

The VoF-Study 2015



**The Swedish
Skeptics
Association**

**Föreningen
Vetenskap och Folkbildning**

The VoF-study 2015

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The Swedish Skeptics Association
Föreningen Vetenskap och Folkbildning

29 October 2015

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Foreword

Vetenskap och Folkbildning, VoF, (aka the Swedish Skeptics Association) has for several years received questions from the general public and the media regarding to what the extent Swedish people are superstitious and pseudoscientifically oriented. Some research exists in the area, but there has been a general lack of comprehensive studies about the attitude of the Swedish public towards science, pseudoscience, conspiracy theories and the supernatural. Throughout history as well as today, misconceptions have had disastrous consequences. To obtain a deeper knowledge about the position of Swedish people in relation to these topics, VoF commissioned Demoskop*) to conduct a poll during early summer 2015. This report presents the result of this poll.

The Swedish Skeptics Association, October 2015



Linda Strand Lundberg
President



Mikael Ingemyr
Project Manager

**) Demoskop AB, was founded in 1989 and is a private Swedish PR and public information company, specializing in conducting polls and producing public opinion studies.*

Introduction

This study concerns a wide variety of questions all of which are of interest for VoF and its members.

Science concerns scientifically well-established facts, as the theory of evolution and global climate change, as well as scientifically discredited ideas such as dowsing and electromagnetic hypersensitivity.

Conspiracy Theories looks at the beliefs in several of the most common conspiracy theories, such as the idea that the terror attacks of 9/11 in 2001 were staged by the American government or in the concept of deliberate release of substances from airplanes to control the public, aka Chemtrails.

Medicine and Health looks into belief in common alternative treatments like acupuncture, healing and homeopathy and also the opinion about GMO, vaccines and the pharmaceutical industry.

Faith and the Supernatural deals with ghosts, gods, reincarnation, destiny, creationism and astrology.

The study was conducted by Demoskop through their “OnlinePanel”, that recruits participants via telephone through a randomized algorithm. The interviews were conducted from 5th to 11th of May 2015 with 1,113 responding participants. The targeted group was the Swedish general public, ages 18 through 89. The results were weighted based on gender, age group, education and political affiliation (based on vote casted in the latest general election) in order to best represent the Swedish population.

The two questions asked were: “In public debate, statements are often made which many people have very different opinions about. To what extent do you agree with the following statements?” and “Below you will find questions about your beliefs. To what extent do you believe in the following?” The respondents rated 29 and 18 statements respectively on a seven graded scale, from 1 = ”Disagree”, 4 = ”Neutral”, to 7 = ”Fully agree”, plus the option to not respond. The results are presented in this report. The responses to one statement has been omitted since it was found to have been poorly worded.

All mentioned differences by gender, age group, education and political affiliation are statistically significant (confidence level $\geq 95\%$), except for the comparison with the results in “DemoskopPanelen 2008” on page 52, where no special control of statistical significance was conducted. All correlations mentioned on page 55 have an R-value of ≥ 0.3 .

Science

Science is regarded as a good source to knowledge. Despite this, the opinion of the general public differs significantly in certain areas from the scientific consensus held by researchers. Because of this, it is interesting to look into the prevalence of opinions that contradict the established research and whether unscientific positions correlate with certain segments of the population.

Science - All

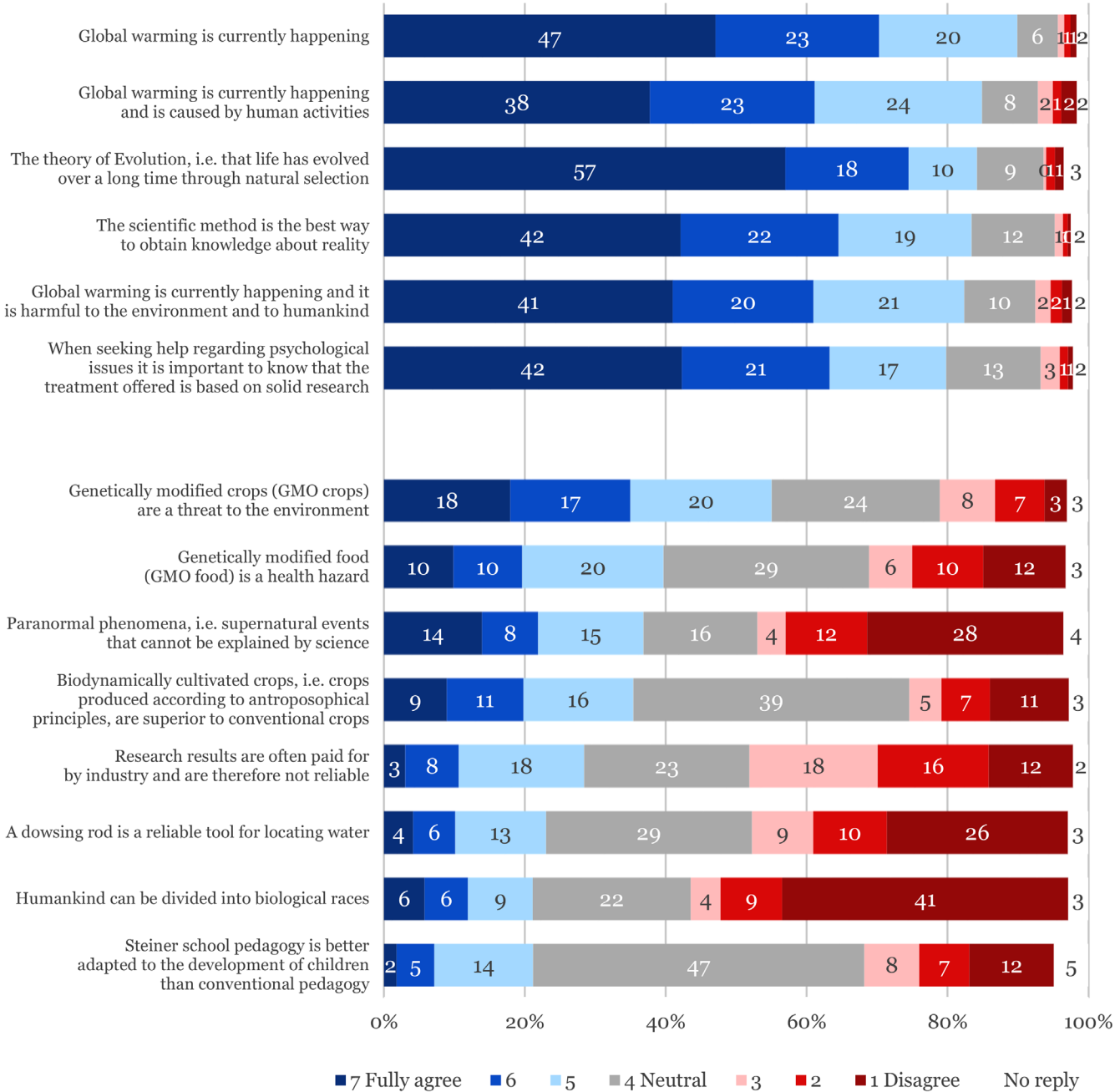
In general, most Swedes seem to agree that global warming is real, that it is a threat and that it is caused by human activities. Most people do not question the theory of evolution and a big majority agrees that it is important for psychological treatments to be based on solid research. At the same time as the majority feels that the scientific method is the best source of knowledge, about a third still believes in paranormal phenomena.

More than half of the respondents are worried about the effects on the environment of genetically modified crops and almost as many are concerned about how they affect our health.

About a third of the participants believe that biodynamic agriculture is superior to conventional agriculture. One quarter believes that industrial interest often pay for certain research results and almost as many believes in dowsing. The pedagogy of Steiner schools has relatively few followers.

Just over one in five support the statement that humans can be divided into biological races.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". Regarding the statements about the theory of evolution and about paranormal phenomena the question given was "Here are some statements regarding your beliefs. To what extent do you believe in the following?" Number of responses: 1,113.



Science – Gender

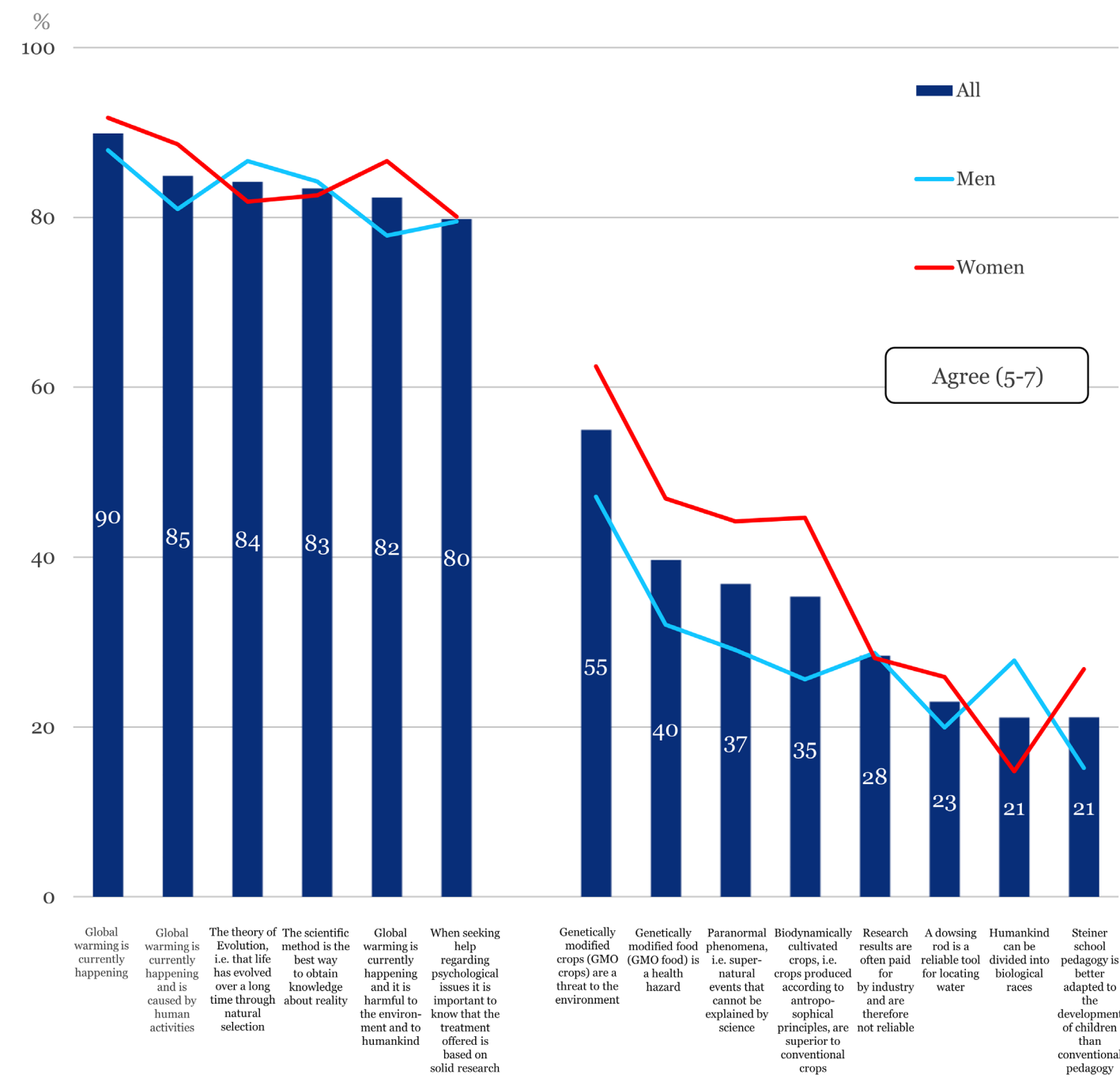
There are some differences between responses by men and women.

Women are more convinced of that we are experiencing a harmful global warming caused by human activities. Men on the other hand, are more convinced that the theory of evolution correctly describes the development of living species. However the differences in these areas are not extreme.

Women are overrepresented regarding concerns about genetically modified foods (GMO) and preference of biodynamically grown foods. They are also significantly more positive towards the idea of Steiner schools. Women are more likely to believe in paranormal phenomena than men.

