Science & Values

– a summary

vetenskap & allmänhet

ISSN: 1653-6843
ISBN: 978-91-85585-56-4 (in print)
urn:nbn:se:vetenskapochallmanhet-2010-4 (pdf)

Published by: Vetenskap & Allmänhet, VA, September 2010
Box 5073, 102 42 Stockholm
Telephone: +46-8-791 29 00
Fax: +46-8-611 56 23
E-mail: info@v-a.se
Website: www.v-a.se

Authors: Cissi Askwall & Karin Hermansson
Translation: Esther Crooks & Diane Högsta
Production: Pelle Isaksson & Lotta Tomasson

Content

Preface

For the knowledge society to become a reality, its citizens must be interested and engaged in the production of knowledge – that is, in science and research. How people view knowledge, research and researchers is therefore of vital importance not only for the research community but also for society as a whole.

The Swedish non-profit association VA (Public & Science) has monitored public attitudes to science and research for several years. As well as the public in general, these studies have focused on attitudes within specific groups, such as politicians, journalists, teachers and business leaders. In addition VA has studied how researchers value public engagement and how they feel about communicating with the public at large.

These studies have shown clear differences in attitudes to scientific research between people with different levels of education and between different social classes. In this latest study, *Science & Values*, VA has looked into these differences in depth and analysed the findings for underlying factors.

This study, *Science & Values*, has been published in three parts (available online in Swedish):

1) *Vetenskap att tro på?,* focussing on beliefs and values.
2) *Kunskap i en klass för sig?,* focussing on political values and class.
3) *Känsla för kunskap* – a book containing nine interviews with leading researchers, opinion formers and representatives from different parts of society.

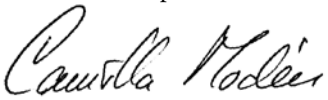
This report summarizes in English the results, conclusions and recommendations of all three parts of the study.

Karin Hermansson, Research Director at VA, is responsible for the Science and Values project and the analysis of the results. Cissi Billgren Askwall, Communications Director at VA, is the editor of the book "Känsla för kunskap".

The study was funded by, the Riksbankens Jubileumsfond, the Torsten and Ragnar Söderberg Foundations and the Swedish Council for Working Life and Social Research (FAS).

It is hoped that the findings and conclusions of this report will inspire further dialogue about how to stimulate interest for science and knowledge, and how the knowledge society can be a society for all.

Stockholm, September 2010



Camilla Modéer
Secretary General, VA

Introduction

Citizens of the knowledge society need to make many decisions – decisions that require both knowledge and engagement. Interest, openness, and involvement are crucial for all sectors of society if the findings of scientific research are to be effectively and efficiently utilized.

A positive public attitude to science and education is essential to our universities. Student recruitment is affected by the attitudes of young people and their parents. We also know that there is a clear correlation between people's trust in research and their willingness to spend government money on research.

To be able to reach out and connect with people, the research community must have the right approach to dialogue with society. They need an understanding of the general public and the different target groups within it. A key part is the understanding of values, faith systems and attitudes.

People's attitudes to science and research are connected to many different factors. From previous studies, we know that there are clear differences in attitude between people with different levels of education. We have also seen signs of differences between social classes. In a new study, entitled *Science & Values*, Swedish organisation VA (Public & Science) has analysed these differences in further detail, with the aim of discovering possible underlying factors. Is the knowledge society a new kind of class society based on education? Are certain values associated with a higher level of education?

The study consists of three parts: 1) Beliefs and values, 2) Political values and the "class society," and 3) Reflections and conclusions. The first part was presented in November 2009 and the second in June 2010.

The results presented in the first two reports are based on national surveys *(see page 16)*. The final report, published in September 2010, contains reflections and conclusions on the study's findings from leading researchers, opinion-formers and representatives from different parts of society. Based on the survey results and the conclusions, VA gives recommendations for the future.

The following is a short summary of the findings and conclusions.

Key findings

LEVEL OF EDUCATION is the strongest factor in how people view research – this is already known from previous studies. The higher level of education a person has, the higher the level of confidence in research and researchers, and the more positive attitudes to science, technical development and government funding of research *(see examples in figure 1 and 2)*.

