

Graduate Socialization in the Responsible Conduct of Research: A National Survey on the Research Ethics Training Experiences of Psychology Doctoral Students

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Research Questions

- How do current and recent graduate students in psychology perceive the qualities of their RCR departmental climate and RCR mentored experiences?
- To what extent do students believe their graduate experiences have prepared them to independently implement RCR practices in their own research and what are the contributions of course instruction, RCR departmental climate and RCR mentoring?
- To what extent do students have confidence in the RCR integrity of the discipline of psychology and what are the contributions of course instruction, RCR departmental climate and RCR mentoring?

Mentoring Students in the Responsible Conduct of Research

- Socialization of students in RCR explicitly through direct instruction and implicitly through modeling and student observation of behaviors (Fisher et al, 2009; Johnson & Nelson, 1999; Swazey & Anderson, 1996).
 - Explicit RCR mentoring:
 - Research-relevant federal regulations and Ethics Code
 - Procedures protecting rights and welfare of participants.
 - Implicit RCR mentoring:
 - Mentors' behaviors indicating a valuing of research-related ethical principles and standards

Department Influences on the Responsible Conduct of Research

Socialization of RCR through Department policies and faculty behavior
(Anderson et al 1994; Fisher et al, 2009)

- Explicit aspects of the department climate:
 - Formal policies on research misconduct
 - Promotion of relevant codes of scientific conduct
 - Support in resolving ethical conflicts among students and faculty
- Implicit aspects of RCR department climate:
 - Prevailing department norms
 - Faculty adherence to standards of research conduct
 - Modeling of concern for the rights and welfare of research participants

RCR Preparedness and Confidence in the RCR Integrity of the Field

- A sense of preparedness is an important factor in RCR socialization (Brown & Kalichman, 1998; Fisher et al., 2009) Meyers, Reid & Quina, 1998).
- RCR values explicitly and implicitly communicated to students promote expectations that all members of the discipline are obligated to act in similar ways (Eisen & Berry, 2002; Fisher, 2003, 2009; NAS 2002)

Methods

- Participant Recruitment:
 - E-mail announcements to student lists of national psychological associations, department posters and flyers
- Survey administration:
 - Online Survey
 - Firewalls to prevent identification of participants' Internet Protocol (IP) addresses
 - IP addresses not linked to survey responses
- Study approved by the Fordham University IRB

Procedure

- Procedures:
 - Logged on to www.researchmentor.org
 - Completed online survey:
 - Basic demographic information
 - Five measures (158 items)
 - E-mailed \$30 Barnes & Noble online gift certificate

Demographic Questions

- Student and mentor gender, ethnicity, status
- One-item questions on satisfaction with RCR mentoring and department climate
- Completion of an ethics course
- Number of years with mentor
- Publication and presentation record
- Mentored graduate research design (including ethical challenges)

Definition of Mentor

- Research mentor defined as:
“The faculty member who has/had the primary responsibility for supervising your Master’s, doctoral, or other graduate level independent psychology research.”
- If multiple mentors, students asked to select the mentor with “the greatest influence (positive or negative) on your development as a researcher.”

RCR Measures

- Scales assessing RCR mentoring (MRCR), departmental climate (RCR-DC), preparedness (RCR-P) and field integrity (RCR-FI) from:

Fisher, C. B., Fried, A. L., & Goodman, S.A, & Kubo Germano, K. (2009). Measures of Mentoring, Department Climate, and Graduate Student Preparedness in the Responsible Conduct of Psychological Research. *Ethics & Behavior, 17*, 1-26.

Mentoring the Responsible Conduct of Research-Instruction MRCR-I

- 19 items ($\alpha = .95$)
- 6-point Likert-type scale (1=Strongly Disagree; 6=Strongly Agree)
- Begins with stem "My research mentor gave me helpful training about:"
- Items include:
 - "Appropriate informed consent procedures"
 - "How to protect participant confidentiality"
 - "Appropriate storage and collection of data"
 - "Fair and non-coercive participant incentives (i.e. cash payments, lotteries, course credit)"

Mentoring the Responsible Conduct of Research-Modeling (MRCR-M)

- 10 items ($\alpha = .93$)
- 6 –point Likert-type items: 1 = Extremely False, 6 = Extremely True
- Begins with the stem “My research mentor. . .”
- Assesses mentor’s implicit modeling of RCR behaviors and supervisory style
- Items include:
 - “Conducted his/her own research ethically.”
 - “Discussed authorship of publications that might emerge from my research.”

