Hanna Schiff, Honorata Kaczykowski-Patermann, Renate Schubert

Analysis of the IAT data collected during the exhibition „Check Your Stereotypes"

What is the IAT?

Stereotypes are precursors for prejudices and discrimination. Apart from that they reduce the complex social world we live in into simple categories and allow a quick and efficient interaction between social groups. Besides openly displayed stereotypes, we are often confronted with indirect, subconscious stereotypes.

The Implicit Association Test (IAT) – developed in 1998 by Greenwald, McGhee & Schwartz[1] - gathers subconscious stereotypes by measuring the time that is needed to associate different categories like for example "man" or "woman" with a scientific field like "natural sciences" or "humanities".

In general it is easy for us to relate female first names and terms from the "family"-context as well as male first names and terms from the "career"-context. The time that is needed for this association is relatively short. The reverse combination usually is more difficult and thus takes more time. The same is valid for the association of "man" with "natural sciences" and "woman" with "humanities". This combination works out pretty quickly whereas the association of "woman" with "natural sciences" or "man" and "humanities" takes measurably more time.

The IAT uses several terms from different categories that are to be related correctly by keystroke. For example the name "Julia" shall be classified as a female name or the term "office" as a word from the "career"-context. Since terms that do not belong together, according to the stereotype (like e.g. female names and career or male names and family), are to be associated by a keystroke on the same key (each time key E on the left and key I on the right) – like it is seen in figure 1 – it takes people with strong stereotypes relatively long to perform the correct classification. The IAT records the time that is needed to classify the different combinations of terms correctly and calculates a score for every single participant from the reaction latencies, that counts as a stereotype value.

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[1] Greenwald, A. G., McGhee, D. E., & Schwartz, J. K. L. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464-1480.
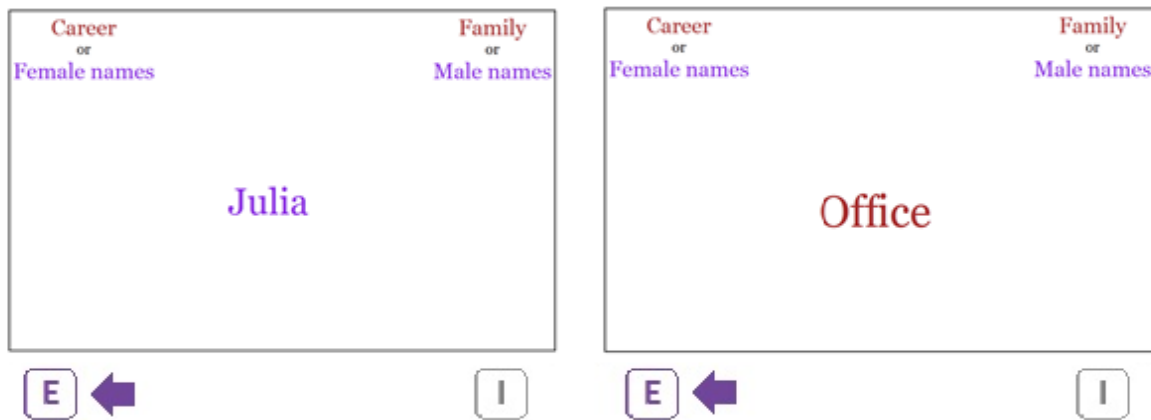
A workgroup at the Harvard University[2] provided a version of the IAT on two subjects "gender & family/career" and "gender & natural sciences/humanities". Those two tests worked as an interactive part of the exhibition "Check Your Stereotypes - 20 Years Equal!" in October 2013. Visitors could run the tests on to computers inside the exhibition area.

Possible results of the IAT

The test computes a so called "IAT-score" for each participant that can be translated into a more or less strong association of the terms "male or female" and "family or career" alternatively "natural sciences/humanities". The scores range from +2 to -2. A positive value indicates an association of "male" and "career" or "natural sciences" respectively "female" and "family" or "humanities". A negative value suggests an association of "male" and "family" or "humanities" respectively "female" and "career" or "natural sciences" (see Table 1).

Table 1: Interpretation of the IAT-scores

	IAT-scores			
	IAT-type: Gender & Family/Career		IAT-type: Gender & natural sciences/humanities	
	Score > 0	Score < 0	Score > 0	Score < 0
Interpretation	Association of ‚male' and ‚career' resp. Association of ‚female' and ‚family'	Association of ‚female' and ‚career' resp. Association of ‚male' and ‚family'	Association of ‚male' and ‚natural sciences' resp. Association of ‚female' and ‚humanities'	Association of ‚female' and ‚natural sciences' resp. Association of ‚male' and ‚humanities'

A value of ±0.15 counts as a break point for a "slight", ±0.35 for a "moderate" and ±0.65 for a "strong" association[3].