Figure 1: The percentage of the public expressing great confidence in research conducted in Sweden in the respective fields vs. educational level of the respondents.
(high = university degree, middle = gymnasium/secondary school, low = compulsory school.)

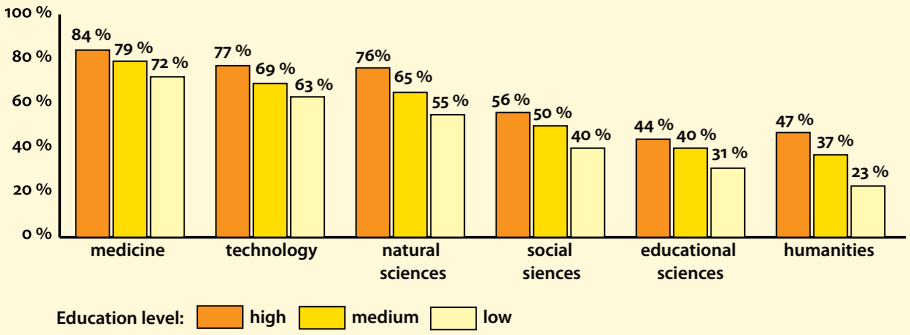
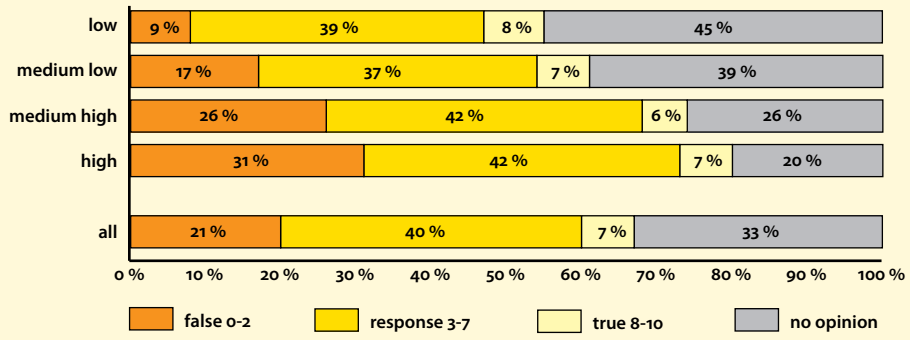


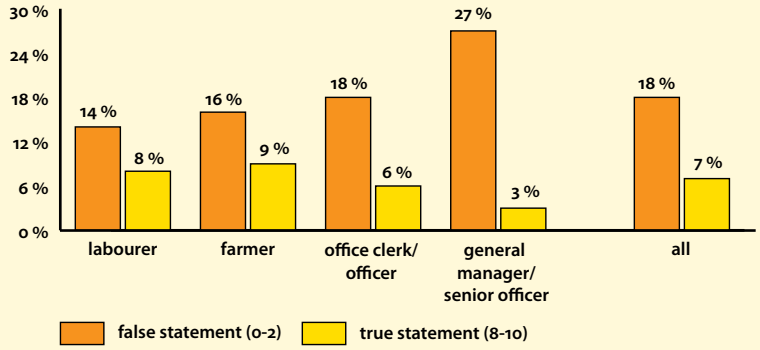
Figure 2: *"Researchers don't take ethical issues seriously"*. Responses on the following scale: 0 = entirely true statement to 10 = entirely false statement, vs. educational level of the respondents.



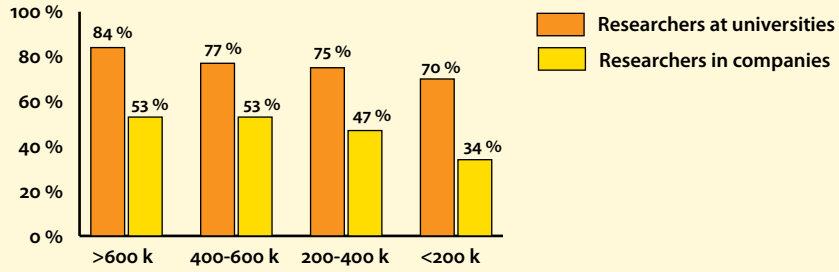
What subject people have studied also have a bearing on their confidence in research. This can be explained in part by "attachment" to a specific subject. People with a background in natural sciences or mathematics, for example, have more confidence in medical, scientific and technical research than others, whilst those with a social science background have more confidence in social science research.

