

Becoming Scientific: Objectivity, Identity, and Relevance as Experienced by Graduate Students in Psychology

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Key words:
psychology;
graduate training;
identity; objectivity;
science

Abstract: The adoption of a rigorous experimentalism in the discipline of psychology has imposed tight constraints on what can be asked in psychological research and what sorts of answers given. Over the course of psychology's history the interpretive agent has receded into the background to make way for a more concrete observation language and a mechanistic, functionalist description of mind and behavior. In this context of disciplinary loss and gain, how do psychology's fledgling practitioners—its graduate students—understand the significance of their own research efforts? In this paper, we present thematic and discursive analyses of interviews with a sample of psychology graduate students at a large, public, research university in North America. We explore the manner in which the imperatives of "objectivity," as applied to psychological research, serve paradoxically to enhance the validity of what students feel their research permits them to claim while reducing its personal and social significance. We look at how, in this compromise, students struggle to define their identities as scientists so as to allay doubts about the significance of their work. Their comments provide insight into how psychological knowledge is critically evaluated inside and outside the discipline, and how these two perspectives are dialectically related.

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1. Introduction

Students pursue graduate training in psychology for many reasons. Chief among these is the desire to conduct research that is personally and socially meaningful (KEITH-SPIEGEL & WIEDERMAN, 2000). That is, most who enter the field hope to establish a line of investigation that is consistent with their interests and values while contributing to the advancement of society. These twin aims fit well with the legitimating discourse of today's scientific culture, which no longer cleaves to the

grand ideals of science as emancipation and enlightenment (LYOTARD, 1984 [1979]) but continue nonetheless to valorize "basic" research as a noble and socially beneficial activity. Psychology is among the academic disciplines jostling to position itself within this legitimating discourse, hindered though it is by its speculative past and hybridity as both social and natural science. The turn to experimentalism in the early 20th-century helped to establish psychology's scientific credibility by aligning it with other "positive" sciences. The reorientation, however, did not come without cost. The resulting restrictions on methodology and theory impoverished the discipline's ontology, limited its topical scope, and divided its practitioners (DANZIGER, 2000). As a far-reaching response to the demand that psychology reinvent itself as an objective science, the conversion to rigorous experimentalism imposed tight constraints on what could be asked in psychological research and what sorts of answers given. Over time, the interpretive agent who spins a world of cultural meaning from action and experience receded into the background to make way for a more concrete observation language and a mechanistic, functionalist description of mind and behavior. The genealogy of doctrine and practice in scientific psychology is, of course, much more involved than this, rooted as it is in the complex and wide-ranging technological, economic, political, and social changes of the late-19th and early-20th centuries. Even so, it can be said that the shape of psychology today reflects both what it acquired and what it left behind in adopting objectivity as its core ideal. [1]

In this context of disciplinary loss and gain, how do psychology's fledgling practitioners—its graduate students—understand the significance of their own research efforts? In this paper, we present thematic and discursive analyses of interviews with a sample of psychology graduate students at a large, public, research university in North America. We explore the manner in which the imperatives of "objectivity," as they are applied in psychological research, serve paradoxically to enhance the validity of what students feel their research permits them to claim while reducing its personal and social significance. We look at how, in this compromise, students struggle to define and maintain their identities as scientists so as to allay doubts about the significance of their work. At a broader level, their comments provide insight into how psychological knowledge is critically evaluated inside (by scientists) and outside (by the general public), and how these two perspectives are dialectically related. In this regard, newer approaches to psychological phenomena such as social cognitive neuroscience and implicit cognition can be seen in part as attempts to escape the opposing accusations that psychology's findings are, on one hand, banal and commonsense, and, on the other, sensationalized interpretation. [2]

1.1 The demands of objectivity and researcher subjectivity

Graduate training in any science entails not only the transmission of explicit knowledge and skills, but also socialization into a mode of perception that endows practitioners with a clear vision of themselves, their objects of study, and the institutional contexts within which their potential contributions will be recognized and valued (ADLER & ADLER, 2005; CAMPBELL, 2003). Students are trained to

think, judge, and interpret in ways that are consistent with the prevailing episteme of the science. In this disciplinary socialization, heavy emphasis is placed on the importance of *objective* knowledge—empirically grounded truth claims about the world that are believed to be free of bias, preference, desire, and other predisposing considerations. More generally, the ideal of objectivity represents the "view from nowhere," a perspective that is not tied to any particular individual or collective standpoint (NAGEL, 1986). This ideal has been subject to critical reassessment in many of the social sciences, and in some quarters of philosophy (e.g. LONGINO, 1990) over the past half-century. Within psychology, however, objectivity remains largely unexamined as an overarching commitment guiding and constraining the understanding that researchers have of themselves in relation to their work (FOX KELLER, 1996). The inculcation of respect for objectivity and its translation into specific prescriptions and proscriptions that define good research practice is a significant part of graduate training in psychology. How does this emphasis affect the subjectivities of graduate students as they struggle to position themselves within the profession? What relevance does it have for their emerging identities? To begin addressing these questions, some historical awareness of the place of objectivity in science is needed. [3]

