# Girls´ Perceptions about what is Required to Have Success in Male Dominated Professional Areas: Gender Stereotypes under Vocational Choices[1]

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## Abstract

*Gender continues to be a key organizer of social order and gender stereotypes tend to distort girls´ self-perceptions of competencies to have success in traditional male dominated professional areas, like Science and Engineering. Experts from education and vocational psychology have been concerned with the low representation of girls and women in these domains, since the 1980's. Among other reasons that highlight this fact as a form of gender discrimination, it is possible to refer that these fields generally include more well-paid jobs, these professional activities tend to have better social status and professionals have more opportunities to contribute to scientific and hi-tech development of the countries. This study is based on 42 semi-structured interviews to 9th and 12th grade female students, who were undecided to choose engineering and science educational paths. Results evidenced a frequent and spontaneous vocational discourse, as well as a discourse on gender, which is "hidden" behind the first. Social representations made by these girls about women in Science and Engineering include some "special" characteristics of "these not common" women as courageous, strong-minded, tenacious, with high self-esteem and with "good capacity of communication" with men. Although the importance of gender stereotypes has already been highlighted in vocational development theories as a barrier to girls' vocational choice, this study may help to understand how this influence operates and how a different perspective on the same "reality" can simultaneously function as a facilitator or as a barrier, structuring "identities" which may be oppressing to girls and women. Results discussion will question girls' difficulties to foresee themselves in some fields of occupational world predominantly occupied by men, without having as a reference and model the men's world. New methodologies of teaching, curricula changes and training of professionals are needed in order to promote vocational choices free of gender bias.*

## 1 The pervasive power of gender stereotypes in girls' vocational choices

The diversity of characteristics of men and women represents such richness for individuals and society and offers a myriad of possibilities of success that are independent of being biologically male or female. Nevertheless, social constructions based on the dichotomy XX or XY of the twenty-third pair of chromosomes – and all the subsequent hormonal secretions and physical characteristics – leads gender to be a main organizer of daily life, resulting in the fact the men and women learn since very early that they should develop and behave differently through the lifespan. The so-called gender stereotypes, being rigid ideas about what kind of attributes and conducts are 'normal' in each sex, have such a pervasive power in individual life, that it is possible to see self-fulfilling prophecies taking place in many life arenas. It is the case of vocational choices of girls in the middle adolescence.

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In fact, the number of girls and boys who are interested in issues and activities of Science and Technology is identical until the twelve/thirteen years of age, but since that period it is notorious a decrease in the number of girls who choose those areas in all subsequent levels of education [1] [2], despite their advantage in terms of schools grades on related subjects when compared to boys [3]. This has been called the leaky pipeline effect.

Based on self-evaluations influenced by incorporated gender stereotypes, it is possible that adolescent girls vocational choices are partially restricted by the idea that women's appropriate behavior in the occupational world should be similar to their traditional maternal and domestic roles: expressive, emphatic, dedicated to take care of others, being sensitive to others' needs, being focused on establishing relationships and emotional ties with others, and so on [4] [5] [6].

In Portugal, a recent meta-analysis of gender and science research that involves several European countries showed that in what concerns horizontal and vertical segregation in science, "traditional concepts of gendered educational aims and primary socialization still influence educational and career choices. Women's segregation in science has been linked to a scientific paradigm where woman is considered as the 'other'" (p. 2) [7]. For example, in 2008, the percentages of women in financed programs of Portuguese Foundation of Science and Technology was very far from the scenario of an equal participation of both sexes in the fields of sciences of engineering and technology: they were only 26% of the coordinators of research projects; they were only 25% of the members of the research units; they were only 13% of the experts chosen to participate in evaluation panels of projects [8]. Some available statistic indicators of the presence of Portuguese women in some areas of science make us feel that we can even speak about a setback in the overcoming of stereotyped choices: from 2001 to 2008 the number of women in hard sciences, mathematics and informatics dropped from 59% to 56% and dropped from 35% to 28% in the areas of engineering, manufacturing industries and construction during the same period [9].

Women seem to avoid the areas of science and technology and related fields in three main situations: at the point they have to choose an area of studies to develop a professional career, at the transition from a program of graduation for a post-graduation, and when they have to decide whether to continue or not in leadership or coordination of academic and industrial environment, particularly when such settings are perceived as hostile to them [10]. Studies conducted over last decades put in evidence the power of several factors for this vocational avoidance of women, like the girls' low expectations of self-efficacy in mentioned fields [11], the anticipated difficulties of balancing career responsibilities and familiar roles because of the rules of completion at work [12] or because the perceived difficulty in balancing an appearance with female style and male attitudes typical in these professions [13].

In order to better understand why discrimination persists in the culture of science in Portugal, continuing men to be mostly in superior and controlling positions [7] and young females with high academic achievement and strong interests in areas as mathematics and physics giving up these careers at some point of their studies, it was conducted a three-years research project funding by the Portuguese Foundation for Science and Technology (FCT-PIHM/GC/0035/2008), coordinated by Professor Luisa Saavedra of the University of Minho. These extended qualitative research involved females from middle and high-schools and higher education institutions, and adult young women less than 30 years old or more than 40 years old, with different professional experiences and from distinct regions of the country.

Next section we will discuss some answers of the middle and high-schools students that show their stereotypic perceptions about what is required to have success in male dominated professional areas.

## 2 Conditions to be successful in male dominated professions: the voices of some Portuguese middle and high-school girls

In order to give voice to forty-two middle and high-school female students previously identified by the research team as being undecided about following (or not) graduation studies in hard sciences, engineering and technology, it was designed an exploratory semi-structured interview covering questions related to their perception of possible future difficulties of being a professional, evaluation of interactions between peers and teachers at the current school level and anticipated views about difficulties in the conciliation of family and work responsibilities.