"SOCIAL CLASS" is also a factor in people's ideas about knowledge and their confidence in research. Class affiliation (self-assigned) and household income are clearly related to attitudes to research and researchers, although these factors are not as strong as the level of education *(see figure 3 and 4)*.

Figur 3: *There is often cheating in research"*. Percentage that responded 0-3 and 7-10 on the following scale: 0 = entirely true statement to 10 = entirely false statement, by self-assigned professional class affiliation of the respondents.



Figur 4: Percentage with a high or very high confidence in researchers, household income (per annum) in SEK thousands.



Although class affiliation is clearly linked to level of education, there is not a complete correlation. In other words, there are highly educated people in working class homes, and people with a low level of education in middle class homes, although these are minority cases. Income levels are also strongly linked to education, with some obvious exceptions. However, it is likely that a combination of certain factors reinforce each other; people with a high level of education, in a high-level position and with a high income are very likely to have a high level of confidence in research and researchers.

Confidence in research is also higher among people with paid employment than among students, senior citizens, the unemployed and people on sickness benefit/activity compensation. The exception to the rule is medical science research, which enjoys approximately the same

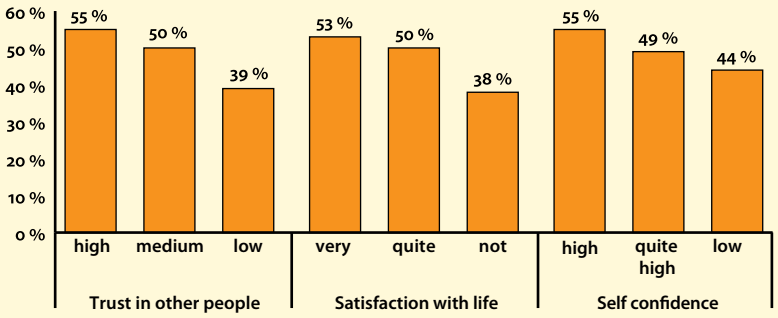
high level of confidence among all groups except for students. Confidence in scientists also varies in different professional categories, with high-level employees and managers at the top and agricultural workers at the bottom.

Research has shown that people whose jobs involve problem solving and creativity have a stronger interest in politics. People who feel that their work is meaningful are also satisfied with the way in which Swedish democracy is working and have more confidence in Swedish politicians. Since these factors are linked to confidence in research, this indicates that there may be a connection between confidence in research and the type of work people do.

Is the knowledge society a new kind of class society based on education? Are certain values associated with a higher level of education? Our results indicate that the answer to both these questions is yes.

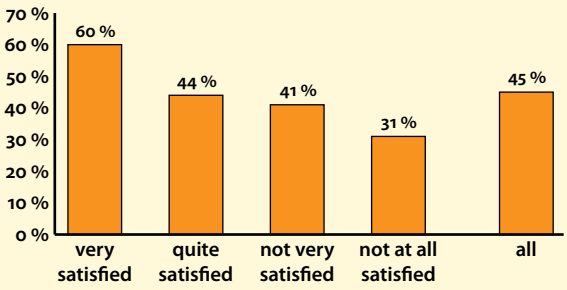
SATISFIED AND SELF-ASSURED MEMBERS OF SOCIETY have a higher level of confidence in research. People who are satisfied with their lives, trust their fellow citizens and have confidence in various public institutions (health care, parliament, the judiciary, etc.) have more confidence in research and researchers *(see figure 5)*. Those who are interested in politics and who are in favour of Sweden's membership of the EU also have a higher level of confidence in research and researchers. They also have a more positive view of scientific development *(see figure 6)*.

