# The “why” and “what for” of research in Social Sciences: early career researchers' conceptions

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# Abstract

**Introduction.** In the Spanish context, very little is known about what research means for researchers in training. The goal of this study is twofold: to analyze the research conceptions held by doctoral students in the Social Sciences, and to evaluate how those conceptions relate to several relevant variables in the process of researcher training.

**Method.** A total of 1082 students from 56 Spanish universities participated in this study. They answered a 33-item Likert-type questionnaire with seven possible responses according to their level of agreement with statements about their conceptions, commitment, interest in research, relationship with the scientific community, and stress. An observational, cross-sectional design was adopted. Descriptive analyses of central tendency and dispersion, ANOVA, and Pearson’s *r* (SPSS, v.23) were performed.

**Results.** Doctoral students conceptualize research mainly as a process-oriented activity useful for contributing to the community and for personal development; additionally, albeit less often, they conceptualize it as a product, that is, papers published for others to read.

**Discussion and conclusions.** These conceptions are placed into the categories of research oriented toward individual or community development, and research oriented toward the process or product. There is some consensus on these categories from prior research in the international context. The results of this study have implications for the design of doctoral training proposals that take into account understanding what research means, along with students’ job expectations.


**Keywords:** conceptions of research, researcher identity, student research, doctoral degrees, Ph.D. degrees, social science research.

# Resumen

**Introducción.** El conocimiento sobre lo que significa investigar para los investigadores en formación en el contexto español es prácticamente inexistente. La finalidad de este estudio es analizar las concepciones sobre la investigación de los estudiantes de doctorado en ciencias sociales y la relación de estas concepciones con algunas variables relevantes en el proceso de formación investigadora.

**Método.** Participaron 1082 estudiantes de 56 universidades españolas que respondieron a un cuestionario de 33 ítems tipo Likert con siete opciones de respuesta según grado de acuerdo, sobre concepciones, compromiso e intereses por la investigación; relación con la comunidad científica y estrés. Se adoptó un diseño observacional de tipo transversal. Se realizaron análisis descriptivos de tendencia central y dispersión, ANOVA y r de Pearson (SPSS, v.23).

**Resultados.** Los doctorandos entienden la investigación prioritariamente como un proceso orientado tanto a ofrecer una contribución a la comunidad como al desarrollo personal, y con menor frecuencia, como un producto que se plasma en la publicación de artículos.

**Discusión y conclusiones.** Este estudio permite situar las concepciones en las categorías orientación de la investigación hacia el desarrollo individual o de la comunidad y hacia el proceso o producto, dimensiones coherentes con la investigación previa en el ámbito internacional. Los resultados tienen implicaciones para el diseño de propuestas formativas en el doctorado que consideren tanto la comprensión de lo que significa investigar como las expectativas laborales de los estudiantes.

**Palabras Clave:** concepciones sobre investigación, identidad del investigador, investigadores en formación, doctorado, investigación en ciencias sociales.

## Introduction

The complex, changing and highly competitive context of Higher Education has created interest in the study of educational processes that take place at universities. This interest focuses especially on researcher training within doctoral programs, and in recent years, on the particular need to better understand conceptions about research. While there are numerous studies on what it means to teach and to be a university professor, there are few studies on what it means to do research and to be a researcher (Akerlind, 2008).

In the Spanish context, most studies have dealt with assessing the level of scientific productivity of doctoral graduates, or how their productivity relates to other variables such as legislation, the discipline of study, and financing (Buela-Casal, Bermudez, Sierra, Ramiro & Castro, 2011; Musi-Lechuga, Olivas-Avila & Castro, 2011). Despite the importance and utility of these initiatives, there are practically no studies that address research from the perspective of its protagonists, the challenges and obstacles that they experience, and their training needs (Castelló, Iñesta & Corcelles, 2013). In the USA, Australia and Canada, however, studies that evaluate the experience of early-career researchers (ECR) during and after their doctoral program are common (Mcalpine, Jazvac-Martek & Hopwood, 2009; McAlpine & McKinnon, 2012; McAlpine, *Amundsen & Turner*, 2013; 2014). There are also studies on general and specific aspects of the doctorate experience in the European context. Most notably, there are studies that address the conceptions that students develop within specific contexts (Martinsuo & Turkulainen, 2011; Mainhard, van der Rijst, van Tartwijk & Wubbels, 2009) and studies that analyze these conceptions from cross-cultural perspectives (Donahue, 2008; Chitez & Kruse, 2012).