Men are significantly more prone to believe that humans can be divided into biological races.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". Regarding the statements about the theory of evolution and about paranormal phenomena the question given was "Here are some statements regarding your beliefs. To what extent do you believe in the following?" Number of responses: 1,113.



Science – Age Groups

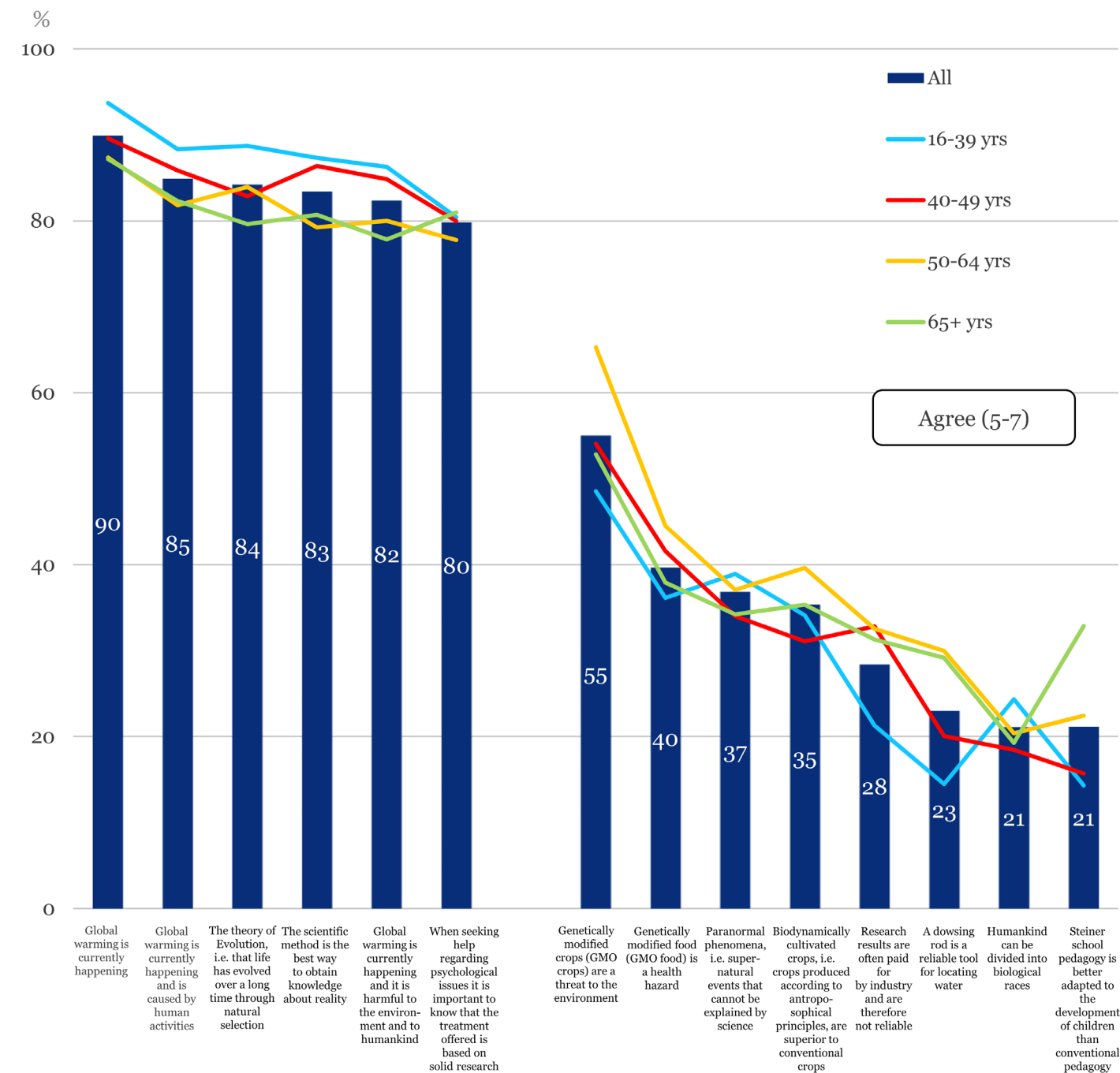
Different age groups show differences in several areas.

The youngest category (16-39 years) is more prone to believe that we are experiencing a global warming than other age groups. This category is also more positive towards the theory of evolution.

At the same time the younger respondents are less concerned about GMO and to a lesser extent believe that industrial interests are buying research results for their own gain. Dowsing rods are regarded as less reliable with younger people compared to the older population and the merits of Steiner pedagogy is also less supported.

The upper middle aged group (50-64 years) is more worried about GMO and puts more credence in dowsing than others. The oldest group (65+) also feels more positive about dowsing rods and is clearly more positive towards Steiner pedagogy.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". Regarding the statements about the theory of evolution and about paranormal phenomena the question given was "Here are some statements regarding your beliefs. To what extent do you believe in the following?" Number of responses: 1,113.



Science – Education

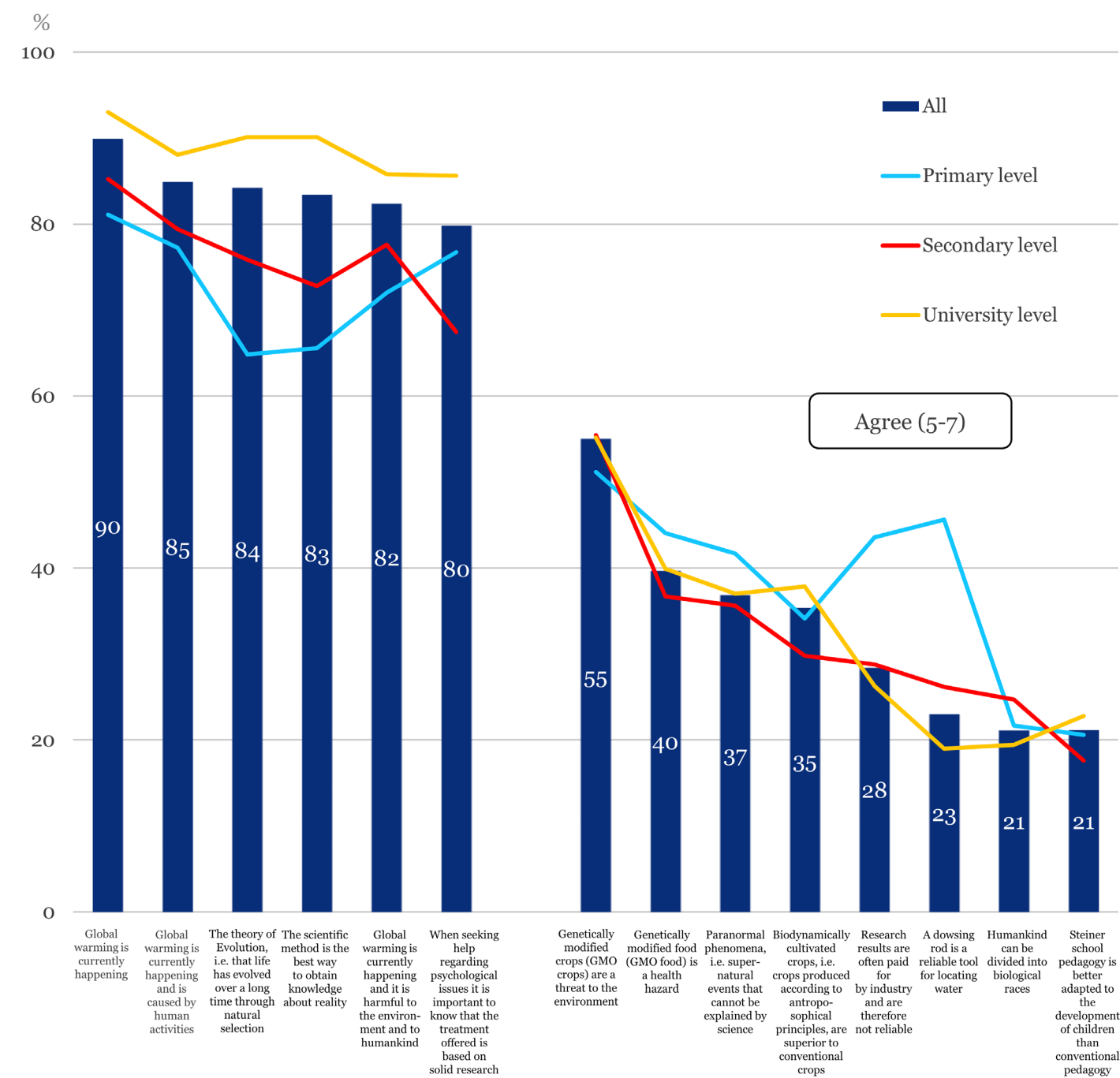
There are clear differences between people of different education levels regarding science.

People with university level education are more convinced about global warming than people of secondary level education, and this group is still more convinced than people with only primary level education. The differences between high and low-level education are apparent.

There is a difference regarding scientifically based psychological treatment. While most people of high level education finds this important, the group of secondary level education does not value this quite as much.

Low-level educated people stand out regarding their beliefs that results of scientific research is bought and they regard scientific results with more skepticism. They also believe in dowsing to a greater extent, something which is met by more skepticism by persons of higher education.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". Regarding the statements about the theory of evolution and about paranormal phenomena the question given was "Here are some statements regarding your beliefs. To what extent do you believe in the following?" Number of responses: 1,113.



Science – Political Affiliation

Persons sympathizing with Miljöpartiet (the green party) are more prone than the average population to believe in global warming, the scientific method and the theory of evolution. In addition they have less belief in that humans can be divided into biological races. On the other hand they are more concerned regarding GMO, more positive to biodynamical farming and Steiner pedagogy and they also believe more in paranormal phenomena than the average person.

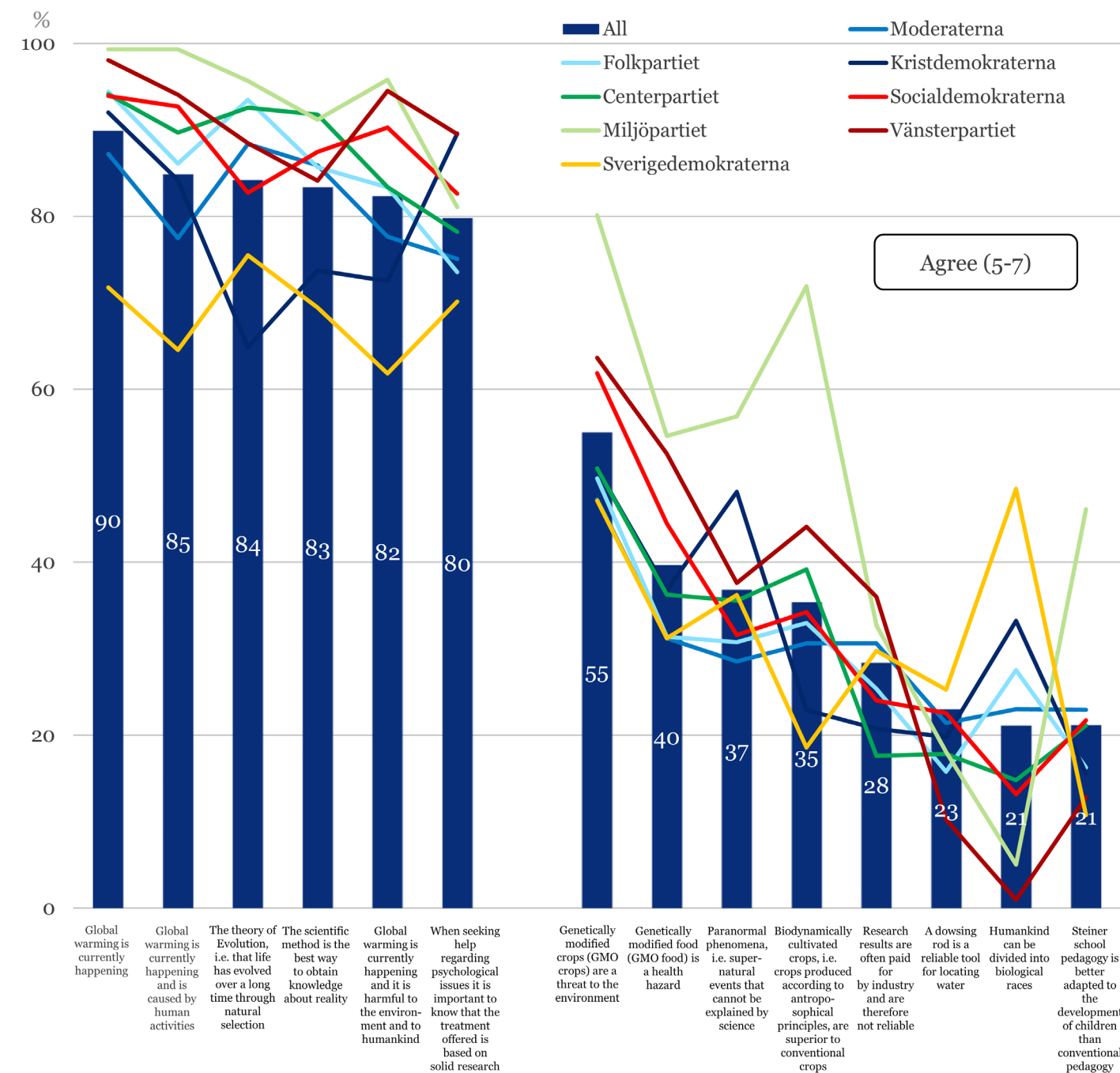
Sverigedemokraterna (an anti-immigration, right-wing party) stand out regarding the idea that humans could be divided into biological races. Supporters of this party are more skeptical towards global warming, the theory of evolution, biodynamical farming and Steiner pedagogy than the average population.