Figur 5: *"Has scientific development over the last few decades made life better or worse for ordinary people?"* Percentage of respondents who think scientific developments have made life much better or somewhat better vs. degree of trust in other people, life satisfaction and self confidence.



These factors can be seen as a measure of how satisfied people are with society and their lives –which in turn is affected by education and the type of work people do. The higher the level of education, the more people trust their fellow citizens and the more satisfied they are with democracy in Sweden, in their own municipality and in the EU. Middle class people are more satisfied with democracy and are more trusting of their fellow citizens than people in working-class homes. People with a high level of education and high-level jobs are also

Figur 6: Percentage that agree with the statement *"Increased investment in research provides a better society for all"* (responded 8-10 on the following scale**:** 0=entirely false 10=entirely true statement) by level of satisfaction with democracy in Sweden.



somewhat more satisfied with their lives than others. Rothstein (2009) has shown that trust in each other is greatly linked to self-confidence.

The connection between basic values and views on research and researchers is weaker. People who highly value democracy, health, fairness and a peaceful world have more confidence in research and researchers than people who consider these values to be less important. Young people believe to a lesser extent than older people that democracy is important. People who regularly donate money to aid organisations – which is also an expression of their values – have a somewhat higher level of confidence in research in social sciences and humanities than those who do not usually make charitable contributions.

World Values Survey analysis has shown that Swedes with a positive attitude to science and technology have a more positive opinion of rules and predictability and a more negative opinion of change, freedom and excitement. Young people are less positive to rules and predictability, which, according to the author, can explain to some extent why young people have a less positive opinion of science and technology (Pettersson 2008).

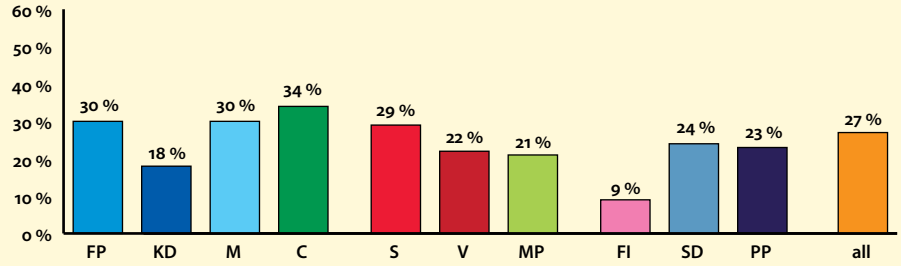
A 2005 Eurobarometer survey showed that people who generally reflect on the meaning of life more often than others believe that university research has a positive effect on society. Optimism about new science/technology in the field of biotechnology is greater among people who trust other people.

POLITICAL VALUES are also linked to attitudes towards research *(see figure 7)*. Political preferences, i.e.. which party people prefer, are a reflection of the values that people hold. Studies have shown (Sjöberg 2008) that political values are a more important indicator in questions such as perception of risk, or opinions on specific issues, than more basic, general values.

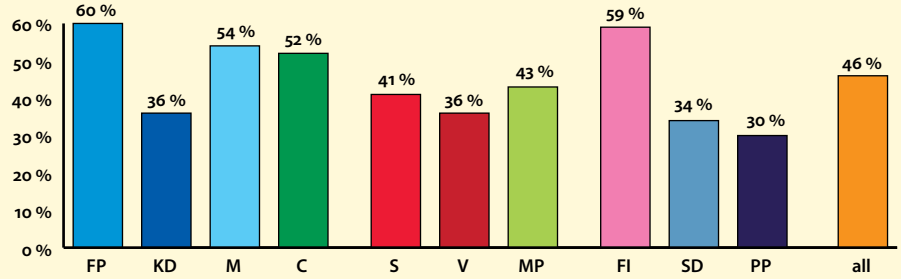
Swedes who support the centre-right Alliance (the ruling coalition) have more confidence in research than those supporting the red-green coalition (Social Democrats, Green Party and Left Party), with one exception: the red-green voters have a higher level of confidence in educational sciences. Supporters of the Liberal Party of Sweden have the highest level of confidence in research and researchers. They strongly believe that research will lead to a better society for all and that Swedish research is internationally competitive.