Special mention should be given to studies by Pyhältö and Lonka, where relationships are established between different key aspects of doctoral studies, such as wellbeing, commitment, insertion in the community of reference, and writing (Pyhältö, Stubb & Lonka, 2009; Stubb, Pyhältö & Lonka, 2012). These studies show how conceptions about research constitute predictive variables with regard to completion of one’s dissertation, and one’s professional development as a researcher -- results that are confirmed by Spanish studies (Castelló, Iñesta & Monereo, 2009; Castelló, González & Iñesta, 2010) that stress the importance of knowing and characterizing the conceptions of early-career researchers. Scholars are accus-

tomed to proposing their own research and justifying their results, but are not accustomed to explaining what it actually means to do research (Stubb, Phylalto & Lonka, 2014).

Interest in studying *conceptions about research* is fairly recent and most of the literature was published in the past decade. Akerlind (2008) identified just ten studies following Brew's pioneering work (2001); moreover, most of the studies focused on the conceptions of senior researchers (Meyer, Shanahan & Laugksch, 2005, 2007). Only in recent years have certain studies begun to consider early-career researchers (Pitcher, 2010; 2011; Stubb et al., 2014); their results concur in pointing to certain useful dimensions and categories for explaning conceptions about research. Namely, these conceptions are classfied along two dimensions: whether the researcher is oriented toward the individual and/or the community, or alternatively, oriented toward the process or product (Stubb et al., 2014). Some agreement has been reached on these dimensions for establishing the nature and scope of categories of research perceptions (Akerlind, 2008; Pitcher & Akerlind, 2009, Pitcher, 2009; Stubb et al., 2014). Akerlind (2008) distinguishes between research intentions, questions, process and results. Similarly, but focusing exclusively on doctoral students' conceptions, Stubb et al. (2014) specifically analyze the reasons or goals for doing research and the ways that these goals are met.

As for methodology, practically all the research to date has been qualitative in nature, based on interviews or questionnaires with open-ended questions. Some studies have used metaphors as a tool to tap into conceptions (Visser-Wijnveen, Van Driel, Van der Rijst, Verloop & Visser, 2009; Pitcher, 2011). Meyer et al. (2005, 2007) used a different methological approach to develop the *Students' Conceptions of Research Inventory* (SCoRI), so that dimensions of students' conceptions about research might be empirically and psychometrically validated. Items on the SCoRI come from a prior qualitative study where several preliminary categories were established. The final factors are conceptually consistent with prior research results and can be explained in terms of the dimensions mentioned above: research oriented to individual or community development, and research perceived as fundamentally oriented to the process or product.

This questionnaire has several limitations that impede its use. First, the final version is excessively long (69 items), which may be a hindrance to conscientious completion of all

items until the end. Second, not all the factors and qualitative categories obtained the same empirical support. Even though all the studies reviewed emphasize the need to further explore conceptions about research in order to help students chart an adequate course through their doctoral program, our present knowledge of the motives that lead students to take on the doctoral process and persevere in the face of its challenges is still fragmentary and meager (Vekkalia, Pyhältö, & Lonka, 2013; Villardón-Gallego & Yániz, 2013).

*Objectives*

The aim of the present study is to help increase this knowledge, and toward this end, the following objectives have been set: 1) to understand the conceptions held by Spanish doctoral students in the Social Sciences about what it means to do research; 2) to analyze any existing relationship between these conceptions and different academic and sociodemographic variables; and 3) to study how these different conceptions may be linked to commitment and type of interest in research, integration in the scientific community, and stress that is experienced during the process.

## Method

*Participants*

The sample was composed of 1082 doctoral students in the Social Sciences: Psychology (34.7%), Education (19.3%), Economics (18.9%), Law (12.3%), Political and Information Sciences (14.8%); from 56 Spanish universities (74% of the population); 59.7% men and 40.3% women. The mean age of participants was 36.85 (SD = 9.2); 21.1% were under 30 years of age, 32.3% between 30 and 39, 16.1% between 40 and 49, and 9.3% were over age 50.