The IAT provides statements about an implicit gender-stereotype of a person. These are interesting, because especially the subconscious stereotypes are often not accessible by direct interrogation. But it is not possible to make any reliable predictions from even a markedly positive or negative IAT-score about how a person will *behave* towards somebody.

Who participated in the IAT?

During the exhibition "Check Your Stereotypes" 1293 tests were performed and 886 (68.5%) had been completed. For the following analysis only the completed tests were regarded. Men and women participated in almost equal shares in the test. Most of the participants were swiss students at the age between 21 and 30 years.

Table 2: Cancellation rate

	participated	canceled	total
N	848 (65.6%)	445 (34.4%)	1293 (100%)

Table 3: Gender of the participants

	f	m	n.s.	total
%	464 (54.7%)	366 (43.2%)	18 (2.1%)	848 (100%)

Table 4: Age of the participants

	≤20	21-30	31-40	41-50	51-60	>60	n.s.	total
%	134 (15.8%)	433 (51.1%)	118 (13.9%)	78 (9.2%)	52 (6.1%)	18 (2.1%)	15 (1.8%)	848 (100%)

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[3] https://implicit.harvard.edu/implicit/demo/background/raceinfo.html

Table 5: Nationality of the participants

	CH	DE	IT	AT	other	n.s.	total
%	479 (56.5%)	138 (16.3%)	32 (3.8%)	30 (3.5%)	155 (18.3%)	14 (1.6%)	848 (100%)

Table 6: Position of the participants at ETH

	Student	Doctoral Student	Techn./Admin. Staff	Researcher	Professor	„none" or n.s.	total
%	455 (53.7%)	53 (6.3%)	83 (9.8%)	47 (5.5%)	19 (2.2%)	191 (22.5%)	848 (100%)

Women and men also participated in almost equal shares in both different IAT-types on the topics "gender and family/career" resp. "gender and natural sciences/humanities". The IAT "gender & family/career" was chosen by 281 (56.9%) female and 201 (40.7%) male participants. Twelve (2.4%) didn't indicate their gender. "Gender & natural sciences/humanities" was chosen by 183 (51.7%) female and 165 (46.6%) male participants. Six (1.7%) participated without indication of their gender.

Table 7: Choice of IAT-types. *.

	IAT-type				total
	family/career		natural sciences/ humanities		
	%	number	%	number	number
f	58.3%	281	52.6%	183	464
m	41.7%	201	47.4%	165	366
total	100%	482	100%	348	830

*Only participants with an indication of their gender were included.

The IAT "gender & family/career" – Gender analysis

The male participants had a mean ($\bar{x}$) of .44 and a standard deviation (s) of .38. This corresponds on average a "moderate" association of the terms "male" and "career" resp. "female" and "family (see the section "Possible results of the IAT").

The female participants had a mean of .50 and a standard deviation of .44 which also indicates a moderate association.

IAT gender and family/career	n	$\bar{x}$	s
female	281	0.50	0.44
male	201	0.44	0.38
N	482		

No significant differences between the groups

As seen in table 8, the groups of male and female participants did not differ significantly in terms of their associations. Men and women associated the terms "male" and "career" respectively "female" and "family" equally and both groups had "moderate" associations of the items. The group means did not differ significantly[4].

The IAT "gender & natural sciences/humanities" – Gender analysis

The male participants had a mean ($\bar{x}$) of .55 and a standard deviation (*s*) of .45. This corresponds on average a "moderate" association of the terms "male" and "natural sciences" resp. "female" and "humanities".

The female participants had a mean of .24 and a standard deviation of .55 which also indicates a moderate association. The mean of the female participants is significantly lower than the mean of the male participants.

Table 9: IAT "gender & natural sciences/humanities"

IAT gender and natural sciences/humanities	n	$\bar{x}$	s
female	183	0.24*	0.55
male	165	0.55*	0.45
N	348		

*Significant differences between the groups

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[4] Data was not normally distributed and homogenity of variances between the groups was not given. Non parametrical testing (Mann Whitney-U-Test): two-sided, U=25633, p=.084

As seen in table 9, the female participants associated the terms "male" and "natural sciences" resp. "female" and "humanities" less strong than the male participants did. Both groups differ significantly[5]. Still, both groups show a "moderate" association of the items.

Conclusion

The IAT-analysis indicates, that gender-stereotypes are effective in the groups of men and women who completed the IAT on our exhibition. Both groups tend to associate "career" and "natural sciences" rather with "male" as well as "family" and "humanities" rather with "female". The test "gender & natural sciences/humanities" additionally shows that women are less influenced by the stereotype "humanities are a women's thing" and "natural sciences are a man's thing".

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[5] Data is distributed normally. Homogenity of variance between the groups is not given. Non parametrical testing (Mann Whitney-U-Test): two-sided, U=9996, p=.000