Objectivity was by no means always the ultimate criterion by which knowledge was judged. Its elevation to a moral imperative in scientific inquiry developed alongside increasingly individualized and interiorized forms of subjectivity (DASTON & GALISON, 2007). In the late-19th and early-20th centuries, modern science embraced an epistemology that maintained a sharp separation between the knower and the known, the subject and the object, and the corresponding qualities of subjectivity and objectivity. During this time, the emerging discipline of experimental psychology played a key role in constituting this distinction in the form in which it currently exists (GREEN, 2010). Early experimental research on color perception in particular helped to draw attention to the distance between an internal realm of subjective perception, such as what one sees and experiences when presented with the color blue, and an external world of perception-independent objects. As DASTON and GALISON (2007) argue, the fierce defense and cultivation of the principle of objectivity was integral to an emerging episteme in which "objectivity" came to assume ethical and moral overtones bearing on the investigator's responsibilities to science. The image of science as an intrinsically ennobling activity was, in fact, tied to the ethical value of objectivity and its relation to truth. Furthermore, as notions of objectivity evolved, so too did corresponding ideas of what kind of subjectivity, or self, the scientist was expected to cultivate. DASTON and GALISON (2007) claim that these self-ideals were embodied in sets of "epistemic virtues" internalized by scientists, virtues that implied both an ethics and a pragmatics of knowledge production. In this regard, it should be noted that scientists have, across changing epistemic periods, been encouraged to be artistic, willful, ascetic, restrained, or dispassionately reasonable. As science has evolved, so too has the prescribed identity of the scientist. For example, the development of machines that could photograph, "sense," or measure phenomena was coextensive with attempts by scientists to remove themselves and their subjectivity from the investigative process. Also, strict, mechanical adherence to a set of procedures conducted by the scientist

was modeled in part on the regularity and constancy of the machine. Over time, deficiencies in this form of "mechanical objectivity" resulted in an emphasis on the rigorous and disciplined training of scientific perception (STRONG, 2008). DASTON and GALISON's (2007) study suggests that as the scientific understanding of the nature of mind and self changed—and it should be noted that psychology contributed in no small part to these changes—so too did notions of scientific objectivity. Thus, when the mind came to be seen as a collection of faculties, objectivity was held to require an encyclopedic memory. With the self seen as a bastion of willpower, objectivity was reconceived as unwavering resolve. [4]

The dominance of experimental and quantitative methodologies in psychology since the late-19th century reflects the manner in which aspirations to objectivity have been taken up within the discipline. It has resulted in a form of psychology in which all that is deemed "subjective" has been subordinated to that which is tangible, observable, and measurable. The cognitive revolution's embrace of mentalism, for all its advances, did little to reverse this. Cognitive psychology deals chiefly with functional operations, not the content of subjective experience itself (LEAHEY, 1992). More generally, the knowledge produced in psychology today tends to take the form of directly received "facts." The constitutive dependence of these facts on theoretical frameworks is usually underplayed. Because psychological knowledge not only reflects on but also reflexively shapes the human mind as it is understood by the wider public (GIDDENS, 1993), the importance of these frameworks for determining who and what we are cannot be underestimated. To the extent that we uncritically identify with psychology's "findings" and articulate ourselves and others in its terms, our "objective self" (DUMIT, 2003) becomes aligned with psychology's explicit and tacit commitments. [5]

Thus, "being objective," as that imperative is understood in contemporary psychology, guides not only how research participants are understood by psychological scientists, but also how these scientists are inclined to perceive and understand themselves. More than perhaps any other group, graduate students in psychology are expected to identify closely with its account of objectivity in demonstrating their mastery of the discipline. This requirement is clearest in, for example, some forms of psychotherapeutic training, where the self-application of "objective" knowledge is encouraged and sometimes even prescribed (BENNETT-LEVY et al., 2001). [6]

The historically changing nature of objectivity in scientific practice and its consequences for self-positioning invited us to explore through personal interviews how the ideal of objectivity is understood in contemporary psychology, the epistemic virtues that are supported by this understanding, and how these are experienced by graduate students. [7]

2. Participants and Method

Twenty students enrolled in a graduate program in psychology at a large, public, Canadian university participated in the study. The program emphasizes experimental research and the department is internationally recognized for the strength and productivity of its faculty and students. The latter are divided for administrative purposes into four topical areas: brain and behavior, perception and cognitive neuroscience, social and personality psychology, and developmental psychology. For the purposes of this paper, these divisions will be reduced to a broader distinction between researchers working in what is commonly referred to as the "hard" areas of psychology—brain/cognitive neuroscience, cognition, and perception (BCP)—and those working in the "soft" areas—social, personality, and developmental (SPD). Students were recruited by word of mouth and selected on the basis of year of study, administrative area, and gender to form a fairly representative sample of the graduate student population. Women outnumbered men by two, and participants ranged in their year of study from MA-level to 6th-year PhD. [8]