*Instruments*

We used the questionnaire *Formación de la Identidad del Investigador Novel en CCSS* [Development of researcher identity in the early-career Social Sciences researcher]; an online format was developed with the Lime-Survey application. For this study, the following scales were analyzed: *conceptions about research, commitment* and *interest* in research; *relationship to the scientific community* and *stress*). All scales were Likert type scales with seven response options, ranging from 1 “disagree totally” to 7 “agree completely”.

The *conceptions about research* scale was designed based on the SCoRI (Meyer et al. 2005, 2007), and includes items confirmed by later research studies (Stubbs et al. 2014), thus ensuring construct validity. Eight items were selected based on the following criteria: a) reliability (in terms of factor weight) and b) representativeness of the different categories (see Table 1). Results confirm scale reliability with a Cronbach alpha of .751.

Table 1. *Conceptions about what it means to do research on the continuum of orientation toward the individual or community and orientation toward the process or product*

| | Process Oriented | Product Oriented |
|---|---|---|
| Oriented to Individual | 5. Doing research is a matter of personal development | 8. Doing research has to do with being influential or recognized in your area of study |
| | 2. Doing research is something of a struggle, where you must decide on a topic that is compelling enough for you to persevere in your study | 1. Doing research has to do with the act of publishing articles and of others reading them |
| Community Oriented | 3. Doing research has to do with comparison most of all; for example, new results are compared to previous ones | 6. Doing research has to do with finishing what you started |
| | 7. Doing research is not only important for oneself but also because the results may benefit others | 4. Doing research has to do with combining different pieces of information, synthesizing or organizing them in a coherent way so that they make sense |

The remaining scales (see Table 2) were adapted from previously validated instruments (Pyhältö, Vekkaila & Keskinen, 2015; Pyhältö, Peltonen, Rautio, Haverinen, Laatikainen & Vekkaila, 2016; Castelló, McAlpine, & Pyhältö, 2017; Castelló, Pardo, Sala-Bubaré, & Suñe, 2017).


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Table 2. *Description and items from the scales on Commitment, Interest, Stress and Relationship to the scientific community*

| Scales | Description | Items |
|---|---|---|
| *Commitment* (5 items adapted from Pyhältö, 2016) | Degree of commitment and dedication to research | When I am doing research, I feel full of energy |
| | | I feel I have the drive to develop my research project |
| | | I am enthusiastic about my research work |
| | | My own research inspires me |
| | | I feel happy when I start to work on my research |
| *Interest* (6 items adapted from Pyhältö, 2016) | Degree of interest in one's own research | I feel inspired by my research topic |
| | | I enjoy intellectual challenges |
| | | I want to work in the research community |
| | | I want to contribute to my field of research |
| | | I feel inspired by the job of researcher |
| | | My research is useful for others |
| *Stress* (11 items adapted from Pyhältö, 2016) | Loss of interest in one's own research. *Cynicism* | I think that my doctoral studies are not useful |
| | | I feel like I'm losing interest in my doctoral studies |
| | | It's hard for me to find meaning in my doctoral studies |
| | | I used to have higher expectations about my doctoral studies than I do now |
| | | I often feel like I'm failing in my doctoral studies |
| | | I often feel incompetent to carry out my doctoral studies |
| | Work load and excessive responsibility. *Burnout* | I feel overwhelmed by the workload of my doctoral studies |
| | | I often sleep poorly because of matters related to my doctoral studies |
| | | During my free time, I give a lot of thought to matters related to my doctoral studies |
| | | The pressure of my doctoral studies is creating problems for me in my personal relationships |
| | | I feel burnt out. |
| *Relationship with the scientific community* (11 items adapted from Pyhältö, 2015) | Support and recognition from adviser(s) | I receive support and personalized attention from my adviser(s) |
| | | I feel that my adviser(s) value my work |
| | | I feel appreciated by my adviser(s) |
| | | I can openly discuss with my adviser(s) any problem related to my doctorate |
| | Support and recognition from other members of the scientific community | My experience is useful in the scientific community |
| | | I feel that other members of the scientific community value |

| | |
|---|---|
| | my work |
| | I feel that I am treated with respect |
| | I feel accepted by the scientific community |
| | I often receive feedback about my work in the form of constructive criticism |
| | There is camaraderie among the researchers that I relate with |
| | I receive support and encouragement from other researchers |

A multicultural, multilingual team composed of researchers from the United Kingdom, Finland and Spain[1] reached a consensus on adaptation of items to English. These items were translated afterward to the respective languages, following a back translation process. All scales were piloted with a sample of 50 doctoral students, making it possible to adjust the wording and improve cultural adaptability.

