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For further information see www.motivation-project.com.

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Abstract

Images of engineering majors and jobs often go along with general and gender specific stereotypes of science, engineering and technology (SET) and outdated clichés about scientists and engineers. Some of these stereotypical attitudes are still active and have great impact on study decision making processes and students' job expectations. This paper will discuss Austrian, German and French results of MOTIVATION, a FP-7-project financed by the European Commission (Sagebiel et al. 2008; www.motivation-project.com). The project analysed in one work package ("Youth, gender and SET in media") factors influencing young people's perception of SET and SET jobs. Results from SET representations in youth media will be shown as these media build a daily companion for youngsters and therefore have an influence on young people's perceptions of SET and especially the genderedness of those images.

Teenagers and science, engineering and technology (SET)

Contrary to the efforts of the European Union to strengthen its reputation as scientifically and technologically innovative and knowledge based society, the declining number of students in SET degree courses and gender imbalance in SET bears a need for ongoing improvement especially of SET education and public understanding of science (European Commission 2004). Several studies revealed that although students agreed on the importance of science and technology, only a minority of them thinks about a career in SET (Dahmen and Thaler 2009).

A presupposition of the work package "Youth, gender and SET in media" (leader: Anita Thaler) is, that job choices of young people are among other things influenced by media representations of jobs, hence popular media can be seen as today's informal vocational counsellors for young people. Movies, television series, music clips, commercials and magazines mirror social reality and they construct culturally dominant images and influence implicitly young people's attitudes and to a certain extent study choices as well.

Technology takes place in youth media – but how?

Research on SET and gender in media focussed on SET professionals so far. The new focus of the project MOTIVATION and especially the piece presented in this paper was to focus on general images of SET in youth magazines and television. The idea behind that is vocational and educational choices are not only based on explicit representations of SET professions.

In a first phase of the project, in 2008, the consortium explored relevant youth magazines; and analysed images of SET and gender quantitatively and qualitatively (Thaler 2009). In the second project phase, in 2009, the consortium analysed images of SET and gender in "soap operas" in all partner countries.

In this paper Austrian, German and French results will be presented, as these three countries carried out the largest amount of field work in this work package and therefore set the basis for a comparison of results. For instance from 1016 analysed magazine pictures in the consortium Austria, Germany and France contributed 947 of these analysed SET images, that are 93.2%.

For the analysis of popular youth magazines a data sheet has been developed (Thaler 2009), including criteria and precise guidelines for all national team members on how to identify and

describe relevant SET representations in their country-specific youth magazines. Supplementary a qualitative content analysis of the detected gender representations in SET images was prepared.

Technology for the project purposes is defined in a layperson's view: technological artefacts like machines, hardware, and software and SET professionals for instance scientist, engineers, etc., in order to analyse technology representations, which would be recognised as technology by teenagers (ibid.).

Austrian, German and French images of technology

The analyses include 22 issues of the German "BRAVO" magazine, which corresponds to a complete analysis from July to December 2008. For instance in Austria and Germany "BRAVO" is one very popular youth magazine for more than 1.6 million female and male readers weekly, which is published since 1956. Of the Austrian youth magazine "Xpress", which is published monthly, six issues were closer examined from July 2008 to January 2009. Supplementary and in contrast to the two other magazines which are focussing on the same audience, seven issues of girl's magazine were analysed. The German magazine "BRAVO GiRL!" is published every second week. And in France 202 images have been analysed in the magazine "Closer", a British newspaper, delivered in France since June 2005, plus 60 further images of "Phosphore", which is read by 14.5% of the 15-18 years old.

The majority (51.8%) of those 947 SET representations stem from the German "BRAVO", because it was analysed from the Austrian and German teams. Averagely 22.3 SET images were found per issue.

Role of represented SET in European youth magazines				
		SET in background	SET is the main topic	total
Bravo	number	244	247	491
	% of magazine	49.7%	50.3%	100.0%
Bravo girl	number	54	33	87
	% of magazine	62.1%	37.9%	100.0%
Xpress	number	44	63	107
	% of magazine	41.1%	58.9%	100.0%
Closer	number	123	79	202
	% of magazine	60.9%	39.1%	100.0%
Phosphore	number	28	32	60
	% of magazine	46.7%	53.3%	100.0%
total	number	493	454	947

Overall there is no big difference whether a technological artefact or a scientific topic was presented in background (46.7%) or as a main topic (53.3%) in an image. But there are interesting differences from magazine to magazine, or to say it more accurately magazines can be differentiated wheter they have more SET in the background or if foreground and background are nearly equally often represented. While the French "Phosphore", the Austrian "Xpress" and the German "BRAVO" portray nearly the same amount of images with SET as a main topic as

SET-in-the-background pictures, the French “Closer” and the German girls’ magazine “BRAVO GiRL!” have a significant higher proportion of images with SET in the background. Another notable insight is that although technology plays a great role in youth magazines, only 3.1% of the analysed images show SET as a job field; the rest represent SET products. These 3.1% SET job representations came exclusively from German “BRAVO” (24 images) and Austrian “Xpress” (4 images), neither “BRAVO GiRL!” nor both French magazines presented scientists, engineers or other technology related jobs.