All the interviews were authorized by parents and were conducted by a trained research in places chosen by girls, being the answers then critically analyzed using Foucaudian Discourse Analysis, in the line of [14] and [15] suggestions, to identify discursive constructions of girls.

The critical analysis of the interviews showed that the social representations made by these girls about women in science and engineering include some special characteristics of these not common women as courageous, objective, strong-minded, disciplined, tenacious, with high self-esteem and with good capacity of understanding with men. Some of them stressed the idea that the socialization of girls did not include the contact with machinery and too practical tasks, and because of that it seems that female in such areas are in a part of the world of jobs that naturally belongs to men. Moreover, the need of these women for hiding some aspects of their femininity – like emotionality, empathy, caring for others and some aspects of appearance – in order to be successful among male partners in professional contexts is also highlighted.

Physical strength is, at the first sight, the main argument used by girls to be undecided about choosing a profession that typically is male dominated and to explain why most women tend to avoid such areas. Further exploration of their answers showed that they also think the personality characteristics of females in hard sciences and technology are not the common female attributes, and that those women have more difficulties then men to prove their competencies in a ground so hard for them. In their opinion, although more and more women choose science and technology, despite their concerns of not being so proficient as their male colleagues, it is normal that men continue to be among the teams' leaders in such professionals fields, because "it is a men's world" (sic).

## 3 The importance of training in gender sensitive questions the vocational psychologists and other educational agents

The embedded perception of men´s professional world and females´ professional world as two opposite territories do influence negatively girls' perception of future self-efficacy in careers traditionally male dominated. Such stereotypic vision is not only portrayed in adolescent students' discourses, but tend to be very evident in some family and school practices, in media representations of men and women, or even in the behavior of those who have educational responsibilities with new generations. The training of professionals, as teachers and vocational counselors, to be sensitive to gender stereotypes consequences in girls' (and boys') career choices, seems to assume a crucial importance if the goal is to open a world of possibilities of being successful in work life for all. Along with this better preparation of professionals, changes should also take place in the methodologies of teaching, in curricula contents, in pedagogical resources available and in family socialization principles. Like in other arenas of human life, the decisions of adolescents in terms of fields of study at a graduation or pos-graduation level should be free of misconceptions based on gender or other social categories of belonging of individuals.

## References

[1] Bouville, M. (2008). On enrolling more female students in science and engineering. Science and Engineering Ethics, 279-290.

[2] Saavedra, L. (2010). Assimetrias de Género nas Escolhas Vocacionais. In T. Pinto (coord.), C. Nogueira, C. Vieira, I. Silva, L. Saavedra, M. J. Silva, P. Silva, T.-C. Tavares & V. Prazeres (Eds.) Guião de Educação Género e Cidadania – 3ºciclo do ensino básico (pp. 121-129). Lisboa: Comissão para a Cidadania e Igualdade de Género. Disponível em: http://www.cig.gov.pt

[3] Saavedra, L. (2005). Aprender a ser rapariga, aprender a ser rapaz. Teorias e práticas da escola. Coimbra: Livraria Almedina.

[4] Baudelot, C. & Establet, R. (1992). Allez les filles! Paris: Éditions du Seuil.

[5] Fondas, N. (1997). Feminization unveiled: Management qualities in contemporary writings. The Academy of Management Review, 1, 22, 257-282.

[6] Vieira, C. C. (2008). Estereótipos de género. In A. Rubim & N. Ramos (Orgs.). Estudos da cultura no Brasil e em Portugal (pp. 217-250). Salvador: Edufba, Editora da Universidade Federal da Bahia.

[7] Gonçalves, M. (2009). Meta-analysis of gender and science research. D31-Country Report Portugal (RTD-PP-L4-2007-1). Acedido a 12 de Maio de 2011, em:

International conference
The Future of Education

[8] http://www.genderandscience.org/doc/CReport_Portugal.pdf

[9] Amâncio, L. (2011). A participação das mulheres nos programas da FCT. Alguns indicadores. In T. Pinto, T. Alvarez & I. Cruz (Orgs.). Mulheres e Conhecimento/Women and Knowledge (pp. 45-62). Vila Franca de Xira: Associação Portuguesa de Estudos sobre as Mulheres.

[10] GPEARI – Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais do Ministério da Ciência, Tecnologia e Ensino Superior (2009). Diplomados no Ensino Superior [2000-2001 a 2007-2008]. Acedido em 11 de Maio de 2011, em http://www.gpeari.mctes.pt

[11] National Science Foundation (2003). New formulas for America's workforce: girls in science and engineering. Arlington: National Science Foundation.

[12] Betz, N. (2004). Contributions of self-efficacy theory to career counseling: a personal perspective. Career Development Quarterly, 52, 4, 340-353.

[13] Cinamon, R. G., & Hason, I. (2005). Facing the future: Barriers and resources in work and family plans of at-risk israeli youth. Paper presented at the 7th Biennial Conference of the Society for Vocational Psychology, Vancouver, CA.

[14] Evetts, J. (1996). Gender and career in Science and Engineering. Bristol: Taylor & Francis.

[15] Gillies, V. (1999). An analysis of discursive positions of women smokers: implications for pratical interventions. In C. Willig (Ed.). Applied Discourse Analysis: Social and Psychological Interventions (pp. 66-86). Bucking: Open University Press.

[16] Willig, C. (2003). Discourse analysis. In J. A. Smith (Ed.). Qualitative Psychology: A Practical Guide to Research Methods (pp. 159-183). London: Sage Publications.