Sociodemographic variables included in this study refer to *gender*, *age*, *source of income* and *having children.* In addition, the following academic and professional variables were taken into account (multiple choice items): *discipline of study*, *full- or part-time dedication*, *format of the dissertation*, *intention to drop out* or *interruption of doctoral studies*, *international mobility*, *research collaboration* and *job desired*.

*Procedure*

For the data collection, doctorate schools in public and private Spanish universities (offering doctoral programs in the disciplines indicated in the sample) were contacted to request their participation in the study. If the doctorate school so indicated, or if there was no response, contact was made with the departments and program heads.

The link to the questionnaire was open during a three-month period, and three reminders were sent from the doctorate schools or the departments. Participation was voluntary, after receiving information about the project through the same platform that housed the questionnaire. The study received approval from the different ethics comissions and research commissions involved. The Project was approved by the *Ethics Committee* of the Universitat Ramon

[1] This study is part of a broader project on development of the researcher in Social Sciences, and the instrument was designed to collect parallel data in the three countries mentioned.

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*Data analyses*

A cross-sectional, observational, interpretive design was adopted for this study. Information was analyzed with IBM’s SPSS Statistics 23 program. Descriptive analyses of central tendency and dispersion were carried out, as well as ANOVA, in order to calculate the significance of the differences of means; Cohen’s *d* was included for effect size. Pearson’s *r* was calculated in order to understand the relationships between variables.

## Results

*Descriptive results*

As shown in Table 3, keeping in mind that the scale mid-point is 4, the most commonly shared idea with respect to research is its importance to the researcher and to others (item 7) (*M*=5.73, s.d.=0.77). Similarly, research was considered to encourage personal development (item 5) (*M*=4.95; s.d.=1.28). With respect to the tasks involved in doing research, participants were quite aware of the need to manage information (item 4) (*M*=4.64; s.d.=1.5). They showed a medium level of awareness of the need to publish articles (item 1) (*M*=4.19, s.d.=1.62) and to persevere in the process (item 6) (*M*=4.19; s.d.=1.62; *M*=4.18; s.d.=1.65), and they considered, to a lesser degree, that doing research involves comparing (item 3) (*M*=4.16; s.d.=1.51) and that it is a pathway to being influential and recognized (item 8) (*M*=4.10; s.d.=1.63).

In short, participants valued the importance of research both for themselves and their development as well as for others. Similarly, they identified managing information as one of the most important tasks in research, and to a lesser degree, publication of articles and comparison of results. Research was not strongly associated with recognition and social influence.

In order to study whether conceptions were different as a function of certain variables, we carried out a difference-of-means analysis, and obtained the results presented below.

Table 3. *Descriptive statistics for conceptions of research*

| Items | Mean | SD |
|---|---|---|
| 7. Important for oneself and for others | 5.73 | 0.77 |
| 5. Personal development | 4.95 | 1.28 |
| 4. Gathering, synthesizing and organizing the information | 4.64 | 1.50 |
| 1. Publishing articles and having others read them | 4.19 | 1.62 |
| 2. Struggle, selecting a compelling topic in order to persevere | 4.19 | 1.62 |
| 6. Finishing what you start | 4.18 | 1.65 |
| 3. Comparing (e.g. new results with previous results) | 4.16 | 1.51 |
| 8. Being influential and recognized | 4.10 | 1.63 |

*Conceptions of research according to sociodemographic variables*

No significant difference appeared in conceptions about research as a function of *gender*. As a function of *age*, persons over 40 ($M$=4.39; s.d.= 1.79) and over 50 ($M$=4.89; s.d.=1.37) considered that research involves finishing what you start (Item 6), to a greater degree than those under 30 ($M$=3.93; s.d.=1.61); effect size was small ($d$=0.27) or moderate ($d$=0.64). Significant differences in this conception also appeared between students ages 30-39 ($M$= 4.03; s.d.= 1.57) and students over 50 ($M$= 4.89; s.d.= 1.37) ($F$ (3, 849) = 10.376; $p$<.001); in this case the effect size is moderate ($d$= -0.58)

As a function of *source of income*, students who work outside the University ($M$=4.72; s.d.=1.29) considered that research encourages personal development ($F$ (5, 854)= 2.822; p=.015) to a lesser degree than interns assigned to a project ($M$=5.1; s.d.=1.19); effect size is moderate and small ($d$=-0.30 and $d$=-0.15, respectively). For their part, those who work outside the university ($M$=4.39; s.d.=1.59) and predoctoral interns ($M$=4.41; s.d.=1.67) emphasized that doing research involves finishing what you started, to a greater degree than interns assigned to a research project ($M$=3.72; 1.60) ($F$ (4, 855)=5.109; $p$<.001), with a moderate effect size in both cases ($d$=0.42).