Figur 7: a) *"Investing in research leads to a better society for all"* b) *"Sweden has a good research climate"*. Percentage that agree, i.e. response 8-10 on the following scale: 0 = entirely false to 10 = entirely true statement, by political preference (i.e. which party the respondent prefers).

a)



b)



SWEDISH POLITICAL PARTIES

FP = Folkpartiet (The Liberal party) KD = Kristdemokraterna (The Christian Democrats) M = Moderaterna (The Swedish Moderate party)
C = Centerpartiet (The Centre party) S = Socialdemokraterna (Socialdemocrats)
V = Vänsterpartiet (The Left party) MP = Miljöpartiet (The Green party)
FI = Feministiskt initiativ (Feminist Iniative) SD = Sverigedemokraterna (Sweden Democrats) PP = Piratpartiet (The Pirate party)

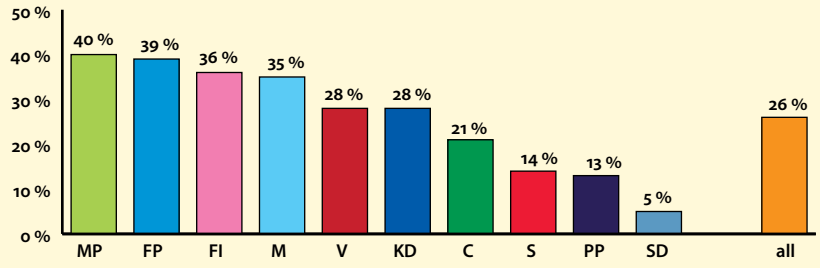
They also distance themselves to the greatest extent from claims that researchers do not take ethical issues seriously or that there is often cheating in research. A more cautious approach to the importance of research and the way in which researchers work is prevalent among supporters of the Left Party and the Social Democrats, as well as the Christian Democrats. Among Green Party supporters, views on scientific development had a positive shift between the years 2002 and 2008, while attitudes among the Christian Democrats' supporters became more negative during the same period.

People who express support for the Sweden Democrats [1] and the Pirate Party [2] have the lowest level of confidence in research and researchers. They also trust their fellow citizens less and are less satisfied with democracy in both Sweden and the EU. Sweden Democrats' supporters have, however, shifted from clearly having a lower level of "general" confidence in researchers in 2006 and 2007 to the same level as most of the others in 2008. The Liberal Party voters have been in first place in terms of confidence in researchers for most of the period covered by the study.

Differences between the supporters of the different parties are also evident in how actively people engage with science. Liberal Party supporters, for example, attend popular science lectures more often and read more popular science magazines than others. Green Party supporters are most likely to search online for information on current research.

The average level of education differs among the supporters of different political parties. The Green Party and the Liberal Party have the largest portion of supporters with a high level of education, while the Sweden Democrats have the fewest supporters with university degrees *(see figure 8)*.

Figur 8: Percentage of supporters from each party with a high level of education (i.e. educated to degree level)



It is well known that political ideology is linked to class. One study has shown that there are also class differences among the supporters of the respective parties and that these are connected to differences in political involvement and confidence in politics. According to the author, this probably means that certain opinions "are heard the most" and represented the best in Swedish politics, namely those of highly educated, highly paid, office workers (Oskarson 2009).

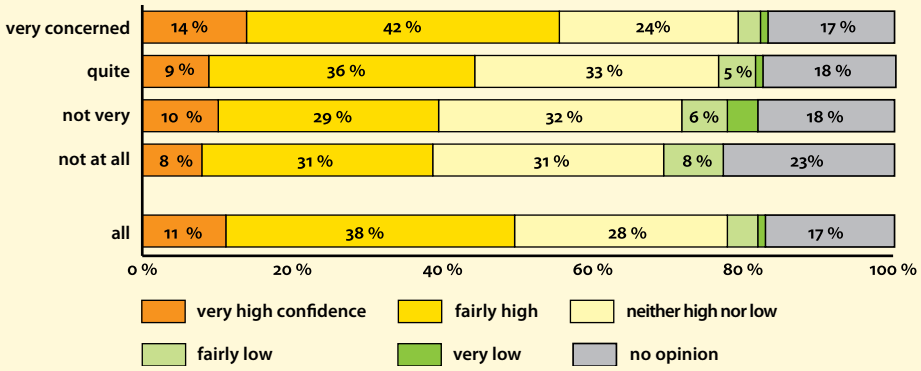
Interest, involvement or concern regarding specific issues is another factor that directly affects attitudes. In certain cases this interest or concern about specific issues may be dominant over

[1] Sweden Democrats is a nationalist party arguing against immigration and globalisation. It is not represented in the Swedish Parliament.