We conducted a face-to-face, semi-structured interview with each participant for approximately one hour. The central question around which the interview was structured was "What does it mean to you to be (training to become) a psychologist/researcher/scientist?" Extending from this question were those concerning students' understanding of the scientific and social significance of their research, the place of their interests and values in their research, the process of graduate training, and their developing status as "scientists." These foci were selected to promote reflection by participants on the personal, social, and scientific significance of their work and on their developing identities. [9]

The digitally recorded interviews were transcribed and analyzed using two qualitative approaches: 1. hermeneutic or thematic analysis (KVALE & BRINKMANN, 2008), and 2. discourse analysis (POTTER & WETHERELL, 1987, 1992). The first approach involved reading the transcripts to gain a general sense of meaning-in-context. This involved juxtaposing and harmonizing interpretations of specific portions of each interview with interpretations of the interview as a whole, and identifying frequently recurring themes across interviews. The second approach involved reading the texts for "interpretive repertoires" and structuring discourses, or particular ways of speaking and making sense of things that are embodied in recognizably typical sets of statements and rhetorical forms. Particular attention was given to comments that described or implied normative accounts of science and psychology, the place of science and psychology in society, and the various subject or identity positions adopted by the speaker. While we distinguish between these two analytic approaches, both involve a recursive and incorporative hermeneutic aimed at producing an integrated account of students' experience and understanding of the issues of concern. Accordingly, we will focus less on identifying discrete discourses as such an approach tends to obscure the complex interplay of multiple discourses in the interview. [10]

All excerpts used for illustration below are identified by the broad "side" of the discipline in which the participant was working (BCP or SPD), his or her year of study, and the sequential number of the excerpt. Thus, BCP3-15 would be excerpt #15, from a third-year student working on the brain/cognitive neuroscience/cognition/perception side of the program. The interviewer's phatic responses are indicated in square brackets [*like this*]. Participants' expressive actions such as smiling, sighing, and groaning are indicated in (*round brackets*). Vocal emphasis on specific words or phrases is indicated in *italics*, and significant pauses are indicated by ellipses (...). All identifying information has been either changed or removed. [11]

3. Analysis

We introduce our analysis by briefly outlining the major themes and narratives that emerged from our analysis. On the whole, it was clear that students were heavily invested in and committed to their academic and professional identities, but not without some ambivalence. Although this is not surprising for graduate students in any academic program, given the uncertainties of where their education will take them in life, many of the concerns voiced by participants pertained to critical issues within the discipline of psychology itself. For example, tensions concerning the appropriate epistemology for the discipline were evident, reflected in discussion of whether psychology should be considered a natural science, an interpretive science, or both. This discussion was often accompanied by doubts about professional identity, location, and status within the wider scientific community. [12]

The issue of psychology's disciplinary identity often served as the pivot upon which students defined and articulated their conflicts. On one hand, the "objectivity" of the natural sciences and its associated epistemic virtues were frequently claimed as valued aspects of participants' identities as empirical researchers. This feature gave their empirical projects legitimacy, respectability, and the potential to effect real social and technological change. Objectively "knowing" the world—including its people and their minds—as a mechanistic system open to the light of universal scientific reason was seen as both a virtue and a responsibility by most participants. The interpretive restriction imposed by objectivity, however, was also regarded as something of a burden. Students were painfully aware that the prescriptive ideals of their science at times left them feeling alienated from "ordinary people" and distanced from the kinds of "messy," "real-world" phenomena that they and the public care deeply about. Some mentioned with irony that the mundane phenomena that had inspired them to enter the field in the first place had shifted beyond their investigative reach as researchers. They interpreted this loss as resulting from the redefinition, decomposition, operationalization, and typification of representing complex phenomena in experimental research. These methodological demands had, they felt, distanced their research from the truth of "real life." In this context, participants described changes in their own thinking, perception and behavior, contrasting it with that of friends, family, and the general public. Implicit in this line of discourse was the familiar distinction between "experts" and "lay people." [13]

Aside from doubts about their own research, participants remained committed on the whole to the importance and value of their chosen discipline. Some invoked the relevance of psychology to perennial questions about human nature. Others emphasized the need for psychological knowledge to complement technological approaches to social, medical, and economic problems. Referring to this intellectual and practical significance, some participants expressed concern and resentment about psychology's "unscientific" reputation in the wider academic community. At the same time, however, some claimed that there was some truth to the criticism, in that the scientific training of psychologists was insufficiently rigorous. [14]

In what follows, we elaborate on and illustrate these various ideas through the use of interview excerpts. We present in turn six themes that define the main lines of understanding and concern that participants expressed about their science and their identity and status as psychological "scientists." [15]

3.1 Psychology is a science

Nearly all participants suggested or directly stated that they were "doing science." In many instances, they spoke of a general attraction to science as one of the primary reasons they had chosen to study psychology. Furthermore, participants described scientific research as quite different from many other kinds of work, characterizing it as requiring a special kind of commitment. Consider the following comments:

BCP2-01: "I guess primarily it means committing my life and my work to asking questions and trying to find pieces that can at least be assembled towards creating answers. And I think that does go above and beyond the type of commitment that most people in a nine to five job would experience."