As a function of whether students *have children*, those who are parents ($M$=5.09; s.d.=1.22) were more likely to relate research to personal development than those who do not have children ($M$=4.88; s.d.=1.31) ($F$ (1, 858)=5.461; $p$=.020) ($d$=0.22). The parents group

(*M*=4.45; s.d.=1.61) had a stronger conception that doing research involves completing what you started (*F* (1,858)=12.062; *p*=.001), than those who are not parents (*M*=4.04; s.d.=1.64), effect size (*d*=0.25). In the same way, those who have children (*M*=4.27; s.d.=1.64) gave more value to research as a source of recognition and influence (*F* (1, 858)=5.631; *p*=.018) than those who do not (*M*=3.99; s.d.= 1.61), with a small effect size (*d*=0.17).

*Conceptions of research according to academic and professional variables*

Next, we describe differences in conceptions about research according to academic and professional variables, such as *discipline*, *full- or part-time dedication*, *intention to drop out* or *interruption of doctoral studies*, *international mobility*, *research collaboration* and *job desired*.

As a function of *discipline*, doctoral students in Psychology (*M*=5.87; s.d.= 0.46) were more aware of the importance of research for oneself and for others than were students of Political and Information Sciences (*M*=5.58; s.d.=0.94) [*F* (4, 889)=3.467; *p*=.008], with a moderate effect size (*d*=0.39).

With respect to the *time* so far invested in studying one’s doctorate, those who began before 2011 considered to a greater degree (*M*=4.49; s.d.=1.63) than those who began in 2012 (*M*=3.87; s.d.=1.69) that research consists of finishing what you start [*F* (8, 848) =3.449; *p*=.008]; effect size is *d*=0.37.

Those who have *full-time dedication* to doctoral studies showed less agreement (*M*=4.86; s.d.=1.28) with the potentiality of research for personal development than those who study *part time* (*M*=5.05; s.d.=1.27) [*F* (1, 889)= 4.566; *p*=.033] (*d*=0.14). Similarly, full-time students considered to a lesser degree (*M*=3.95; s.d.=1.63) that doing research involves finishing what you start [*F* (1, 858)= 18.201; *p*<.001]), than did part-time students (*M*=4.43; s.d.=1.61), with a small effect size (*d*=0.29).

The *intention to drop out* of doctoral studies made a difference in certain conceptions about research, as can be observed in Table 4. Doctoral students who have had an intention to drop out showed less awareness that research promotes personal development, they considered to a lesser degree that research is important not only for oneself but also for others, and

they had less motivation to be influential and recognized for their research. They considered to a lesser degree that research involves comparing information.

Table 4. *Significant differences in conceptions of research according to intention to drop out of doctoral studies. Group 1 Intention to drop out / Group 2 No intention of dropping out*

| Conception | F (sig.) | Group (M; s.d.) | | Cohen's d |
|---|---|---|---|---|
| 3. Comparing (e.g. new results with prior results) | 4,054 (.044) | G1 (4; 1.50) | G2 (4.22; 1.52) | -0.14 |
| 5. Personal development | 7,424 (.007) | G1 (4.77; 1.30) | G2 (5.03; 1.27) | -0.20 |
| 7. Important for oneself and for others | 7,615 (.006) | G1 (5.64; 0.88) | G2 (5.79; 0.68) | -0.19 |
| 8. Being influential and recognized | 6,328 (.012) | G1 (3.90; 1.64) | G2 (4.20; 1.60) | -0.18 |

Students who at some time have *interrupted their doctoral studies* (*M*=4.48; s.d.=1.58) were more aware than students who have had continuity (*M*=4.11; s.d.=1.65) that research involves finishing what you start (*F* (1, 883)= 6.649; *p*=.010), with a small effect size (*d*=0.22). Having a *research visit abroad* did not produce any significant differences in conceptions about research. Similarly, no significant differences in conceptions were seen in relation to the conditions of one's doctoral activity, whether individual, as a team, or a combination.

