why there were considerable differences between semester groups (i.e., point in program). Students late in their program scored less than the early and middle subgroups across all of the outcome variables, except for interest. Some of the students could have been focused on graduating and lost enthusiasm for the course. Interestingly, the middle group revealed the largest gains across attitudes subscales and research self-efficacy. A review of where students are in their program when they took the research methods course was not the focus of this study. The hypothesis stated there would be significant positive change in students' interest, attitudes and research self-efficacy from pre to post a research methods course. Therefore, the sample was reviewed as a whole. Research self-efficacy was the only variable to improve significantly. These findings support [Mullen, Uwamahoro, Blount, & Lambie \(2015\)](#), who argued that students' experiences in their program may result in higher levels of self-efficacy. However, if the data is reviewed by subgroup, the middle subgroup increased over 10 times than the late subgroup.

Most of the literature reviewed for this study examined doctoral-level counseling psychology or counseling education students ([Bard et al., 1998](#); [Bieschke, Herbert, & Bard, 1998](#); [Deemer, 2007](#); [Lambie & Vaccaro, 2011](#); [Mullen et al., 2015](#)). Findings from this study suggest that the point in program a master's level student is enrolled has an influence on research self-efficacy and attitudes toward research. Information gathered in this study might prove helpful for programs to further develop training strategies. Instructors of research methods have the opportunity to help students better understand outcome research, as well as the importance of clinical application. If the low levels of interest and less positive attitudes in students of this study is consistent across programs, perhaps learning more about what students find interesting in a research classroom could be beneficial for increasing positive attitudes and higher levels of interest in outcome research. Furthermore, the variation observed between semester groups could have strong implications for counseling training programs. Surprisingly, students late in their program had the lowest mean scores for interest, attitudes, and research self-efficacy. Graduate programs may consider these findings to substantiate an assessment of students' attitudes, interest and research self-efficacy at different points in their program.

There were several limitations in this study. The study design is one group, pretest/posttest, therefore, potential relationships and associations between variables cannot be attributed to the course alone ([Field & Hole, 2002](#)). Data collection procedures could have been another limitation; some faculty may have been more

encouraging to students to complete the surveys than others (Deemer et al., 2007). Moreover, the study topic may have influenced students' decision to participate. Hence, those students with greater interest in or more positive attitudes toward research may have been more likely to participate (Deemer et al., 2007; Lambie & Vacarro, 2011). Data were not collected from faculty members; therefore, faculty's interest in research and level of encouragement is unknown. The main limitations of this study is that over half of the students were from the same graduate program and 45% took the research course from the same instructor. A more even distribution across programs may have produced different results.

The lack of change in interest and attitudes from pre- to post- course is a surprising finding. Future researchers might consider a mixed-methods design; perhaps using a qualitative design to capture more in-depth information. For example, course instructors could be surveyed to capture their interest, attitudes, and research self-efficacy. Course syllabi could be reviewed for differences among courses and programs. Researchers might look for differences between programs by examining research courses with a qualitative focus, courses with a quantitative focus, and courses that balance the two. Moreover, an exploration of the comparison of students who are enrolled in a research methods course at the same time as a clinical course to those who are enrolled in one course; either research methods or clinical skills could provide information for program development. Finally, researchers might consider the examination of the semester variable (i.e. point in program) more closely. Specifically, when is the best time in a program to offer research methods where students could potentially have higher levels of research self-efficacy and more positive attitudes toward and more interest in outcome research.

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