BCP2-02: "Um, I'm really excited about it. I love science, I always have. So, it's um ... maybe like a lifelong goal for me."

BCP1-03: "The general question that I'm asking is, how is knowledge stored or represented. So it's a problem that's old in cognitive science, but it's not solved yet, so I think it's still definitely a useful thing to be working on." [16]

In these excerpts, psychological science is seen as an intrinsically worthwhile vocation, deserving of life-long devotion. The value of scientific knowledge is assumed without justification. Words and phrases such as "excited," "love," "commitment," and "lifelong goal" suggest both passionate identification and dedication. This *parti pris* attitude was more common for BCP students, but also evident for those in SPD. [17]

Psychology was seen as making a distinctive contribution to our scientific understanding of the natural world, as expressed by the following participant:

SPD3-04: "Psychology offers an understanding that's crucial. So I mean engineers can offer us the mechanics and physicists can do so at an abstract level. Biologists

can help us make better use of our resources—everybody has something to contribute, but when it comes down to it the making of those decisions—the rationality that goes into them and into balancing the needs of all human beings in some way—a lot of that comes down to psychology. When you talk about humanity, I mean this is what psychology has to offer." [18]

Here, psychology is described as occupying a unique and important place in the family of sciences, each of which contributes in its own way to "creating answers." Through such talk, students laid claim to membership in a larger community of scientists, all of whom are dedicated in their work to the shared goal of greater understanding. [19]

This lofty characterization of psychology was not unconditional. It was clear that psychology's status and value as a science depended on its allegiance to the demands of objectivity and truth. In this regard, some participants described switching to psychology from the humanities, having grown tired of what they had come to see as unsubstantiated rhetoric or mere speculation. Where the study of literature offered only endless dispute, the empirical methods of psychology were capable of generating incontrovertible *facts*.

SPD3-05: "What I liked about the psychology class was that it had more science, you know, research, um like things you could learn, you know. I'd call them facts, but of course, not that that means that they're set in stone, but they are at least, they are empirically derived and relatively reliable and something where you can say '*Ah I know something now.*'. It's a firm body of knowledge, as opposed to sort of um ... one way of spinning things, I would say. And I mean I appreciated the philosophy class I took and the religious class I took and even the literature class I took. But, it didn't seem *substantive enough*. When I use the term '*substantive.*' I really think in terms of *something solid, something reliable*, not as *subjective interpretation* [emphasis ours]." [20]

The superiority of objective knowledge (for unstated purposes) is taken for granted by this participant. Although he admits certain qualifications to scientific facts, they are preferred nonetheless because they allow for "substantive" claims and reliable, objective knowledge. These facts raise the scientist out of the watery realm of philosophical or religious debate and onto the solid ground of what is "known" and not merely arguable. Implicit here is the substantive conception of science as a cumulative body of received facts, empirically and objectively derived. As suggested in the italicized phrases, there are subjective benefits for the researcher who can lay claim to "knowing" something, however specific and limited. One can now speak on a surer footing and be heeded by others accordingly. As is evident in the following section, the source of this confidence is the cultivation of a certain mode of perception and understanding that students associate with "being objective," a defining aspect of becoming a scientist. [21]

3.2 The rewards and costs of objectivity

The prestige and authority of psychology as a species of scientific knowledge depends on its commitment to the perspectives, methods, and, crucially, epistemic virtues associated with objectivity. Accordingly, when speaking about the general aims of science, participants tended to identify with the virtues of balance, critical thought, and objective perception. An integral part of this identification was their distinct sense of being different and somehow standing apart from "ordinary people." Here, the graduate school experience was likened to an initiation, a process of being inducted into a privileged epistemic community with an informed, expert way of perceiving and thinking about the world. This involved in part gaining access to an arcane and exclusive body of knowledge and earning the right to contribute to it. Many students experienced the induction into disciplinary "objectivity" as transformative, altering the way they experienced themselves and others both at and away from work. For many students, their new cognitive and analytical orientation served as a source of pride, but was accompanied in several cases by a concern that this orientation challenged or threatened a more natural mode of experience that they happened to value. Here are two examples that raise this concern:

BCP3-06: "I think I'm becoming a very analytical person. Um ... it's actually a little bit—not disturbing but—something that I try to control [*uh-huh*]. I almost just can't listen to a news report without getting into a debate or a discussion or some sort of disagreement, and it becomes a little bit difficult to just experience life, for the sake of experience alone. I don't think there is anything really wrong with that, it's just something that I find sort of slipping away. It's almost like operationalizing things or measuring things or pondering over things is becoming automatic, and that's fine, that's part of who I am, but I don't necessarily want it to pervade every aspect of my life. You know, I still want to be able to have these sorts of sensory experiences and just experience them."