The only aspects pertaining to *collaboration in research* that accounted for differences in conceptions had to do with participation in national and international conferences. Namely, students who had not made any *presentation at national conferences* had less awareness of research involving the publication of articles for others to read (*M*=3.92; s.d.=1.718), than did students who had made one or two presentations of this type (*M*=4.42; s.d.=1.47) or those who had made three or four (*M*=4.44; s.d.=1.52) (*F* (4, 889)=5.234; *p*=.000). The effect size of the differences between these two groups and students who had not made any presentation was moderate (*d*=-0.31 and *d*=-0.32).


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As for the students who had made one or two presentations at national conferences, they were more aware that doing research involves gathering, synthesizing and organizing information (*M*=4.88; s.d.=1.37) than were those who had made three or four presentations (M=4.42; s.d.=1.58) (*F* (4, 889)=3.410; *p*=.009) (*d*=0.31).

Doctoral students who had made more than 7 *presentations in international conferences* considered research as a pathway to recognition and social influence (*M*=4.69; s.d.=1.41) to a greater degree than did those who had made 1 or 2 presentations (*M*=4.01; s.d.=1.64) (F (4, 889)= 2.959; *p*=.019); the effect size was moderate (*d*=0.44). Students who had at least one *publication* considered that doing research consists of publishing articles and for others to read them (*M*=4.31; s.d.=1.58) to a greater degree than did doctoral students who had no publication (*M*=3.98; s.d.=1.66) (*F* (1, 892)=8.4407; *p*=.004); the effect size between the two groups is small (*d*=0.20).

Table 5 shows the significant differences in conceptions of research according to *job desired*. In this variable, five groups of expectations were distinguished: G1 exclusively teaching, G2 exclusively research, G3 both but primarily teaching, G4 both but primarily research, G5 no interest in pursuing an academic career. Those who have no interest in pursuing an academic career did not give as much value to research as important to oneself and to others as did those who aspire to work either in teaching and/or research. Those who wish to have exclusive dedication to research give less value to research as a pathway to being influential and recognized than do those who wish to work in both teaching and research.

Table 5. *Significant differences in conceptions about research as a function of job desired*

| Conception | F | Group (M; s.d.) | | Cohen's d |
|---|---|---|---|---|
| 7. Important to oneself and to others | 5.773*** | G5 (5.46; 1.18) | G3 (5.74; 0.75) | 0.28 |
| | | | G4 (5.85; 0.47) | 0.43 |
| 8. Being influential and recognized | 4.262** | G2 (3.15; 1.65) | G3 (4.23; 1.60) | 0.66 |
| | | | G4 (4.14; 1.56) | 0.61 |

Note: **p<.01; ***p<.001

*Relationship between research conceptions and other variables*

General *interest* in a doctorate had a significant positive, low relationship to conception of research as an important pathway to recognition and personal development. With all other conceptions, its relationship was significant, positive, and very low. When specifying according to dimensions of interest in doing research (see Table 3), interest in contributing to the community and interest in its challenges have a positive, low correlation to the conception of research as a means for personal development, as a pathway to recognition, and as something important to oneself and to others; with all other conceptions they have a positive but very low correlation.

Interest in a doctorate that centers on improving one's job situation had a significant, very low relationship to almost all conceptions of research, except to research as managing information, with which it had no significant relationship, and with the conception of research as a path to influence and recognition, where the relationship was significant and low. Interest in pursuing a doctorate from a personal development focus was significantly related to all conceptions about research. Most of these were very low, positive relations, except conceptions related to personal development, importance for oneself and for others, and personal recognition, where the relation is low.

Table 6. *R correlations between Conceptions of research and Interest in research (N=894)*

| Conceptions/Interest | Interest T | Community | Position | Development |
|---|---|---|---|---|
| 1. Publishing articles and having others read them | .181*** | .122*** | .179*** | .137*** |
| 2. Struggle, selecting a compelling topic in order to persevere | .134*** | .079** | .126*** | .127*** |
| 3. Comparing (e.g. new results with previous results) | .126*** | .099** | .103** | .121*** |
| 4. Gathering, synthesizing and organizing the information | .100** | .077* | .073 | .133*** |
| 5. Personal development | .229*** | .242*** | .107** | .295*** |
| 6. Finishing what you start | .166*** | .140*** | .109** | .196*** |
| 7. Important to oneself and to others | .282*** | .358*** | .126*** | .300*** |
| 8. Being influential and recognized | .268*** | .173*** | .259*** | .224*** |