Supporters of Vänsterpartiet (left wing, former communist party) are more likely to believe in global warming and also more convinced about the importance of evidence based psychological treatments. They are more skeptical about dowsing and almost none of them agree that humans can be divided into biological races.

Sympathizers of Socialdemokraterna (the social democrats) are also more skeptical than average towards the concept of biological human races. They are concerned about the environmental impact of GMO, which does not concern followers of Moderaterna (the largest right-wing party) to the same extent. Sympathizers of Moderaterna are generally more skeptical regarding paranormal phenomena.

Followers of Kristdemokraterna (right-wing christian party) are more skeptical about the theory of evolution than followers of other parties. Close to one third of them more or less distrust evolution, in contrast the sympathizers of Centerpartiet (liberal agrarian party) who subscribe more to the theory of evolution than the average.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". Regarding the statements about the theory of evolution and about paranormal phenomena the question given was "Here are some statements regarding your beliefs. To what extent do you believe in the following?" Number of responses: 1,113.



Conspiracy Theories

It is often justified to be skeptical of information given. It is not unusual for inaccuracies to be shared through social media and for misleading articles to be published in mass media. A critical approach regarding claims and operations can therefore be more than justified. In certain cases however, this suspiciousness is built on cherry picked information, extreme interpretations, implausible associations och pure misconceptions. Conspiracy theories such as these are promoted passionately - not seldom by a small number of people.

The conspiracy theories may however be very tenacious and in these days are widely spread via the internet. A selected sample of the most common conspiracy theories were selected for our study together with a few other suspicious topics where skepticism is more justifiable.

Conspiracy Theories - All

More than a quarter of the respondents believe that research results often are paid for by the industry, and almost a sixth believe that the pharmaceutical industry is deliberately keeping people sick rather than healthy. Almost one in ten are of the opinion that ADHD is a diagnosis made up by the pharmaceutical industry.

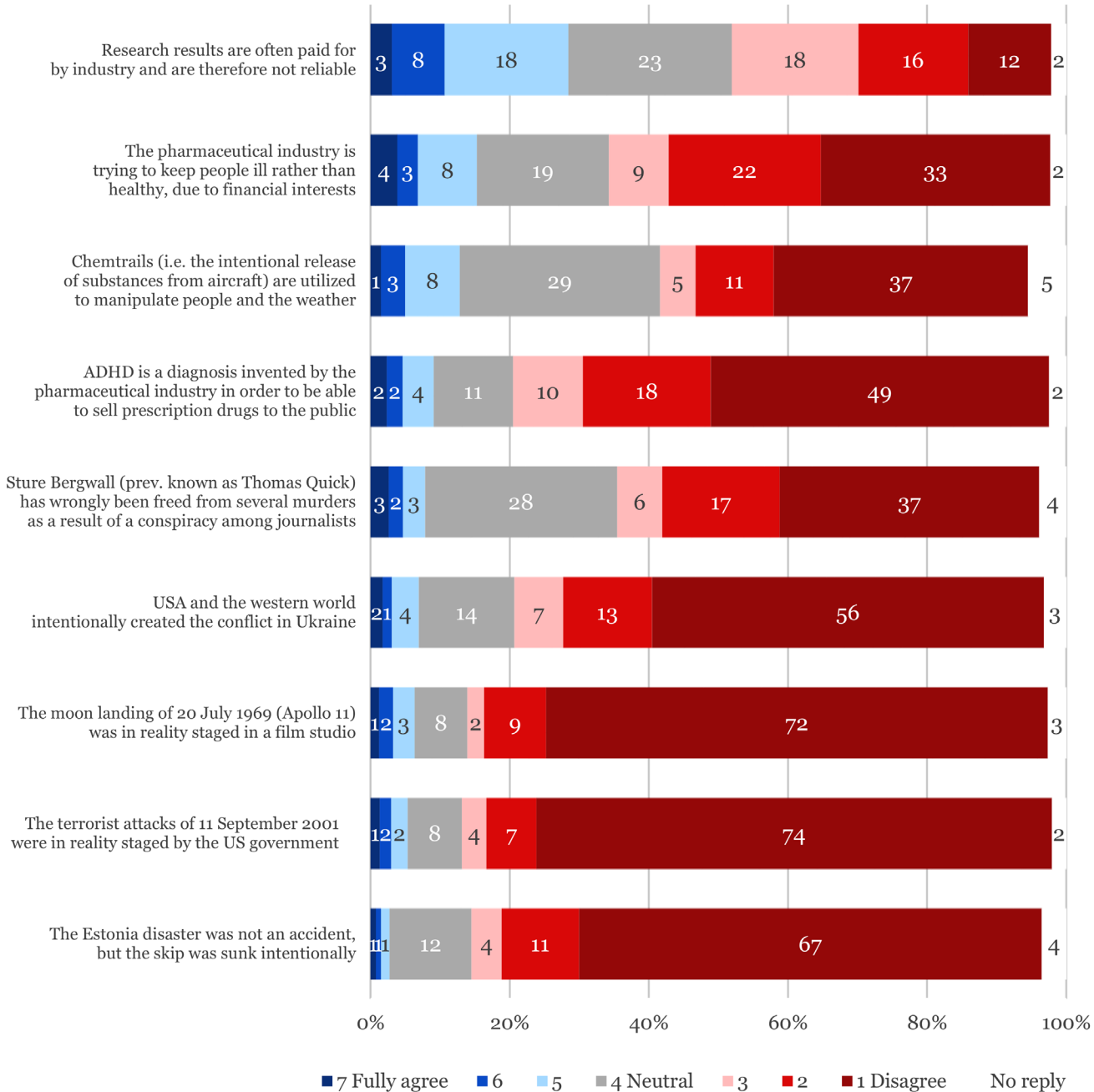
A more recent conspiracy theory circulated on the internet is the belief in so called chemtrails, the conviction that emissions from commercial air traffic are released intentionally in order to manipulate the public or the weather. More than every tenth Swede believe that there is some sort of truth in this conspiracy theory.

Eight percent believes that Sture Bergwall (Sweden’s most well known “mass murderer” until he was acquitted of all previous convictions) was wrongly acquitted from a number of murders due to a conspiracy between journalists and seven percent believes that the USA and other western countries deliberately created the conflict in Ukraine.

Somewhat fewer, six percent, are skeptical to the moon landing of 20 July 1969. Instead they believe that it was recorded in film studio.

One out of twenty believes that the terror attacks of September 11 were orchestrated by the American government, and three percent believe that the Estonia disaster was not an accident, but a deliberate sinking of the ship.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?. To what extent do you agree with the following statements?" The number of respondents was 1,113.

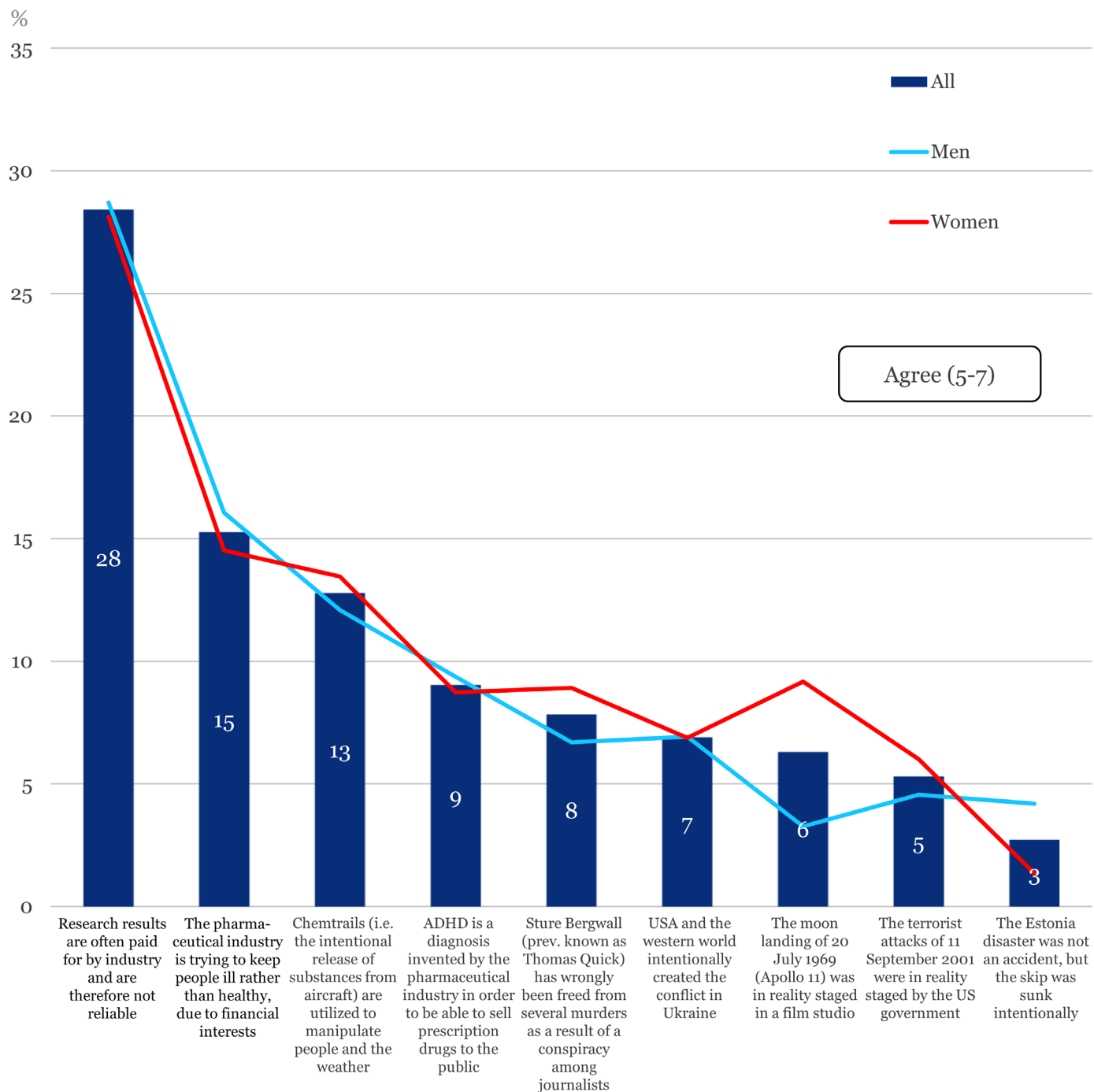


Conspiracy Theories - Gender

Women are more likely than men to believe that the moon landing of Apollo 11 was in reality recorded in a film studio.