SPD2-07: "For me actually I love mindlessness, literally just being able to turn it off, and just zone out. You know, without feeling like I should be focusing on something for whatever reasons, or that I shouldn't be focusing on something for whatever reasons, just literally turning it all off. And even in terms of, you know, 'mindfulness' and even calling it 'mindfulness' instead of just saying ok well ... 'being on a bus, taking a ride on a bus,' and just totally being open to the experience; not analyzing the person sitting opposite me, trying to figure out you know what they're thinking, why are they behaving in that way, just ... taking a ride on a bus." [22]

In the second excerpt in particular, a clear differentiation is established between the everyday, meaningful world of experience—valuable in its own right—and the expert, analytical world of scientific thinking and psychological concepts. By emphasizing the importance of being able to "turn off" the latter, this participant implies that the inability to do so would diminish the experiential quality of everyday life. [23]

Not only did students attribute a personal cost to their newfound status, but the cultivation or attribution of the expert gaze also appeared to have an undesirable *social* side. Some participants described how their (non-scientist) friends and family viewed them with a sense of awe, presumably on account of their epistemic authority in psychological matters, but also sometimes expressed annoyance at their thoroughly "scientific" way of seeing things. The resulting mix of pride and unease is evident in the following excerpts:

SPD2-08: "It's something that I really have to learn to turn off, you know. I've got a friend of mine who says that I should just walk around in a white lab coat always (*both laugh*). In relationships with people outside of psychology, I've really got to turn it off and turn it down, you know, as opposed to well ... when they ask me something, I think about that, and they're like "no don't answer" (*laughs*) ... because they know that they're gonna get (*laughs*) ... a mini thesis."

BCP3-09: "When other people hear you're in psychology, they think you're a mind-reader, they think you're this, they think you're that. They think you're analyzing them immediately."

SPD1-10: "One of the things that happens when you're part of the graduate program as well is that you sort of have certain kinds of conversations, you start talking to certain people. And I like those kinds of conversations and those people but I think it makes, um ... it might be sort of a bit elitist, taking me in an elitist direction." [24]

While these comments appear to express minor concerns about the social consequences of the scientific persona, they relate to a more central tension between expert and lay thinking that underlies many of the themes brought to light in the interviews. The ambivalence in this regard involves the pride of being able to stand apart from others and understand ("analyze") them from a position of scientific authority coupled with the recognition that this stance offers little in the way of intimacy and communion with others and may in fact prevent it. [25]

3.3 Physics envy

Another area of ambivalence for students concerned the identity of the discipline itself, an identity complicated by psychology's status as a young science and the lack of "peaceful coexistence" between its natural and social/interpretive approaches (TAYLOR, 1985).

BCP1-11: "I don't completely rise above, uh ... you know the quote-unquote 'physics envy' that, you know, every social scientist supposedly has."

BCP2-12: I consider myself to be more in a science. Um, which, telling that to a geneticist or physicist, they'd be like 'pssh ... you're not a scientist!' (*laughs*)." [26]

On one hand, participants identified with the "nobility" of science as a privileged heuristic method, consistent with the strong emphasis on experimentation in North American psychology departments (DANZIGER, 2000). However, they also revealed a troubled awareness that psychology's scientific status is somewhat controversial in the wider scientific community. Underlying this awareness was

the perception of a status hierarchy within science itself, with subordinate disciplines vying for greater respect from more established and prestigious disciplines. In contrast to claims that the value of psychology's contributions were guaranteed by its allegiance to the epistemic commitments common to all the "objective" sciences, this discourse implies a dynamic political reality in which interdisciplinary competition, power relations, and status distinctions are important. The distinction between "hard" and "soft" science was often mentioned in this context, with the greater rigor of the former associated variously with quantification, unbiased reasoning, technical virtuosity, faithful rendering of natural phenomena, and strictly physicalist explanation. [27]

A number of participants lamented what they felt to be the popular perception of psychology's dubious scientific status and inferiority relative to the "more established" sciences.

BCP1-13: "There definitely is some truth to one of the stigmas that we get, in that we're fluffy ... You should take linear algebra, calculus, a couple of stats courses through the stats department. Why not put your money where your mouth is, so to speak, and if you call yourself a psychological scientist, then get the same basic training that other scientists get."

Interviewer: "Um ... what specifically about psychology is unsatisfying to you as opposed to going into med school?"