Note: *$p$<.05; **$p$<.01; ***$p$<.001

In Table 7 we can observe the correlations between conceptions about research and the *stress* which is associated with researcher training, both general stress and its two dimensions, loss of interest and overload of work and responsibility. All significant correlations are very low. One might affirm that there is a minimal relationship between the two dimensions of stress and considering research to be a struggle that requires perseverance. Loss of interest is negatively associated, at a very low level, with the consideration of research as something important.

Table 7. *R correlations between Conceptions of research and Stress (N=889)*

| Conceptions/Other variables: | Total stress | Loss of interest | Overload |
|---|---|---|---|
| 1. Publishing articles and having others read them | .061 | .032 | .073* |
| 2. Struggle, selecting a compelling topic in order to persevere | .142*** | .108** | .135*** |
| 3. Comparing (e.g. new results with previous results) | .012 | .003 | .018 |
| 4. Gathering, synthesizing and organizing the information | .075* | .067* | .061 |
| 5. Personal development | .021 | -.097* | .068* |
| 6. Finishing what you start | .064 | .019 | .093 |
| 7. Important to oneself and to others | .065 | -.134*** | .030 |
| 8. Being influential and recognized | .059 | .019 | .086** |

Note: *$p$<.05; **$p$<.01; ***$p$<.001

The relationship between perceived *support* from adviser(s) and the scientific community and conceptions about research is presented in Table 8. A significant positive, low relationship appears between perceived support from the dissertation adviser and the consideration of research as something important for oneself and for others, and a positive, very low correlation with the conception of research as a path for personal development. Perceived support from the community has significant, very low relationships with most conceptions of research, except with the idea of research as a struggle and as finishing what you start.

Table 8. *Correlations between Conceptions of research and Support (N=894)*

| Conceptions/Other variables | Total support | Advisers | Community |
|---|---|---|---|
| 1. Publishing articles and having others read them | .113** | .063 | .145*** |
| 2. Struggle, selecting a compelling topic in order to persevere | .024 | .006 | .040 |
| 3. Comparing (e.g. new results with previous results) | .089** | .051 | .112** |
| 4. Gathering, synthesizing and organizing the information | .075* | .039 | .100** |
| 5. Personal development | .186*** | .165*** | .169*** |
| 6. Finishing what you start | .044 | .024 | .058 |
| 7. Important to oneself and to others | .324*** | .289*** | .293*** |
| 8. Being influential and recognized | .106** | .063 | .132*** |

Note: *$p$<.05; **$p$<.01; ***$p$<.001

Correlations between conceptions about research and the degree of one's commitment to doctoral research are shown in Table 9.

Table 9. *R correlations between Conceptions of research and Commitment*

| Conceptions/Other variables | Commitment |
|---|---|
| 1. Publishing articles and having others read them | .039 |
| 2. Struggle, selecting a compelling topic in order to persevere | .008 |
| 3. Comparing (e.g. new results with previous results) | .049 |
| 4. Gathering, synthesizing and organizing the information | .039 |
| 5. Personal development | .179*** |
| 6. Finishing what you start | .056 |
| 7. Important to oneself and to others | .265*** |
| 8. Being influential and recognized | .083** |

Note: **p<.01; ***p<.001

*Commitment* to doctoral research had a significant positive, low relationship to conception of research as important for oneself and for others, and a very low relationship with the conception of research as a means for personal development and recognition. By contrast, commitment to doctoral research had no significant relationship to the other conceptions that consider doing research as a means of becoming influential and recognized; as gathering, syn-


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thesizing and organizing information; as publishing articles and for others to read them; as a struggle, selecting a compelling topic in order to persevere; or as finishing what you start or comparing results.

## Discussion and Conclusions

The aim of this study was to understand the conceptions about research that are held by doctoral students in Social Sciences in the context of Spain, and to analyze their relationship to certain relevant variables in researcher training. This analysis has shown that the doctoral students primarily understand research to be a process, oriented toward making a contribution to the community and to one’s own personal development. It is also perceived, to a lesser degree, to be a product that contributes to the community by organizing information in coherent fashion so that it acquires meaning, and which takes the shape of published articles (Akerlind, 2008; Brew, 2001; Meyer et al. 2005; 2007; Stubbs et al. 2014). However, the students do not make a strong connection between research and recognition or social influence (Äkerlind, 2008).