Men are more prone than women to doubt that the Estonia disaster was an accident, but rather believe it was a deliberate sinking of the ship. But only four percent of the men have adopted this conspiracy theory.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?. To what extent do you agree with the following statements?" The number of respondents was 1,113.



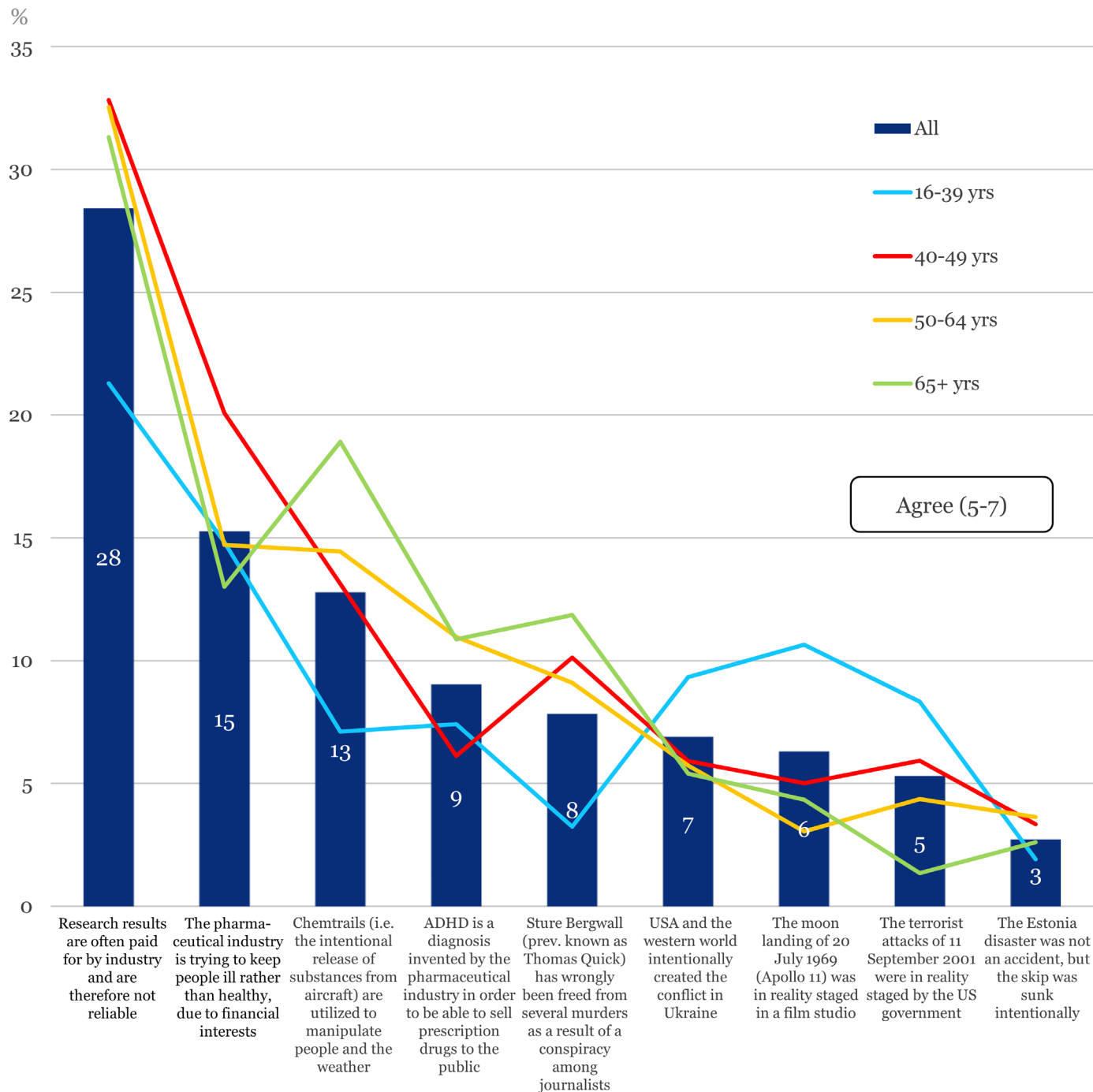
Conspiracy Theories - Age Groups

The youngest age category in the study (ages 16-39) are less prone than older categories to believe that research results often are paid for by industry and therefore are not reliable, and they are less convinced by the idea of chemtrails or that that Sture Bergwall was released as the result of a conspiracy.

The group of age 16 to 39 are more likely to believe that the Apollo moon landing did not take place, while the older middle age group (50-64 years) believes that the moon landing was staged.

The oldest age group, persons above 65 years, are less prone than younger groups to believe that the official explanation of the 9/11 attacks are false. Only one percent of this age group believes that the attacks were staged by the American government.

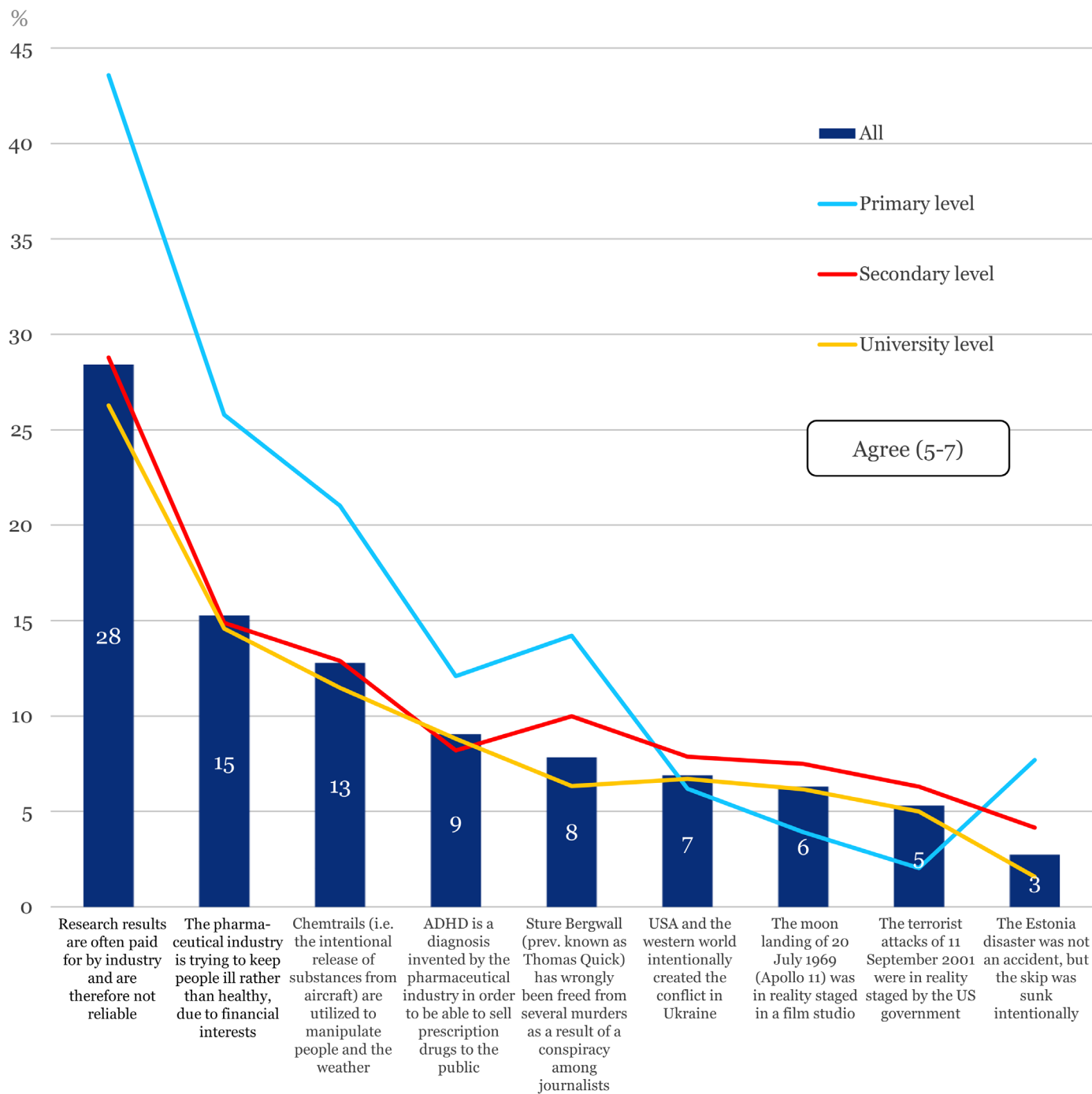
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Conspiracy Theories - Education

People who has only received nine years of primary education are more prone than people with longer education to believe in several of the conspiracy theories included in the study. Among other things they are more likely to believe that scientific research results often is paid for by industrial interests and therefore not reliable, and also the pharmaceutical industry conspires to keep people sick for financial reasons. They are less likely however, to believe that the moon landing was staged or that the American government were behind the 9/11 attacks, than respondents of higher education.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?. To what extent do you agree with the following statements?" The number of respondents was 1,113.



Conspiracy Theories

- Political Affiliation

Almost every fifth person sympathizing with Miljöpartiet (the green party) believes that the Apollo 11 moon landing was a hoax. They are however less likely to believe that the Estonia disaster was brought about intentionally.

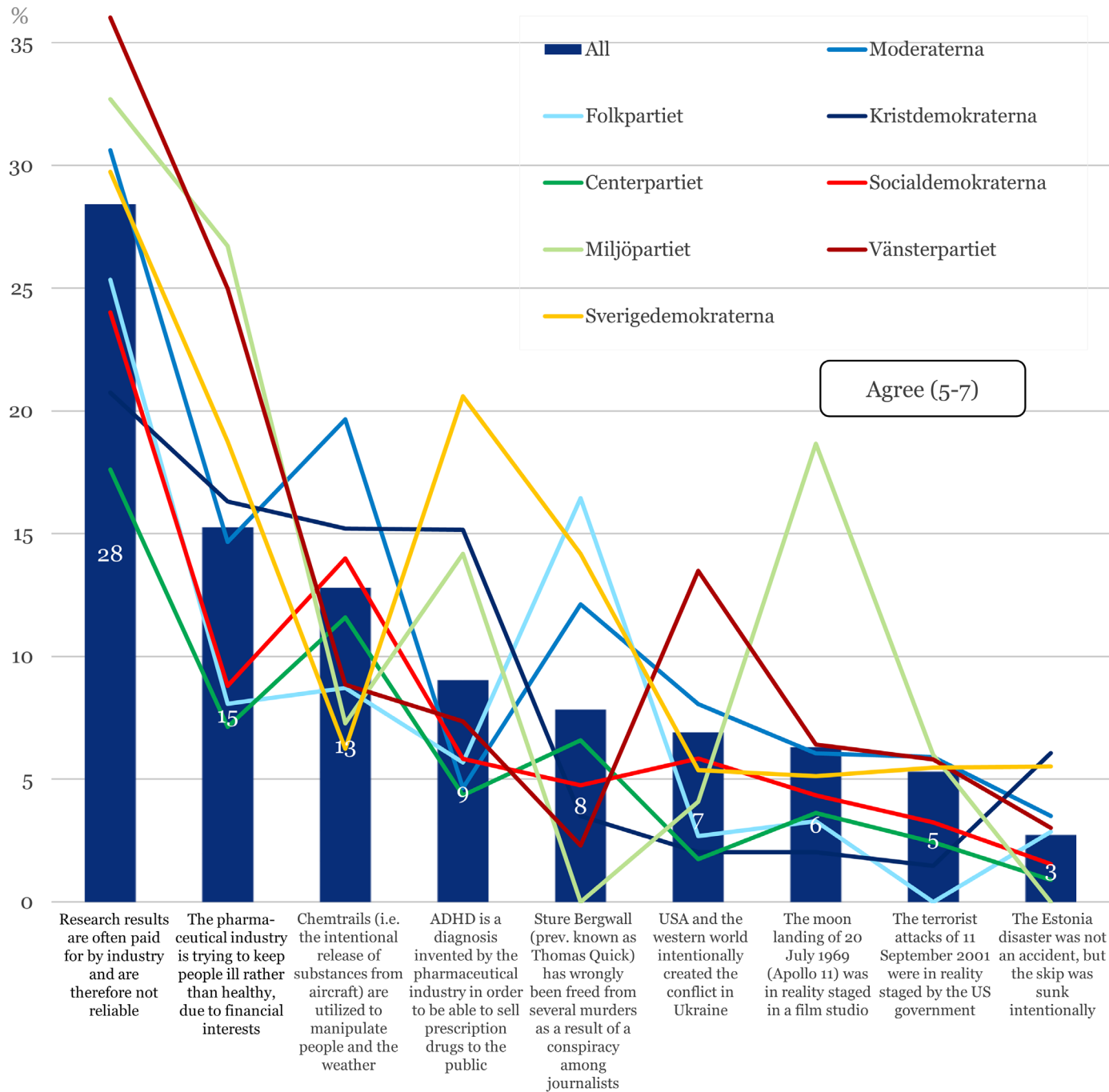
Supporters of Miljöpartiet or Vänsterpartiet (left wing former communist party) are more skeptical than others about the belief that the acquittal of Sture Bergwall was due to a conspiracy of journalists. Both groups are however more prone than others to be convinced that the pharmaceutical industry deliberately tries to keep the population ill in order to generate higher profit. In this respect they differ from supporters of Centerpartiet (liberal agrarian party) and Socialdemokraterna (social democrats) who are less likely to have those beliefs.