BCP3-14: "Right um ... it's sort of like a meme, you know one of those ideas that just gets carried around everywhere. I imagine it has historical roots somewhere, but it really annoys me the fact that um, at least people in the more biological aspects of psychology, have this sort of chip on their shoulder, that they're like...um...medicine's annoying little cousin. And they always feel that they need to fluff their feathers and state their importance and um ... I'm sure not a lot of researchers feel that way, but certainly it tends to show up a lot when meeting at the bar with other graduate students and things like that." [28]

Perhaps to protect against this discomfiting "meme," many were concerned that they be properly identified as *scientists* rather than *psychologists*. Accordingly, they emphasized their biological orientation to support this broader identity and distinguish it from the "soft" side of psychology.

Interviewer: "What does it mean for you uh to be a psychologist or psychological researcher?"

BCP4-15: "(Sigh) It's interesting that you phrase it that way because I see myself more as becoming a scientist than a psychological researcher [ok], and it's partly to do with my background because I started working more in biology and in neuroscience than in psychology exclusively [uh-hmm] um, but within that, I guess—preface (laughs)—I would like to also specify that as a neuroscientist and as a scientist I feel a strong commitment towards behavioral research." [29]

In some instances, the "less scientific" study of social or personal phenomena was distinguished from the "more scientific" study of biological processes to cast

doubt on emerging subfields that sit on the fault line between the two (see VUL, HARRIS, WINKIELMAN, & PASHLER, 2009). For example:

BCP3-16: "You get that carrying over now, into social neuroscience, this new discipline, right, with that 'voodoo correlation' stuff. They're treading the water in this sort of thing, and the same sort of ideas are arising that, 'oh what you're doing isn't right.' Um ... I think that the endeavor to study the person and how people relate to one another and to the environment is important. But to be honest there's a limit to which I'm comfortable studying such phenomena and still calling it science [*uh-huh*], and it might come from my background in more um, biological type things, but once you get into more social processes, and relationships between people and establishing variables of interest and how they impact other things, or interpersonal relations, I just, *I'm not comfortable* ... calling it a science, and I've heard arguments and I understand the reasoning, but there's just something inside me that doesn't ... *it's not satisfying*, and that's where, that's just one of the things that sort of bug me about the discipline (emphasis ours)." [30]

The "new discipline" of "social neuroscience" is disparaged for its claims to scientific status, which in this description, transgresses the boundary that is seen to exist between social science and an implied "real" science. Interestingly, this account parallels the claim that most psychologists are not well trained enough to do "good" science (see above excerpt from BCP1-13). In this case, however, the participant's objection to the transgression is *felt* rather than reasoned. Ironically, a pronouncement on the lack of "objectivity" in the study of interpersonal relations is made on an emotional basis. Note also the subjective nature of the reward—a sense of satisfaction—that comes with claiming greater scientificity. An academic background in biology is invoked, as it was above by BCP4-15, to support this identity claim. It is notable that this thematic concern was not expressed by any participants in the SPD area. [31]

3.4 Scientific distance

As described above, participants on the whole valorized and identified with the objectivity demanded by psychological science. At the same time, some felt that their analytic training could cost them something in their relations with non-scientists and in their appreciation of everyday life. Specifically, they felt that the scientific gaze distanced and detached them from "real life" and "ordinary people." This sense of distance was accompanied by doubts about the meaningfulness of their research and its relevance to "society." While induction into the scientific community had provided these participants with new privilege and status, the specificity, constraints, and limits of their research programs raised new concerns about personal and social significance. Ironically, the scientific rigor of psychology—the very quality that promised knowledge as truth—was interpreted by some as a cause of their disappointment with their research.

SPD1-17: "A lot of the time with psychology, one of the drawbacks is that you find some really interesting thing and you've proved that if you manipulate this it affects

this, but it's not real life. So yeah, that proves that but when is that going to actually happen in real life?"

SPD3-18: "I guess because when you actually try to formalize it into your independent and dependent variables, it all becomes way too ... like something so complex you try to make so, so simplified, and it's never satisfying because it never really gets at what you want to get at. I just found the whole process frustrating and although the question still interests me, it's like what I studied became something that wasn't the question anymore, just became something else, all on its own. It's hard to explain, um ... but it just takes on (*laughs*) its own form and you don't even recognize it anymore because it's not where you started and you've forgotten where you, what you wanted to look at." [32]

In these excerpts, participants point to a distance that separates their constructs and findings from "real life." This separation is seen as an unavoidable consequence of the reductive abstraction, formalization, and operationalization required by experimental science. A few students attributed their deep sense of disillusionment with the discipline to these practical requirements. For them, there was both a feeling of personal disconnection from the research and the suspicion that others – the "general/lay public," "society," or friends and family – did not understand or see much value in what they were doing. The communicability of their research to non-experts and the latter's recognition of its importance was central to these students' estimates of themselves and their work.