Men and women researchers are not differentiated in their conceptions about research, but there are differences according to age group. The differences increase with age, and there may be generational differences--for example, in the conception that doing research involves finishing what you start. Similarly, doctoral students’ source of income and whether or not they have children -- life circumstances that have been highlighted in prior studies because of their impact on realization of the doctoral process (Coromina et al., 2011) -- are associated with different ways of understanding what it means to do research.

Interns who are assigned to a project, and doctoral students who have children, associate doing research with personal development more than their counterparts do. These two groups, together with those who have jobs outside the university, expressed that doing research involves finishing what you start. Doctoral students who have children also considered research to be a source of recognition and influence. Today’s obstacles to beginning and pursuing an academic career are an object of concern internationally, as is evident from the study by Hauss, Kaulisch and Tesch (2015) on German doctoral students wishing to pursue an academic career, or the study from Turner and McAlpine (2011) regarding scholars and doctoral

students in the United Kingdom. These difficulties are a likely key to understanding these groups' conceptions about doing research. Next, those who wish to pursue teaching and research consider that doing research enables them to become influential and recognized. The incongruity between these expectations and today's obstacles should be taken into account when training and advising doctoral students.

Conceptions about research also showed significant but low differences as a function of academic variables. Specifically, in relation to discipline, doctoral students in Psychology were more aware of the importance of research for oneself and for others than were students of Political and Information Sciences; a similar result was found by Stubb, Pyhältö and Lonka (2014), where doctoral students from the behavioral sciences showed the same greater awareness when compared to students of natural science or healthcare. The start date of one's doctorate is an important variable in Spain, because it relates to different curriculum plans. Those who began prior to 2011 considered that doing research consists of finishing what you start, to a greater degree than those who started their doctorate later. This date concurs with the phasing out of former curricula, where there was no limit to duration of studies, and the effective date of a new plan (RD 99/2011), where a limited duration is imposed. The average duration of doctoral studies in former Social Science curriculum plans was nine years (de Miguel, *et. al*., 2004). Those who study part time, in comparison to full-time students, emphasized the potential of research for personal development, and the need for research to involve finishing what you start. A large proportion of this group has some professional occupation outside the academic sphere, or, to a lesser degree, family responsibilities. It seems that the longer the duration of one's studies, the more explicit emphasis was given to finishing what you start.

When less value is given to research as useful for personal development, as important to oneself and to others, and as a path toward becoming influential and recognized, persistence in the doctoral process may be affected. On the other hand, those who had interrupted their studies at some point were more aware that doing research involves finishing what you start; perhaps this conception had helped them resume their studies.

In the current doctoral programs, international visits, participation in conferences, and producing published work have been incorporated as recommendations or even as requirements. Likewise, forming part of a research group throughout the whole process has become

more and more common. The results suggest that participation in conferences and producing published work make a significant difference in beliefs about communicating results, developing knowledge and being socially recognized. This suggests that practice itself solidifies the conception, something worth considering when designing researcher training. However, the experience of a research visit abroad, and whether one’s doctoral activity was pursued on an individual basis, in a team, or a combination, was not reflected as significant differences in conceptions. The fact that much importance is ascribed to these two circumstances in the international context is an indication that further research is needed. In this regard, it would be important to clarify the concept of scientific community, as well as its modalities (hybrid, structured, uni- or multi-disciplinary, etc.) and its influence on conceptions.

*Limitations and prospects*

This study provides valuable information about the conceptions of researchers, but its transversal approach limits this information to a single moment in researcher training. In order to understand how these conceptions evolve and affect the process of forming a researcher identity, it would be interesting to carry out a longitudinal study to observe how conceptions evolve during the different stages of the doctoral process, and their effect on formation of one's identity as a researcher.

In addition, this study contributes a useful instrument for understanding the conceptions of researchers in training, but further consolidation of reliable instruments would be beneficial in order to confirm the organization of conceptions into the dimensions -- individual/community development and process/product -- as identified in this study. A first step would be confirmatory analysis of the structure of this instrument. Furthermore, a qualitative study would make it possible to more fully understand doctoral students’ perceptions of what it means to do research, and how they experience the significant events that are associated with those perceptions.

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