Nearly every fifth sympathizer of Moderaterna (largest right wing party) believes in chemtrails. Supporters of Socialdemokraterna (the social democrats) who are more skeptical of this conspiracy theory. They are in their turn more prone to believe that ADHD is a made up diagnosis, which supporters of Moderaterna and Centerpartiet are more doubtful of.

In addition to this, supporters of Centerpartiet are less likely to believe that scientific research results would be paid for by industry and therefore less trustworthy.

Supporters of Folkpartiet (the liberal party, renamed Liberalerna since this study) are those who most strongly reject conspiracy theories regarding the 9/11 attacks.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?. To what extent do you agree with the following statements?" The number of respondents was 1,113.



Medicine and Health

Healthcare and nutrition-related issues are attracting a lot of interest and the total cost to society of these areas reflects their importance. There is already evidence that attitudes to evidence-based care, ie care based on science and proven experience, versus alternative medicine varies considerably between individuals. The subject is huge and we therefore chose questions that illustrate very different aspects to this huge panorama. Some of the questions relate directly to pseudoscientific phenomena (healing, homeopathy) while others may require a more nuanced assessment, for example regarding food additives (E numbers) since they include such a broad repertoire of subjects.

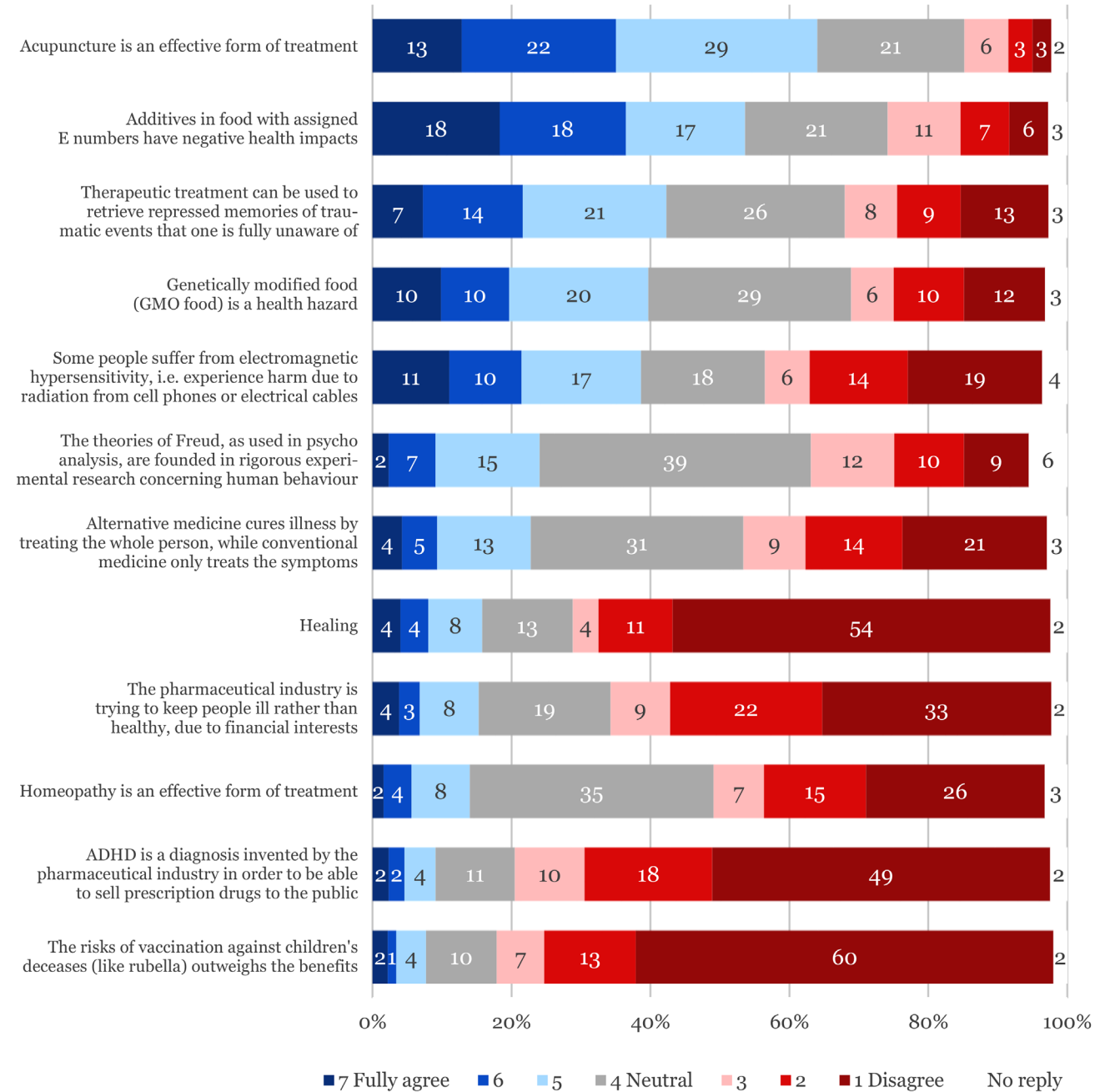
Medicine and Health - All

Most striking in the study is that acupuncture is regarded by many to be an efficacious form of treatment. This should be viewed in light of that several clinical studies have challenged any effect beyond placebo. A fairly large number of people still believe in therapeutic treatment as a means to access suppressed memories, or in the existence of electromagnetic hypersensitivity.

The theories of Freud still has some limited support. Regarding food additives with an E number, a majority thinks that these are negative from a health point of view, and a little less than half of the participants believe that genetically modified food is dangerous.

It is also apparent that a large group of the respondents are of the opinion that vaccinations against common diseases in children do more harm than good and that ADHD is a valid diagnosis. Most people have a fairly high confidence in the pharmaceutical industry.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". For the statement regarding healing, the question was "Here are some statements regarding your beliefs. To what extent do you believe in the following?". The number of respondents was 1,113.



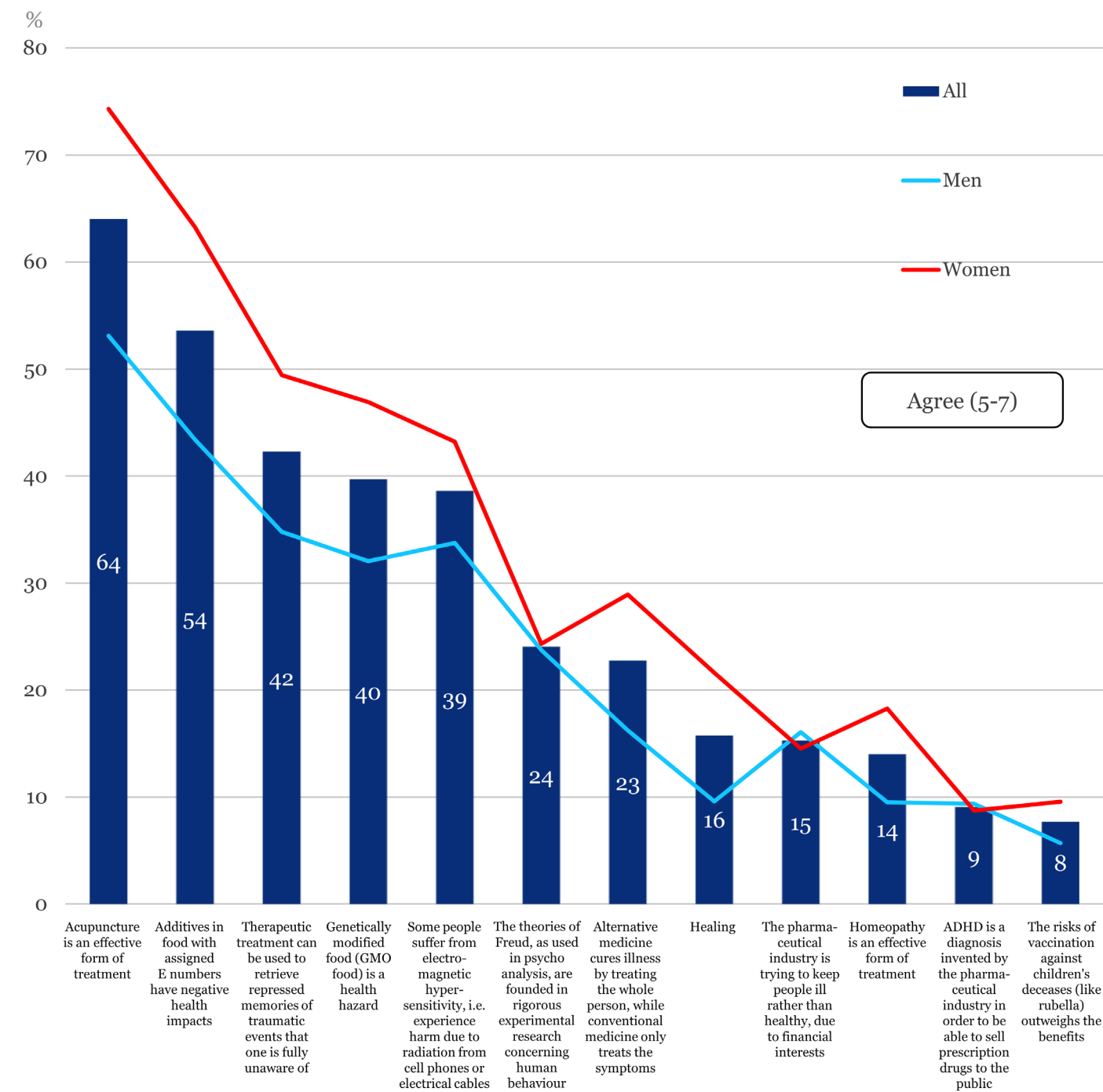
Medicine and Health - Gender

There are clear differences in the attitudes between men and women regarding health-related issues.

Women are more positive than men to acupuncture, homeopathy and healing. They are more concerned about food additives (E numbers), genetically modified foods and they are more likely to believe that the risks of vaccination exceeds the benefits. They also believe to a higher degree than men in the ability to recover repressed memories through therapy, that alternative medicine treats ”the whole person” and that electromagnetic hypersensitivity is a fact.

The only issues where women and men do not differ is in skepticism about the scientific accuracy of Freud’s theories and in the relatively low tendency to believe that the pharmaceutical industry aims to make us unwell.

The graph shows the shares of replies on a seven-graded scale from 1 = ”Disagree”, 4 = ”Neutral”, to 7 = ”Fully agree” to the question “Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?”. For the statement regarding healing, the question was “Here are some statements regarding your beliefs. To what extent do you believe in the following?”. The number of respondents was 1,113.