SPD4-19: "It's something that is a concern to me. I think that I start to feel like things that I'm doing or working on are less important when I feel that I can't explain them to the general public or I feel that the general public wouldn't care. So, I try to keep that in what I'm working on. And I get discouraged if I feel like I can't." [33]

Together with participants' misgivings about the effects of scientific training on their own subjectivities, these concerns about the value and relevance of their research efforts hint at an important tension in the relation between psychological science and the society it purports to serve. [34]

3.5 Lay understanding of scientific psychology

In an effort to explain the lay public's misunderstanding and under-appreciation of psychology, many participants pointed to what they saw as fundamental differences between scientists and non-scientists. Consider the following comments, given in response to a question about the relationship between psychology and "society."

SPD4-20: "I'm not sure that most people think in a scientific way. Not to be disparaging, but, I think that we have more intuitive ways of thinking about things, and I think that sometimes ideas can be conveyed more easily in these more intuitive ways."

SPD2-21: "I guess from my perspective I'm seeing it as a scientist, not that I'm a scientist yet, but with society I think a huge hurdle to get over is making your research

important without overstating what's found. I think scientists are very tempered people, that they're pretty balanced people. I think scientists understand the constraints and I think the problem—and what happens when trying to get your research out to society—is you're dealing with journalists and people who sometimes want to sensationalize what you found."

BCP3-22: "Humans like to categorize, and I think if society as a whole needs to know what you do, they don't have enough room in their already busy minds to have all these subfields. I think it's just a completely natural human thing to do, to categorize at the level of your need, and I think for a lot of people, [the label] 'psychology' is all they need. So whether that's right or wrong, I think maybe is not even the question, I think it's just what's naturally gonna keep happening." [35]

These examples refer to limits and distortions in how the "general public" perceives and understands psychology. The focus is on the cognitive and motivational tendencies of the non-scientist. The layperson is described as more intuitive (as opposed to rational), more prone to sensationalize (as opposed to being tempered/balanced), and as possessing an overburdened mind that is selective and simplifying. These qualities are the converse of the epistemic virtues possessed by the objective scientist. On the whole, "scientific thought" is not seen as a property of laypeople. Accordingly, one should not be surprised if the general public misjudges, criticizes, or dismisses what it fails to understand. [36]

3.6 Folk psychology

Although many participants emphasized the qualities of mind that distinguish scientists from the rest of society, others drew legitimacy for psychology from its prominence in popular discourse and the everyday thinking of the layperson. This was particularly true for SPD researchers. Consider the following examples:

SPD5-23: "I mean there's a tendency in psychology, as there is in probably many academic practices, but I think very much so in psychology to sequester itself from the rest of the world, using this kind of specialized jargon above all to describe *things that people talk about anyway* [emphasis ours]."

SPD3-24: "Psychology to me is something we practice anyway. We practice it in the practice of being human—so in the practice of making ourselves more than animals that run in bands and sustain ourselves and practice basic exchange. I mean, we try to go beyond that level."

BCP3-25: "Even if there were no sciences and for some reason started living in the Stone Age again, there would still be psychology. It's just a part of us, and people always do psychology. I mean maybe they would not have systematic ways of doing it and maybe their methods would be different but they will always be doing psychology, and that is the oldest profession (*laughs*)."

SPD4-26: "I think that psychology is important for our society. I mean, I think *everyone is in some sense a lay psychologist*. So I definitely think that knowing about people and understanding why people do certain things is something that is important to everyone and everyone is interested in [emphasis ours]." [37]

In contrast to previous comments that distanced the scientist from the public, here the layperson is accorded a sort of natural expertise as "folk psychologist." It is claimed that, in a sense, everyone is a psychologist. By emphasizing the ubiquity and perennial nature of psychological questions and concerns, these participants were able to justify and claim relevance for their chosen discipline and, by extension, their own research efforts. The notion that all people are intimately concerned with understanding their own minds and those of others suggests that ordinary people would be likely to find the students' research relevant and interesting. It also suggests a "natural" place for the discipline of psychology. For those who spoke in this way, there was a sense of validation and camaraderie: psychologists were engaged with laypeople in the shared project of increasing humanity's self-knowledge. [38]

However, according to the layperson a measure of expertise poses its own difficulties. On a quite different note, this image of the layperson-as-folk-psychologist appeared in accounts that criticized psychological research as banal or commonsensical:

BCP1-27: "The [name of news website] had an article on something that someone did from XYZ University. And, if you read all the [reader] comments below the target article, there were a lot of people just railing on the 'oh here's more of our tax dollars being spent to answer things we already knew,' you know, 'thanks psychology for telling us what we already knew' etcetera. So you really can find direct evidence for this public perception. There is the strong perception that we're kind of funded to go around answering things that people already know about themselves. You know, everybody is a psychologist in that we all have a pretty decent understanding of human beings and human minds, because that's what we talk about half the time in our lives." [39]

Such contradictory characterizations of the lay public—and their deployment in different judgments of psychology—expose critical, abiding tensions within the discipline itself. Psychology's claims to objective, specialized knowledge about human experience are continually challenged by competing imperatives to appear as both distanced from, and close to, such everyday experience. [40]