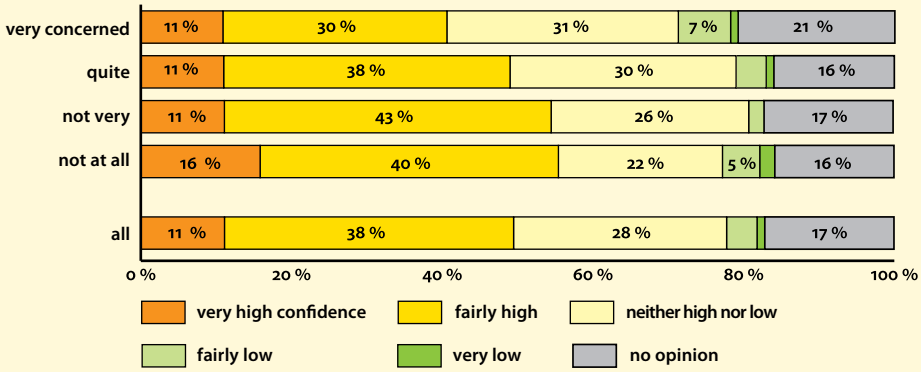
[2] The Pirate Party was founded in 2006, and does not wish to be positioned on the traditional political left-right scale. The party received over 7 % of the votes for the European Parliament in the 2009 elections and so has one MEP, but it is not represented in the Swedish Parliament.

Figur 9: Percentage of people with different levels of confidence in social science research vs. level of concern about a) *environmental harm* and b) *an increase in the number of refugees.*

a)



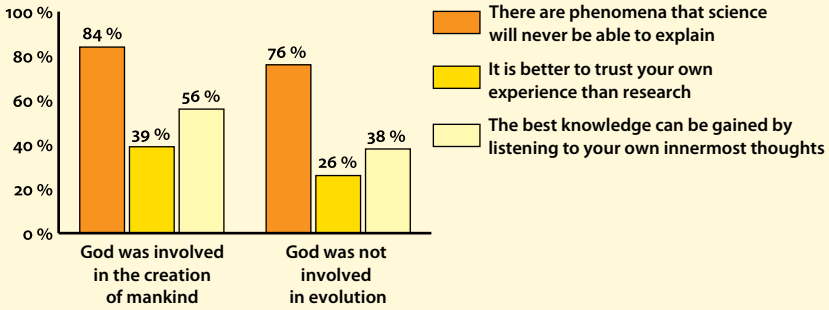
b)



other factors. There is, for example, a link between interest and involvement in environmental issues and a positive attitude to environmental and energy research. Furthermore, people who are concerned about certain societal problems – particularly those relating to the environment – also have greater confidence in researchers and are more positive to research initiatives in areas other than their own "area of concern" *(see figure 9a)*.

On the other hand, people who are concerned, for example, about an increase in the number of refugees have less confidence in research. Here the connection is considered to be the opposite of the case concerning environmental harm and climate change *(see figure 9b)*. This may be an effect of the level of education. Concern for the environment and the climate increases with the level of education, whereas concern about certain subjects including Swine Flu, terrorism, the financial crisis and an increase in refugee numbers declines as the level of education rises.

Figur 10: Percentage of people who agree entirely or to some extent with the statements shown divided into those who do and do not believe that God was involved in the creation of mankind on Earth.



The study shows that an individual's own involvement and/or concerns, educational level and class are all factors affecting concern about societal problems. There does not appear to be any general connection between people's concerns about societal problems and their views on research and researchers.