Medicine and Health

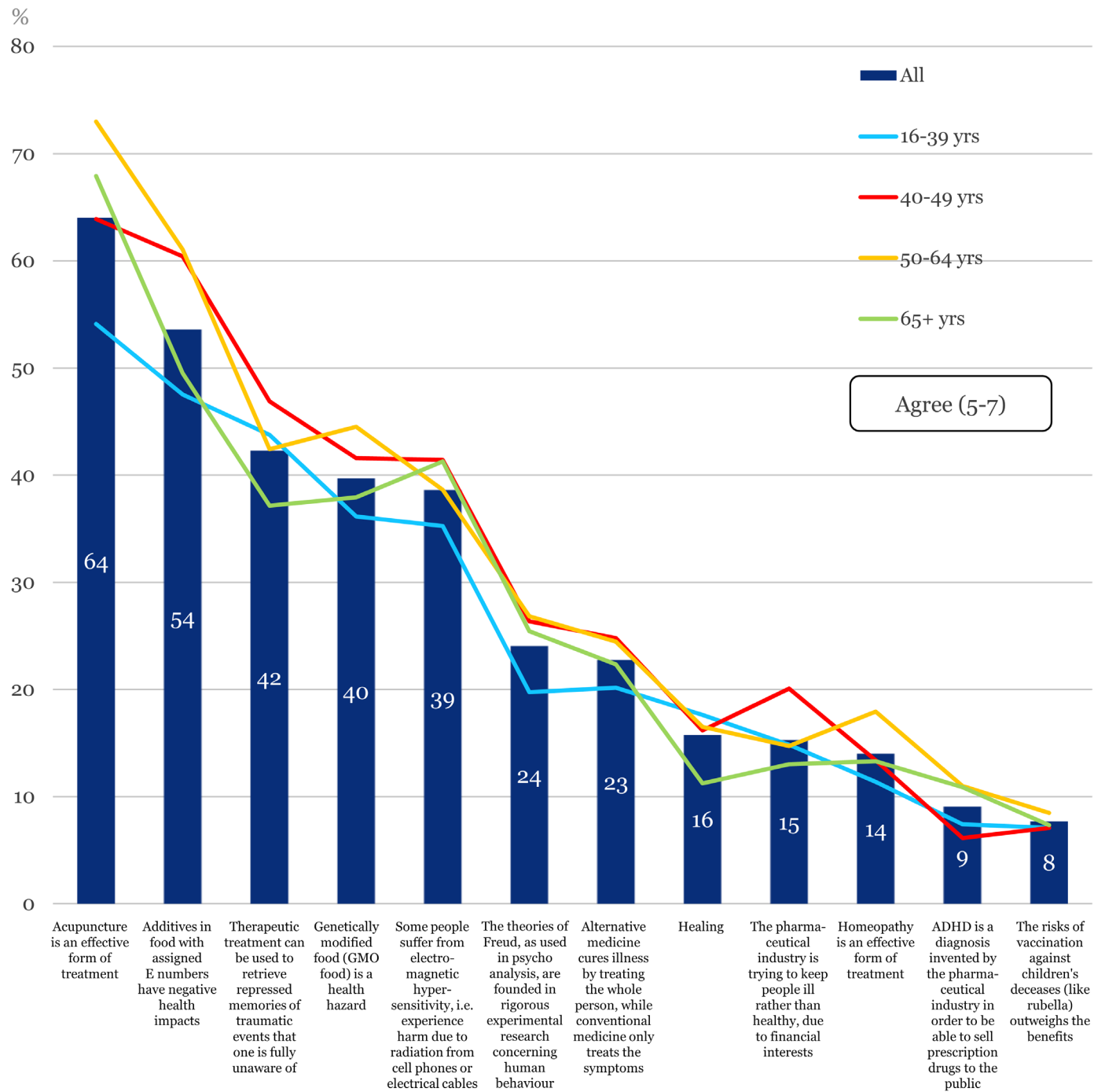
- Age Groups

The study showed little differences between the age groups.

However, upper middle aged respondents (50-64 years) are more worried about the health effects of genetically modified foods and are more likely to look favourably on acupuncture.

The youngest age group (16 - 39 years) are slightly less likely to have confidence in acupuncture and in the theories of Freud.

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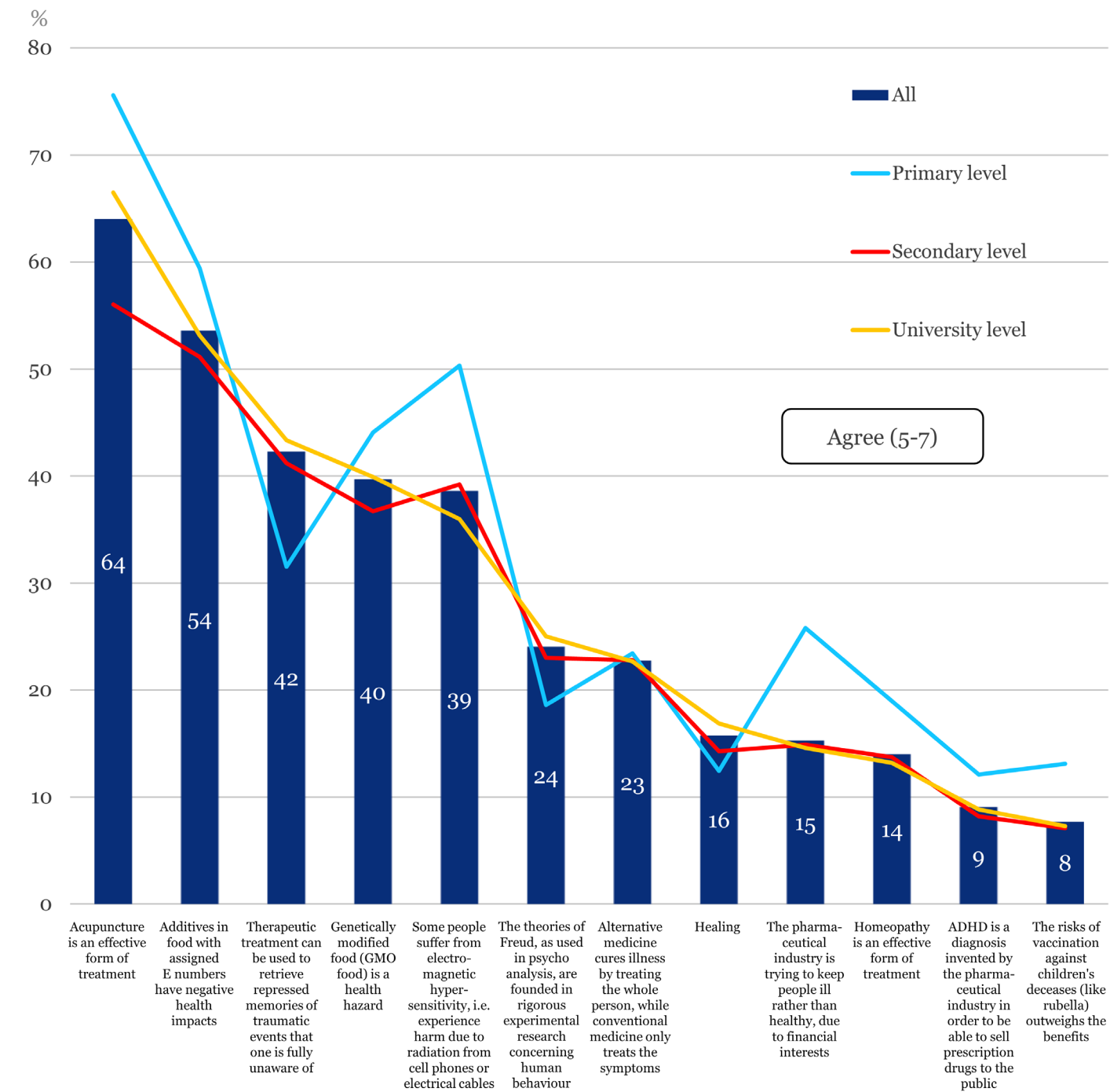
Medicine and Health - Education

Only a few of the claims that belong to this category see differences stand out based on the level of education of the participants.

It is however worth to mention that those with only primary education are significantly more positive - more than three quarters - towards acupuncture, while those with high school education are significantly more skeptical. People with academic education is located midway between the other groups.

Those who have not completed education beyond primary school believes in electrical hypersensitivity to a greater extent than other groups. As many as half of them tend to agree that some people’s symptoms are caused by electromagnetic radiation. This group is also more convinced that the pharmaceutical industry is working to keep us unhealthy to increase their profits. Respondents of lesser education are less positive about the possibility of retrieving repressed memories through therapy and also of Freud’s theories.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". For the statement regarding healing, the question was "Here are some statements regarding your beliefs. To what extent do you believe in the following?". The number of respondents was 1,113.



Medicine and Health

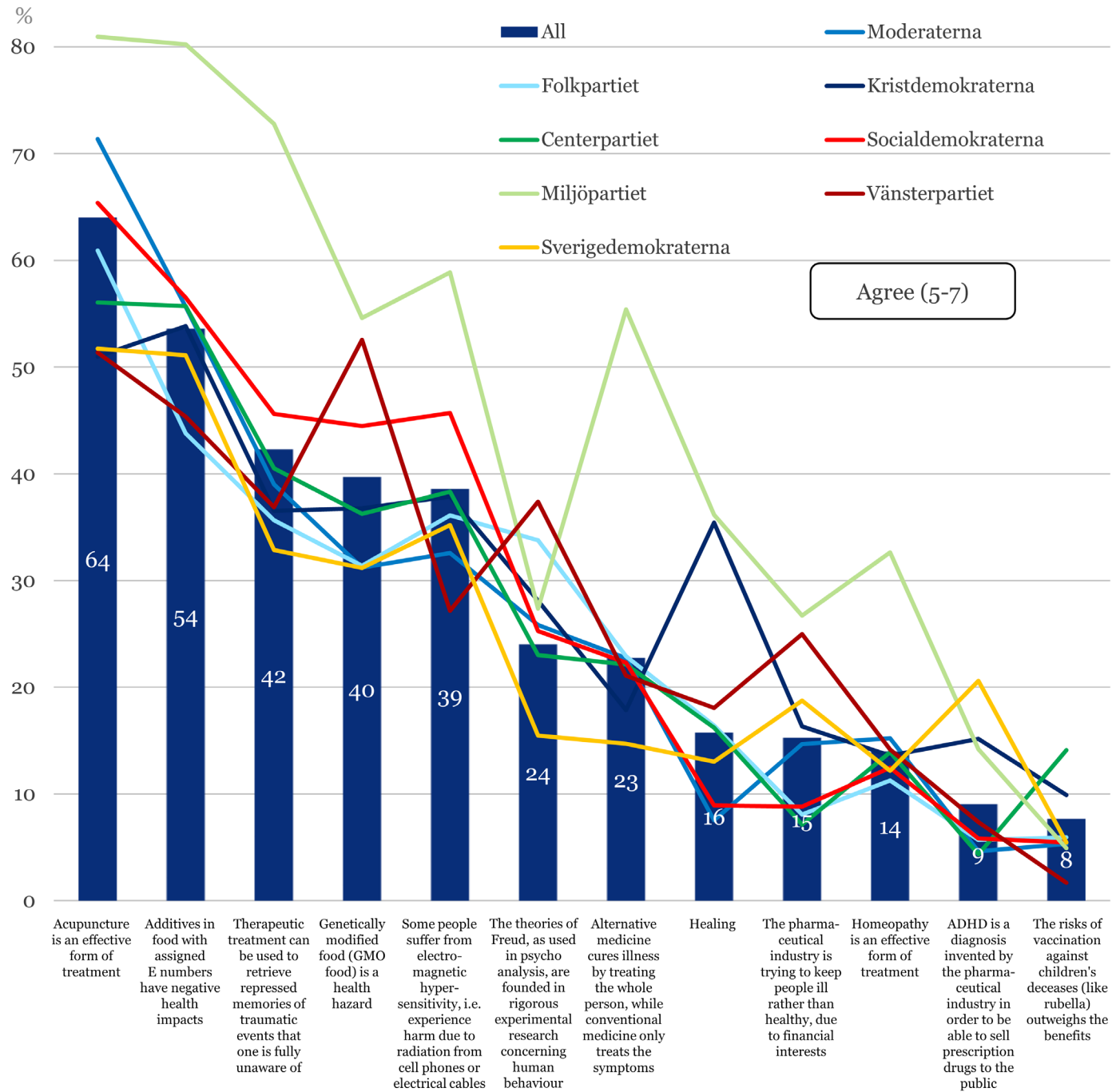
- Political Affiliation

There are clear differences between the parties' sympathizers.