RCR Department Climate Index – Policy (RCR DC-Py)

- 15 items ($\alpha = .91$)
- 6 point Likert-type scale: 1=Extremely False; 6 = Extremely True
- Begins with the stem “In my graduate psychology program....”
- Items included:
 - “There is a clear policy for handling research ethics complaints”
 - “Concern for the welfare of research participants is stressed in courses”

RCR Department Climate Index – Practices (RCR-DC-PR)

- 9 items ($\alpha = .84$)
- 6 point Likert-type scale: 1=Extremely False; 6 = Extremely True
- Begins with the stem “In my graduate psychology program....”
- Items include:
 - “Graduate research assistants are confused about their roles and responsibilities”
 - “Research productivity that violates ethical standards is rewarded”

RCR Student Preparedness Scale (RCR-P)

- 23 items ($\alpha = .95$)
- 6-point Likert-type scale: 1=Strongly Disagree; 6=Strongly Agree
- Begins with stem: "At this point in my research career, I feel my graduate training has prepared me to..."
- Items include:
 - "Maintain research records in a manner consistent with APA ethical standards"
 - "Appropriately debrief research participants"

Responsible Conduct of Research- Field Integrity Scale (RCR-FI)

- 12 items ($\alpha = .89$)
- 6-point Likert-type scale: 1 = Extremely Dissatisfied, 6 = Extremely Satisfied
- Begins with the stem "Based on my psychology graduate training, I believe . . ."
- Items include:
 - "Research that was conducted unethically is not accepted for publication in psychology journals"
 - "Psychology graduate students receive adequate training in research ethics"
 - "Conducting research ethically is the norm in psychology"

Participants

- 968 current or recent graduates of geographically and mission-diverse doctoral programs in psychology
(Age: $M = 28$ years; $SD = 5.34$)
- Equal split between scientist-practitioner and basic/applied program mission
- 59% enrolled in program for three years or more

Participants

- Most reported :
 - Experience as a graduate research assistant
 - Collaboration with their mentor on at least one publication
 - Presentations of at least one paper at a professional meeting
- 76% indicated research was primary or secondary career goal
- Students worked with their mentors for approximately 3 years

RESULTS

Mentored Student Research RCR Challenges

All but one participant reported at least one ethical challenge

Most Common Challenges

1. Informed consent (26%)
2. Confidentiality (26%)
3. Participant compensation (18%)

Least Common Challenges

1. Risk to family or community (2%)
2. Participant recruitment (5%)
3. Participant risk (9%)/Dissemination (9%)

RCR Mentoring Instruction

- Positive about RCR training provided by their mentor (79%)
- 21% had mean scores indicating that their mentors were “extremely” to “somewhat” unhelpful.

RCR Mentoring Instruction

Most Frequently Endorsed

1. Fair and non-coercive incentives (92%)
2. Disguising identities of participants when reporting results (90%)
3. Evaluating research risks and benefits (89%)

Least Frequently Endorsed

1. Financial or personal conflicts of interests that could bias research (76%)
2. Federal regulations governing research (77%)
3. Potentially harmful multiple relationships (78%)

RCR Mentor Modeling

- In general, students felt that their mentor modeled RCR behaviors (88%)
- About 12% indicated that they did not view their mentors' behaviors as ethically responsible

RCR Mentor Modeling

Most Frequently Endorsed

1. Conducted his/her own research ethically (96%)
2. Handled data ownership fairly (94%)
3. Supervised my research in an ethical manner (93%)

Least Frequently Endorsed

1. Monitored my data collection to ensure accurate recording (66%)
2. Initiated ethics discussions (67%)
3. Accurate recording of research expenses (68%)

Relationship Between RCR Mentoring and Student Characteristics

- MRCCR scores **positively correlated** with number of student publications and completion of an ethics course.
- RCR mentor ratings were **not related** to student gender, ethnicity or the number of years the student had worked with his or her mentor.

Department Climate- Policies

- Students generally felt that their department RCR policies were adequate (86%)
- 14% felt that departments did not sufficiently support and monitor ethical aspects of student and faculty research

Department Climate- Policies

Most Frequently Endorsed

1. Students and faculty expected to adhere to Ethics Code (98%)
2. Students and faculty held accountable for ethical conduct of research (95%)
3. Faculty consistently model ethical behaviors (93%)

Least Frequently Endorsed

1. Written policy on avoiding conflicts of interests in research (75%)
2. Adherence to research ethics standards is monitored (77%)
3. Clear policy for handling research ethics complaints (81%)

Department Climate- Practices

- Belief that departments did not encourage or condone the unethical conduct of research by students or faculty (90%)
- 10% with scores suggesting that acceptance of unethical behaviors was at least “somewhat true” in their department

Department Climate- Practices

Most Frequently Endorsed

1. Graduate assistants are confused about roles and responsibilities (24%)
2. Research ethics are guided by investigator's personal ethics (22%)
3. Faculty and students engage in ethically questionable research practices (19%)

Least Frequently Endorsed

1. Research funds are misused (7%)
2. Research ethics are considered a matter of personal values (7%)
3. Research productivity that violates ethical standards is rewarded (7%)

RCR Department Climate: Relationship to Student Characteristics and Experiences

- The more time the student reported being enrolled in the doctoral program, the **more** likely the student was to rate their department as condoning irresponsible ethical practices.
- Students who reported unacceptable departmental practices were **more** likely to have encountered more ethical challenges in their mentored research.