Religious belief is linked to a lower level of trust in science and a lower level of confidence in research and researchers. This is shown in the first part of the study *(see example in figure 10)*. The connection is, however, not quite as strong as for the social factors described above. Believers are more likely than non-believers to think that science and technology are too difficult for most people to understand, and that research attempts new things without considering the risks. Believers are also more likely to think it better to trust your own experience than to trust research. Faith and being religious have a strong influence on people's attitudes to certain research fields, such as evolutionary biology and theology.

Religious belief was measured by asking questions about belief in a God, in a spirit or in a "life-force". People were also asked about whether they believed God was involved in human evolution on Earth [3]. The extent to which people practice religion was measured by asking about their prayer habits and attendance at religious gatherings (religious services etc.).

Research has shown that religious people are more content with life than others (Clark 2009). There is also research that demonstrates a link between New Age beliefs and risk perception (Sjöberg 2002).

[3] Religious affiliation is also included in the study, but because of the small number of respondents with a religious affiliation other than Christianity, it is difficult to carry out a comparative analysis between affiliations.

Conclusions

In summary, the survey results show that:

- There are stark differences with respect to people's level of education and "social class" and their attitudes towards research and researchers.
- "Happiness" – in terms of confidence in social institutions ("social trust"), satisfaction with life and trust in other people – is an important factor linked to confidence in research.
- Political values are also linked to confidence in and attitudes towards research.
- Those who are particularly engaged in certain issues and subjects have more positive attitudes to research in those fields. Education in a certain field can also be regarded as a type of involvement, as can religious belief.
- Religious belief is related to somewhat less confidence in scientific research, but it can also be seen as one form of engagement that can influence attitudes in either direction, depending on the research area.

Is the knowledge society a new "class society"? Our answer, based on these findings, is yes. In the third and final part of the study, we interviewed nine well-known, experienced people from different sectors of Swedish society and asked for their reflections upon the study results.

What can be done to increase interest in knowledge, and to decrease class differences in people's attitudes to research? VA's recommendations, based on this study's findings and the reflections gathered, are:

- Create a society that stimulates curiosity and a desire for seeking out new knowledge
- Re-establish the value of general education and improve the possibilities for lifelong learning
- Support school teachers in stimulating a scientific approach among the pupils, and in using evidence-based teaching methods.
- Encourage and facilitate for young people to embark on university studies, regardless of their background.
- Make sure researchers involved in public engagement activities are rewarded.
- Develop meeting places and contacts between researchers and different sectors in society.

About the study

Science & Values is a study conducted by VA (Public & Science). The report on the findings is divided into three parts: 1) *Research to believe in?*, VA-report 2009:2 2) *Knowledge in a class by itself?*, VA-report 2010::2 and 3) *A feel for knowledge*, VA-report 2010:3.

The results are based on an analysis of survey responses from the national postal survey Riks-SOM, conducted by the SOM Institute at Gothenburg University 2008 and 2009, as well as telephone interviews conducted by Novus Opinion in 2009. Both surveys involved representative samples of the Swedish population, aged 16 and over.

The study is financially supported by the Torsten and Ragnar Söderberg Foundations, the Bank of Sweden Tercentenary Foundation and the Swedish Council for Working Life and Social Research (FAS).