Supporters of Miljöpartiet (the green party) stand out clearly in the majority of the questions. They believe in a higher degree than others in acupuncture - more than four out of five are positive. Nearly three-quarters believe in repressed memories and more than half believe that alternative medicine treats the whole person (as opposed to conventional health care). Their supporters more often have a belief in healing, something they share with Kristdemokraterna (right-wing christian party). Supporters of Miljöpartiet are also more worried about genetically modified foods, something they share with sympathizers of Vänsterpartiet (left wing, former communist party). These two groups are also more skeptical of the pharmaceutical industry. About a quarter believe that this industry aims to keeping people sick rather than to heal them. Socialdemokraterna (the social democrats) joins Miljöpartiet in greater support of the concept electromagnetic hypersensitivity.

Supporters of Folkpartiet (the liberal party, renamed Liberalerna since this study) believe significantly more in Freud's theories than supporters of the other parties.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Statements are often made in public debate that many people have very different opinions about. To what extent do you agree with the following statements?". For the statement regarding healing, the question was "Here are some statements regarding your beliefs. To what extent do you believe in the following?". The number of respondents was 1,113.



Faith and the Supernatural

Folklore and religious mythology include beliefs in many kinds of supernatural phenomena like astrology, reincarnation and religious beings like gods and angels. In addition to these phenomena you can find creationism and support for healing in some religious circles. All these lack scientific support or are almost completely refuted by scientific studies. Likewise, telepathy and communication with the deceased are contradicted by modern research. The probability of intelligent life on other planets was also included in this section as a more scientific item.

Faith and the Supernatural - All

More than half of the Swedish population believe that it is probable that there is intelligent life on other planets, and 15 percent believe that we are visited by them (UFOs).

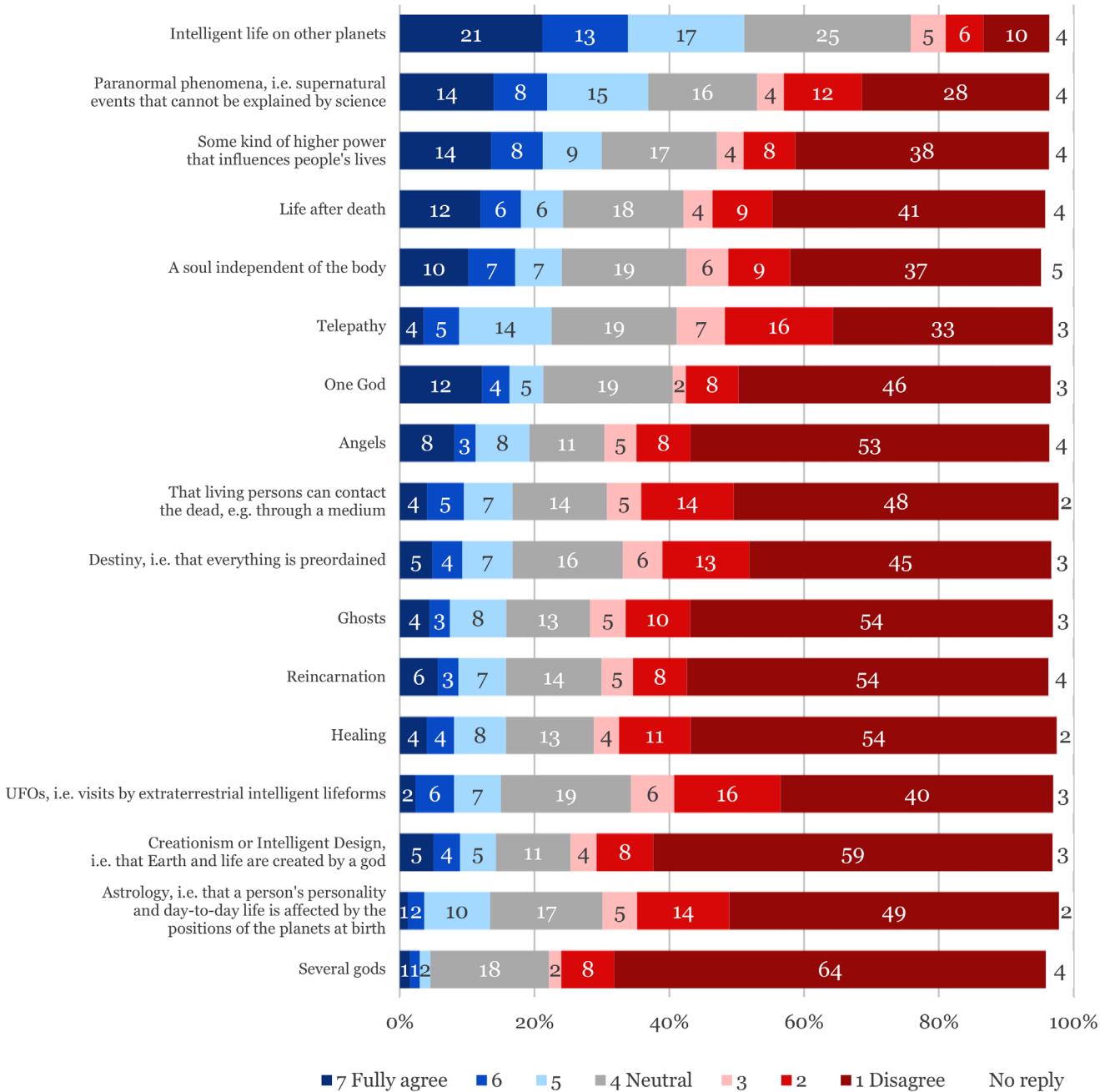
More than one in three Swedes believe in paranormal phenomena, and just over a fifth believes in telepathy. Healing is regarded as credible by one sixth.

One-third believe in a higher power, about one-fifth believe in a god while only one in twenty thinks there are several gods. Almost as many people who believe in god believe in angels, 19 percent of the respondents. Only one out of seven believes that the earth is created by a higher power.

One quarter believes in life after death and in a soul independent of the body, while one sixth believe in ghosts, reincarnation or that living people can contact the dead.

17 percent of all Swedes believe in fate, while 13 percent believe in astrology.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?" The number of respondents was 1,113.



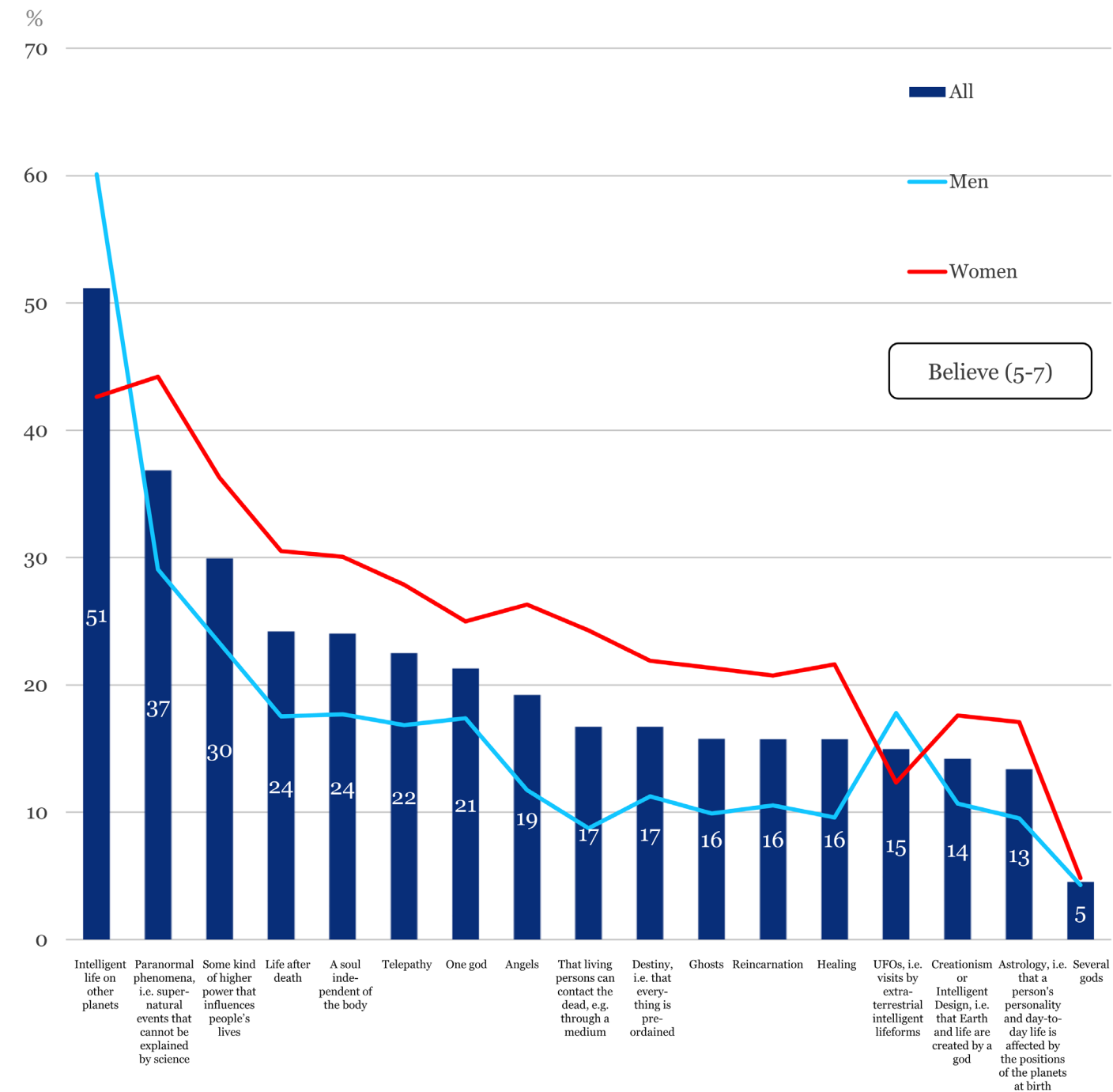
Faith and the Supernatural

- Gender

Women are generally more likely than men to believe in the paranormal and religious phenomena and in notions associated with the so-called New-Age movement. Exceptions are issues concerning extraterrestrial intelligent life where more men than women believe that intelligent life on other planets exist, and that we have been visited by such beings.

The gender differences are statistically significant for all issues except for the belief in multiple gods.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?" The number of respondents was 1,113.



