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Women Physicists Speak Again

HIGHLIGHTS

- More than 1350 women physicists from more than 70 countries responded to a survey designed to elicit information about their educational backgrounds, careers, the balance between work and family, and opinions about physics as a career (**Table 1**). The survey was conducted in conjunction with the Second International Conference of Women in Physics in 2005. The report includes data on degrees awarded to women in about twenty countries (**Appendix**).
- Most responding women physicists said that they chose physics as a career early, primarily during secondary school (**Table 2**). Most women physicists reported receiving positive attention from physics professors as undergraduates (**Table 4**) and had either excellent or good relationships with their graduate advisors (**Table 6**).
- During their education and careers, most responding women physicists reported that they relied on the support of at least one other person, along with their own determination, will power, and hard work (**Tables 5, 8 and 15**).
- Women physicists from developing countries were more likely than those from developed countries to report that they have inadequate resources, including funding, equipment, and travel money (**Table 14**). Women from developing countries also had children earlier than women from developed countries (**Table 19**).
- Although a majority of the responding women physicists said they would choose physics again, a majority also reported being discouraged about physics. Many spoke about negative interaction with colleagues, including many stories about discriminatory attitudes (**Table 17**). Eighty percent said that attitudes about women in science need improvement (**Table 18**).
- The responding women physicists reported both positive and negative effects of marriage and children on their careers (**Table 20**).
- In the first international survey of women in physics, women spoke a great deal about the effects of children and childcare demands on their careers. However, in this study, women were careful to point out that the main problem is that women in physics continue to face discrimination and negative attitudes.

Table 1. Number of Responding Women Physicists by Country, 2005

Continent/Country	Number	Continent/Country	Number
Africa		Europe	
Botswana	1	Albania	2
Canary Islands	1	Austria	12
Egypt	1	Belarus	6
Ghana	1	Belgium	9
Nigeria	8	Bulgaria	8
Senegal	2	Croatia	16
Somalia	1	Czech Republic	4
South Africa	3	Denmark	18
Tanzania	1	Estonia	2
Togo	1	Finland	3
Tunis	2	France	51
Asia		Germany	41
Bangladesh	1	Greece	3
Burma	1	Ireland	6
China	17	Italy	14
India	23	Latvia	4
Indonesia	4	Lithuania	11
Iran	2	Luxembourg	1
Israel	8	Netherlands	13
Japan	64	Norway	4
Malaysia	1	Poland	2
North Korea	3	Portugal	1
Pakistan	5	Romania	3
Singapore	1	Russia	9
South Korea	47	Serbia	1
Turkey	3	Slovakia	1
Australia/New Zealand		Slovenia	8
Australia	20	Spain	67
New Zealand	1	Sweden	20
North America		Switzerland	11
Canada	30	Ukraine	3
Cuba	1	United Kingdom	88
Dominica	1		
Mexico	42		
United States	511		
South America			
Argentina	40		
Brazil	44		
Chile	2		
Columbia	9		
Ecuador	1		
Peru	4		
Venezuela	3	Total	1353

Appendix. Percent of Physics Bachelor's and PhD Degrees Awarded to Women in Selected Countries: 2-year Averages.

	% Bachelor's to women	Ave # of Bachelor's per year, both sexes	% PhDs to women	Avg # of PhDs per year, both sexes
Turkey	39	2,219	28	50
Greece	34	588	25	39
France	33	2,601	24	491
South Korea	30	2,189	10	125
Sweden	29	55	17	60
Latvia	26	12	20	3
Canada	23	503	13	118
Australia	21	182	20	100*
United Kingdom	21	1,755	18	415
Norway	21	72	20	28
USA	21	3,770	13	1,237
Taiwan	20	825	10	24
Slovenia	19	26	15	17
Estonia	18	20	10	5
Mexico	18	162		
Denmark	17	95	20	51
Japan	13	3,314	10	374
The Netherlands	12	206	12	68
Germany	9	2,173	10	1,570
Switzerland	9	206	9	109
Poland			13	182

21 Countries

* Include Master's degrees.

1998-99 data are presented for countries in blue. For all other countries, 1999-2000 data represented. To be included, countries had to provide appropriate data from reliable statistical agencies.

Compiled by AIP Statistical Research Center.

Table 2. Timing of Career Choice for Responding Women Physicists	
	Percent
Before secondary school (high school)	15
During secondary school	60
During undergraduate school	17
During graduate school	8

Table 4. Quality of Attention From Undergraduate Physics Professors Received by Responding Women Physicists	
	Percent
Positive	59
Negative	5
Neutral	32
No attention	4

Table 6. Ratings of Responding Women Physicists' Relationships with Their Graduate Advisors	
	Percent
Excellent	37
Good	41
Fair	14
Poor	8

Table 5. Sources of Support During Undergraduate Studies For Responding Women Physicists

	Percent
Only myself	7
Myself and one other person	64
Other people	29

Table 8. Sources of Support During Graduate Studies for Responding Women Physicists

	Percent
Only myself	7
Myself and one other person	61
Other people	32

Table 15. Sources of Support During Early Part of Career For Responding Women Physicists

	Percent
Only myself	5
Myself and one other person	58
Other people	37

Table 14. Percent of Responding Women Physicists Who Said That They Do Not Have Adequate:

	Developing Countries	Developed Countries
Funding	60	33
Office space	18	12
Lab space	29	15
Equipment	49	22
Travel money	63	32
Clerical support	49	39

Table 19. Percent of Responding Women Physicists Who Have Children

	Developed Countries	Developing Countries
Before final degree	33	69
After final degree	67	31

Table 17. Reasons Responding Women Physicists Gave for Being Discouraged About Physics

	Percent
Research	49
Funding	52
Interaction with colleagues	55
Climate for women	43
Personal life	48
Family obligations	35

*Respondents could choose more than one answer.

Table 18. Percent of Responding Women Physicists Who Agreed That the Following Needs Improvement

	Percent
Daycare cost	55
Daycare availability	65
Travel with young children	58
Balance of child care in family	69
Discrimination	65
Attitude about women in physics	80

Table 20. Perception of Career Progress for Responding Women Physicists With and Without Children

Progressed	With Children(%)	Without Children(%)
More quickly	14	22
About the same	49	49
More slowly	37	29