4. Conclusion

Through our analysis, we have attempted to show how the demands of "objectivity," as understood and grappled with by graduate students in psychology, bear a variety of consequences for the understanding that these students have of themselves and their science. The practices through which objectivity is realized provide psychology with its scientific identity. They also inculcate a disciplined form of perception and subjectivity, towards which many of the students we interviewed appeared to hold some ambivalence. A central concern with objectivity was also prominent in critical discussion of psychology as "fluffy," or insufficiently rigorous and "scientific," and of its crisis of identity at the intersection of the natural and the human sciences. This concern was most often expressed by those working in the biologically-oriented areas of the field—such

as cognitive behavioral neuroscience and neurobiological psychology. Objectivity in its various aspects was equally crucial to how students constructed the qualitative distinction between scientific and lay thinking. Specifically, an epistemic divide was perceived between the reasoned, accurate understanding of the scientist and the intuitive, biased, and emotional tendencies of the layperson. This helped explain the distance that students felt they stood from the "real life" psychological phenomena they had initially set out to investigate, and from the public for whom they felt their research should be relevant and useful. Finally, in an effort to gain or maintain a sense of personal value as psychological researchers, students deployed contrasting characterizations of the layperson as, on one hand, unable to properly understand and appreciate psychological science and, on the other, a knowing folk psychologist. For some, the latter strategy raised concerns about the banality of psychological research. [41]

Considerable attention has been given to how educational practices and pedagogical aspects of graduate psychology programs might be improved. Constructive discussions of effective mentoring and peer relationships, equity policies, professional development, and other factors that predict satisfaction and success have contributed significantly to our understanding of the needs, concerns, and aspirations that shape the student experience (AUSTIN, 2002; CAHIR & MORRIS, 1991; KUNCEL, HEZLETT & ONES, 2001; SCHLOSSER & GELSO, 2001; STERNBERG & WILLIAMS, 1997; TENENBAUM, CROSBY & GLINER, 2001). Less common, however, have been attempts to understand the institutional regime of the discipline itself through the critical window of student uncertainties and concerns (ALCALDE & WALSH-BOWERS, 1996). This is unfortunate, as graduate students' liminality as scientist-academics—that is, their position of standing both inside and outside the discipline—makes them ideal candidates for revealing the frictions that mark the transition from lay understanding and identity to a scientific orientation and persona (REYBOLD, 2003). The present study represents an attempt to explore this under-examined significance. The private troubles and tensions articulated by those we interviewed spoke to the fault lines and compromises of our field, and highlighted the at times uneasy marriage of personal interests and an epistemic rigor built around objectivity and experimentalism. The gratifications and disappointments of "becoming a psychological scientist" could only be understood within this context. [42]

Many participants described their misgivings and concerns with tentativeness, awkwardness, and confessional embarrassment. This diffidence implies that insufficient attention is being given to discussing the epistemological and moral tensions of contemporary psychology as they relate to the transitional tensions of professional research training. DANZIGER's (2000) research suggests that this shortcoming is characteristic of most experimentally oriented graduate programs in psychology (see also RENNIE, WATSON & MONTEIRO, 2000). Such institutional avoidance may stem from reluctance to invite conflict and debate over fundamental questions in the logic of psychological science. Many of those who supervise graduate students may see engagement with these deeper questions as an unnecessary distraction that hinders research productivity. The imperative of competing successfully in an increasingly harsh academic job

market offers some justification here. However, as has been suggested by some of our findings, the cost of pragmatically ignoring these issues early on in graduate training may well turn out to be suppressed confusion, ambivalence, and conflict that carry forward into the early career as a heavy psychological burden. Moreover, the failure of graduate educators to help their students explore key epistemological issues within the broader disciplinary context of psychological science ignores the considerable professional and personal benefits that come from such exploration (ADLER & MATTHEWS, 2009; LOVING, 1997). [43]

If graduate training in psychology is to aspire to more than the production of research "technicians," it needs to devote a share of its institutional resources to fostering a healthy and informed reflexivity among its initiates. This requires a serious, even prescribed, engagement with relevant philosophical concerns early on in graduate training and formal guidance (coursework and individual mentoring) in relating private doubts about one's research to those shared concerns. Alignment with the normative practices of any academic discipline should involve critical questioning of both one's own values and commitments and those that define the discipline. Balance in this regard seems too important to be left to the private thought of individuals. Fulfilling this prescription demands that psychologists have the courage to openly discuss with their students the long-standing inconsistencies, contradictions, and divisions that continue to complicate our discipline—however inconvenient and practically "inefficient" that discussion proves to be. After all, one can question whether an unexamined science is really worth doing. [44]

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Citation

Yen, Jeffery & Tafarodi, Romin W. (2011). Becoming Scientific: Objectivity, Identity, and Relevance as Experienced by Graduate Students in Psychology [44 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 12(2), Art. 26, <http://nbn-resolving.de/urn:nbn:de:0114-fqs1102260>.