RCR Student Preparedness

- In general, students felt well prepared to conduct ethically-responsible research (94%)
- RCR Preparedness significantly correlated with the MRCR and RCR-DC scores
- Higher RCR-P scores associated with:
 - more publications
 - further advanced in doctoral studies
 - completion of research ethics course
 - more years with mentor

RCR Student Preparedness

Most Frequently Endorsed

1. Avoid plagiarism when writing proposals or manuscripts (98%)
2. Adequately protect confidential research data (98%)
3. Avoid scientific misconduct (98%)

Least Frequently Endorsed

1. Know when ethically required to share research data with other investigators (78%)
2. Know when appropriate to dispense with informed consent (89%)
3. Identify financial or personal conflicts of interest (90%)

Predicting RCR Preparedness

Hierarchical multiple regression to test the relative contribution of variables significantly correlated with RCR Preparedness in the following order:

1. Status of student research and number of publications
2. Number of ethical challenges, years working with mentor, and completion of an ethics course
3. MRCR-I, MRCR-M, RCR-DC-PY and RCR-DC-Pr

A significant model emerged with adjusted R^2 accounting for 4%, 5%, and **61%** of variance for blocks 1, 2, and 3, respectively.

Predicting RCR-Preparedness

Predictor	Beta Weight
Status of research	.04
Number of publications	.12***
Total Challenges	-.04
Number of years working with mentor	.08**
Completed an ethics course	-.03
MRCR-Instruction	.26***
MRCR-Modeling	.12***
RCR-DC Policy	.49***
RCR-DC Practices ♦	-.02

*** $p < .001$ ♦Scale negatively scored; higher scores indicative of negative faculty/student practices.

All RCR measures significantly and independently predicted RCR-P except RCR DC-Practices.

RCR - Field Integrity

- Students generally believed members of the discipline conducted research responsibly
- Students were most confident that psychology as a discipline valued and encouraged its members to conduct research ethically.
- Less sure that psychology students received adequate training in research ethics or that the field had adequate safeguards to ensure psychologists engage in ethical research.

RCR - Field Integrity

Most Frequently Endorsed

1. Conducting ethically-responsible research is the norm (98%)
2. Field encourages psychologists to conduct ethical research (98%)
3. Rights of participants are protected (97%)

Least Frequently Endorsed

1. Unethical research is not accepted for publication (78%)
2. It is common for psychologists to consider and resolve ethical problems (79%)
3. Graduate students receive adequate training in research ethics (83%)

Predicting RCR Field Integrity

Hierarchical multiple regression to test the relative contribution of variables significantly correlated with RCR-Field Integrity with the following variables.

1. Completed an ethics course
2. MRCCR-I, MRCCR-M, RCR-DC-PY and RCR-DC-Pr

A significant model emerged with adjusted R^2 accounting for 1% and **47%** of the variance, respectively.

Predicting RCR Field Integrity

Predictor	Beta Weight
Completed an ethics course	-.01
MRCR-Instruction	.10**
MRCR-Modeling	.12
RCR-DC-Policy	.49***
RCR-DC-Practices ♦	-.02***

*** p < .001 ** p < .01
♦ Scale negatively scored; higher scores indicative of negative faculty/student practices.

All measures significantly and independently predicted RCR-FI except MRCR-Modeling.

Discussion

- Students reported positive explicit and implicit RCR mentoring experiences.
- In general, psychology departments appear to provide explicit policies promoting the responsible conduct of research
- Departments appear to promote atmosphere that encourages respect for and adherence to research ethics principles and practices

Areas of Concern

- **Department Support and Monitoring:** One out of every 10 students had scores suggesting that some departments are too lax in their support for and monitoring of student and faculty ethics-related research endeavors
- **Role Confusion:** One one in four students thought graduate research assistants were confused about their roles and responsibilities
- **RCR Guidance:** One in five students felt their mentors were somewhat if not very unhelpful in providing explicit RCR guidance
- **Supervision:** One out of three students indicated their mentors did not provide adequate RCR supervision

RCR Preparedness and Integrity

Preparedness

- Associated with publications, completing research ethics course, and years with mentor
- May be actual RCR competence, social desirability, or naiveté about the demands of RCR
- Department faculty practices **did not** exert an independent effect on students' sense of preparedness to conduct ethically-responsible research

Integrity

- Perhaps related to high participant student interest in research
- Departmental support for faculty and student RCR practices significant predictors of RCR integrity.
- The behaviors of departmental faculty appear to be **more** compelling (than mentor behaviors) in affecting student confidence in the RCR integrity of the field.

Study Strengths & Weaknesses

- Large sample of psychology students from mission and geographically diverse programs
- Respondent demographics similar to those in the field
- Respondents were highly interested in research and many had research assistant experience
- Diversity was insufficient to fully explore relationship between ethno-cultural identification and RCR socialization

Implications and Future Directions

- Students with relatively high interest in research want more direct supervision in RCR methods.
- Explicit RCR direction from mentors and specific and clear RCR departmental policies play a critical role in students' sense of RCR preparedness and their confidence in the integrity of the profession

Implications and Future Directions

- Students' observations of departmental faculty and student RCR behaviors contribute to sense of integrity of psychological scientists as a whole
- Future research to explore:
 - Student interest and experience in research as a product or predictor of RCR socialization outcomes
 - Extent to which findings are generalizable to other disciplines

For Copies of Scales

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