References

- *Vetenskap att tro på? (Research to believe in?)* VA-report 2009:3, Vetenskap & Allmänhet 2009. In Swedish.
- Maria Oskarson, *Viskningar och rop – om samband mellan klass och politik (Whispers and shouts – on the connections between class and politics)*, in Svensk Höst, the SOM Institute 2009, p. 39. In Swedish.
- Lennart Sjöberg, *Ungdomars syn på demokrati- och teknikfrågor (Young people's views on democracy and technology)* in K. Vikström (Ed.), *Samhällsforskning 2008. Betydelsen för människorna, hembygden och regionen av ett slutförvar för använt kärnbränsle (Social research 2008. The importance of terminal storage of spent nuclear fuel for the people, the community and the region)*, Stockholm: SKB 2008, pp. 65-93. In Swedish.
- *Social Values, Science and Technology*, Special Eurobarometer 2005
- Thorleif Pettersson, *Unga sjunga med de gamla (Young sing with the elderly)*, SKB report R-08-53, Aug. 2008. In Swedish.
- Bo Rothstein, *Tillitens mekanismer (The mechanisms of trust)*, in Svensk Höst, the SOM Institute, report no. 46, 2009. In Swedish.
- Bo Rothstein and Daniel Eek, *Political corruption and social trust – an experimental approach,* Rationality and Society 21, 2009
- Bo Rothstein, *Happiness and the welfare state*, Social Research 77(2), 2010
- Andrew E. Clark and Orsolva Lelkes, *Let us Pray: Religious Interactions in Life Satisfaction*, Paris-Jourdan Sciences Economiques Working Paper, 2009
- Luigi Guiso, Paola Sapienza and Luigi Zingales, *People's opium? Religion and economic attitudes*, J. Monetary Economics 50(1), p. 225-282 (2003)
- Lennart Sjöberg and Anders af Wåhlberg, *Risk Perception and New Age Beliefs*, Risk Analysis 22 (4), p.751. (2002)

VA-reports

2002:1 What do people in other countries think?
2002:2 The public's view of science
2002:3 Researchers' views on dialogue with the public
2002:4 How young people view science

2003:1 Science in society
2003:2 VA studies under the microscope: Perspectives on science 2002
2003:3 How the public views science 2003
2003:4 How researchers view Public & Science*
2003:5 Researchers' views on dialogue with the public

2004:1 Science in society
2004:2 Teachers' attitudes towards science and research-based knowledge
2004:3 How the public views science 2004
2004:4 How teachers view science*
2004:5 Researchers' views on dialogue with the public
2004:6 What do people in other countries think, 2004?

2005:1 Science in society
2005:2 Teachers on entrepreneurship
2005:3 Eurobarometers on science, 2005
2005:4 How the public views science, 2005
2005:5 Science in the press
2005:6 How journalists view science*

2006:1 Science in society
2006:2 How politicians view science
2006:3 Science in the political press
2006:4 Eighteen voices on the relationship between researchers and politicians
2006:5 Politics and science*
2006:6 How the public views science, 2006
2006:7 Stockholm politicians' view of science
2006:8 Politics and science – a literature survey
2006:9 The public on Carl Linnaeus, 2006

2007:1 Journalists on research
2007:2 Science in society
2007:3 How the public views science, 2007
2007:4 Young people's views on science
2007:5 Young people on knowledge*
2007:6 Crazy, confused and evil?
2007:7 Projects with no effect?
2007:8 Knowledge rocks! Summary of a youth study by VA*

2008:1 After the Linnaeus anniversary
2008:2 Science in society
2008:3 Myself as a researcher*
2008:4 The value of knowledge in the business world
2008:5 Knowledge in transition*
2008:6 VA barometer 2008

2009:1 Science in society
2009:2 VA barometer 2009/10*
2009:3 Research to believe in?
2009:4 ODE – Public Engagement and Dialogue

2010:1 Science in society
2010:2 Knowledge in a class by itself?
2010:3 A feel for knowledge
2010:4 Science and Values*

Reports marked with an asterisk (*) are available in English.

VA promotes dialogue and openness between the public and researchers

Research impacts all of us and affects our future. For this reason, it is vital that the public has a better understanding of research and takes a full and active role in debating the direction of scientific progress.

Society needs greater knowledge of research results and processes, and of the methods used to communicate these findings. Researchers also need knowledge from society. The questions people ask, their interests and concerns give researchers insights into what is important to the public, and how society as a whole views their work.

About VA

VA is an independent and influential Swedish membership organisation that works to advance and encourage dialogue between researchers and the public. It is an obvious partner and knowledge hub for science and society dialogue at home, in Europe and beyond.

va-report 2010:4

Read more at *www.v-a.se*

vetenskap & allmänhet *with support from*

FORSKNINGSRÅDET FÖR ARBETSLIV OCH SOCIALVETENSKAP

Riksbankens Jubileumsfond

TORSTEN OCH RAGNAR SÖDERBERGS STIFTELSER