Further gender-specific results in a nutshell:

- The German magazine “BRAVO” (which is the most popular youth magazine in Germany and Austria) is partly overt gender and SET stereotypical. For instance vehicles are presented as male technology, showing males driving cars, motorbikes and even boats, females are mostly presented as co-drivers or even not that but just like models posing beside vehicles. “BRAVO GiRL!” has been identified as a magazine with a strong hetero-normative direction, mainly aiming at girls and how they can appeal to boys (detailed analysis in: Dahmen and Thaler 2009).
- The Austrian magazine “Xpress” has less overt gender and technology stereotypes, but in the analysis more subtle forms begin to show (ibid.).
- The French magazine “Closer” presents SET in the context of a job field only in training ads. Beside that SET is predominantly shown with males. Females in SET pictures are presented not only gender stereotypical, but moreover sexist. The second analysed French magazine “Phosphore” presents SET equally with males and females.

The analysed soap operas “Gute Zeiten – Schlechte Zeiten” (Germany) and “Anna und die Liebe” (Austria) are offering similar results than the magazine analysis: Technology is often part of the stage set and seldom used in a meaningful way. The positive exception of our soap opera analysis is the French TV series “Plus Belle La Vie”, which broaches the issue of SET in various ways, mostly via female and male SET professionals and up to date scientific and engineering stories.

A French good practice soap?

The French soap opera “Plus Belle La Vie” (episodes 1196 to 1205, broadcasted every weekday in April 2009) gathers around 5,5 millions of TV watchers every evening. One quarter of the 11-14 and 29 % of the 15-24 years old French population watch this daily soap and more than one quarter of the feminine audience.

“Plus Belle La Vie” is organised around different stories and characters, and is setting, day after day, the live and events of different families living in an imaginary district of the city of Marseille “Le Mistral”. The soap is organised through two main stories: The typical soap core around the personal lives of “Le Mistral” inhabitants, happiness and misfortunes, love, friendships, plus criminal affairs. The “clever” part of this soap is to melt intimately the real life (e.g. 24th of December is coming, Les Mistraliens are as well preparing Christmas) to each one of the scenarios. Each episode begins with the breakfast, and ends with the night coming.

But all that would not make this French soap to a good practice in terms of science, engineering and technology. The difference to other analysed soaps is first that SET, for instance tools, are equally used by female and male characters. Those SET tools were very usual and of ordinary use (e.g. mobile phones, computers, printer) but surprisingly – and the second difference to other soaps – several SET jobs were represented as well, and that by male AND female characters. Gender balance considering SET jobs is though quite harmonized, as female and male characters are represented and acknowledged in SET professions (e.g. contamination expert, engineer).

Beyond representing several SET professions, and female and male equally using SET tools, “Plus Belle La Vie” presents as well a quite revolutionary handling of some controversial society subjects (in France):

- Homosexuality (men and women, with characters quite common, and love stories which go well! (First homosexual kiss broadcasted on French television during prime time and crude sexual proposition, which is in France really breaking a taboo)
- Gay and lesbian parenthood
- Marijuana used as medicine
- Drugs
- Euthanasia
- Environmental problems and how huge agro alimentary firms produced the mad cow disease

Characters, “weak” and “strong” ones are indifferently female or male, and professions usually traditionally taken on by female or by male are reversed (a woman as head of the police station, a man as a social worker for teenagers). Richard (2005) states that there are not so much gender differences concerning male and female teenagers’ interest towards these programmes. Watching these programmes are real ritual moments for those teenagers, who insert them in their leisure time schedule. These are time of “singular/collective” coordinating using of cultural TV practices among teenagers. Pasquier (Pasquier 2003) identifies different positioning or preferences towards soaps more or less « sentimental affair » centred, among female and male teenagers. Youth public develops a horizontal sociability very tense through age groups and individual commitments disappear confronted to a collective acknowledgement.

Plus Belle La Vie soap, as it handles in an untraditional way common social and cultural representations considering jobs, gender, situations, presents SET and SET jobs accordingly to its first way of dealing scenario. Our Plus Belle La Vie characters are not only setting gender sensitive situations (personalities, jobs, developing of the scenario...) but both female and male characters are dealing with SET, as tools, or as a job. As Plus Belle La Vie has a strong teenage audience, its positioning concerning SET, SET professions and gender is representing a good practice case, as soaps, during teenage hood, set up a “common territory of practices” (Pasquier 2003). Insertion into social groups depends of the conformity of tastes and opinions of its members: these opinions are gendered, as neither boys nor girls could freely show his/her attachment to TV soap without engaging its gender identity.

Technology in European youth media – a missed chance?

From the analysis of popular youth media (five magazines and three soap operas) in Austria, Germany and France it could be shown that technology plays an important role in those media

and furthermore in young people's lives. Youth magazines and soap operas have lots of different possibilities to embed SET as meaningful topics, because science, engineering and above all technology are already represented broadly in those media. But only few producers use the chance to connect the existing potential of SET images, like in a job special section of the German youth magazine "BRAVO" or for an explosive storyline in the French soap opera "Plus Belle La Vie". Especially the analysis of this soap opera could prove that including SET topics in the story does not necessarily have to bring boring results. On the contrary, our newspapers are full with thrilling stories around science and technology, youth media could use that to equally promote gender equality in SET as well as enhance discussions about SET and its impacts.

But that is wishful thinking, most youth media represent SET, and predominantly technology in an accessory-style, like clothes or furniture they are used in the stage set of TV scenes or magazine pictures to represent modernity, where unfortunately the message too often is that possessing is more important than using and understanding (Thaler 2009).

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