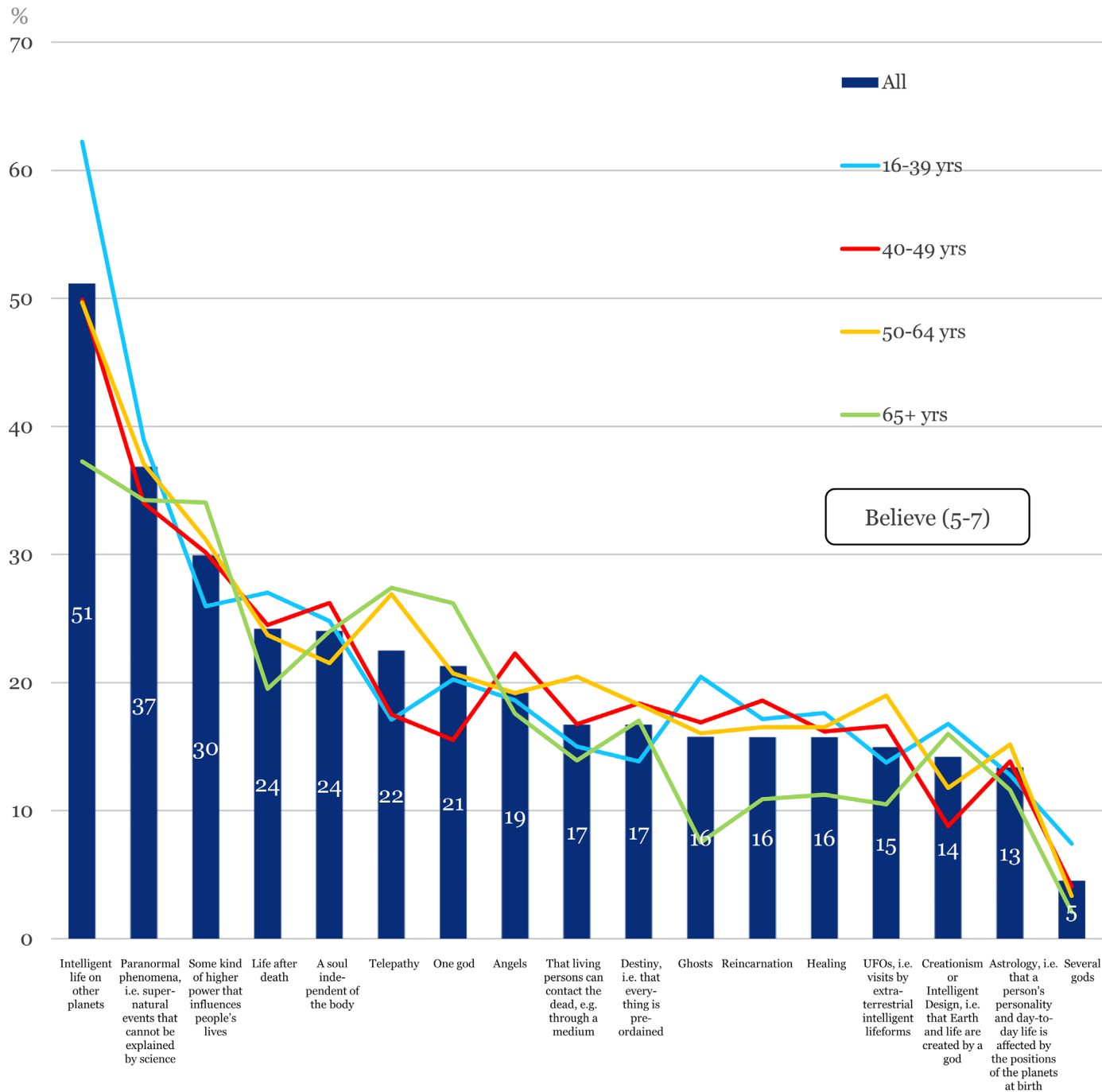
Faith and the Supernatural

- Age Groups

Statistically significant differences occur mainly with the youngest or the oldest age groups. Members of the youngest group (16-39) tend to believe in intelligent life on other planets or in ghosts, but they believe to a lesser extent in telepathy. The oldest group (65+) are more skeptical than others in: intelligent life on other planets, ghosts, reincarnation, healing and UFOs.

The age group 40-49 years stands out as more skeptical of creationism and intelligent design, while the age group 50-64 does not show any statistically significant differences in this category.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?" The number of respondents was 1,113.



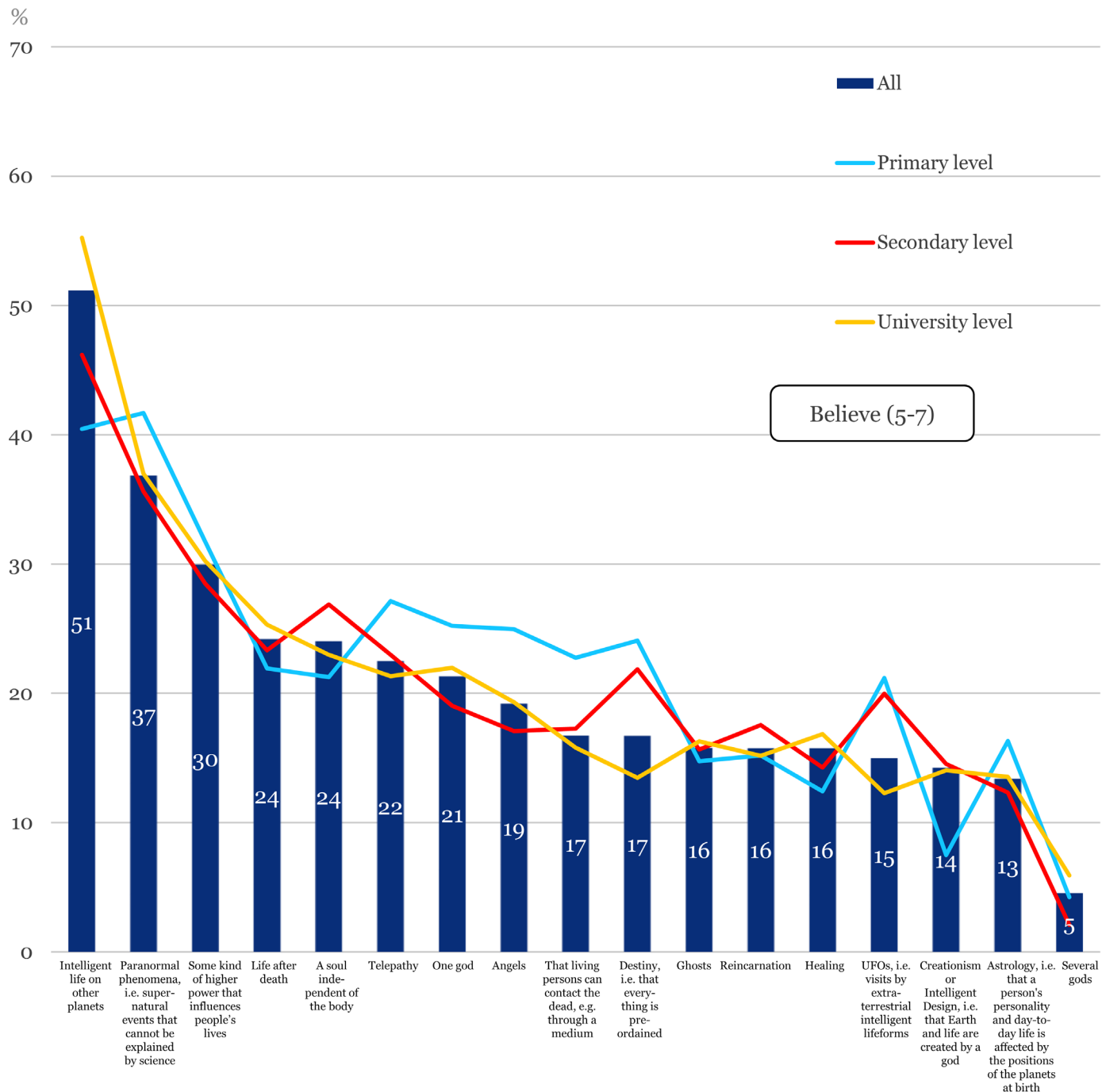
Faith and the Supernatural

- Education

In this category the graph indicates that people who have just completed primary school are more likely to believe in most of the categories here, but most of these instances are not statistically significant. However it is statistically significant regarding creationism and intelligent design.

People with only secondary school training are more likely than others to believe in fate and UFOs, but less likely than others to believe in several gods.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?" The number of respondents was 1,113.



Faith and the Supernatural

- Political Affiliation

Supporters of Kristdemokraterna (right wing christian party) stand out in this category. Not only do they have a significant deviation from the average in most cases (7), but in most cases the share of believers is twice as high as in the other parties. This applies particularly to the beliefs in a higher power, life after death, the existence of a god, angels, healing and creationism. Even in terms of the belief in many gods they stand out, since zero percent of the party's followers support this.

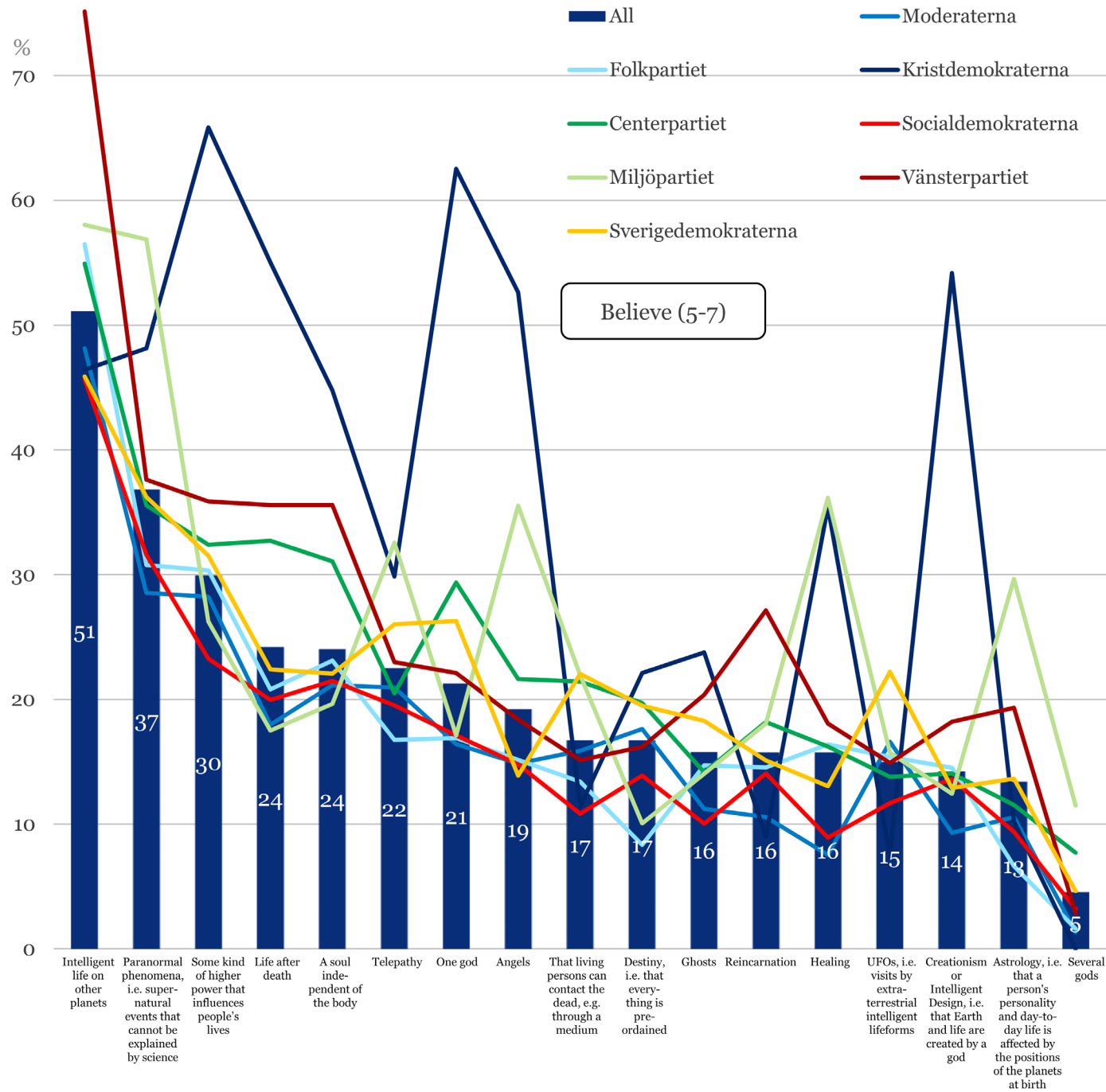
The supporters of Miljöpartiet (green party) are more than twice as likely to believe in astrology, several gods and healing, but they are also heavily overrepresented in the belief in angels.

The supporters of Vänsterpartiet (left wing, former communist party) believe significantly more than others in intelligent life on other planets and in reincarnation. Aside from the supporters of Kristdemokraterna, they are also the most likely to believe in a life after death.

Supporters of Moderaterna (the largest right-wing party) and Socialdemokraterna (social democratic party) are, when there is a significant difference, more skeptical than the average person. Sympathizers of Moderaterna are against paranormal phenomena, life after death, reincarnation, healing, creationism and several gods, while supporters of Socialdemokraterna are skeptical towards a higher power, ghosts and healing.

The supporters of Sverigedemokraterna (anti-immigration, right-wing party) believe in visits by UFOs to a greater extent than the average population.

The graph shows the shares of replies on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?" The number of respondents was 1,113.



Faith and the Supernatural

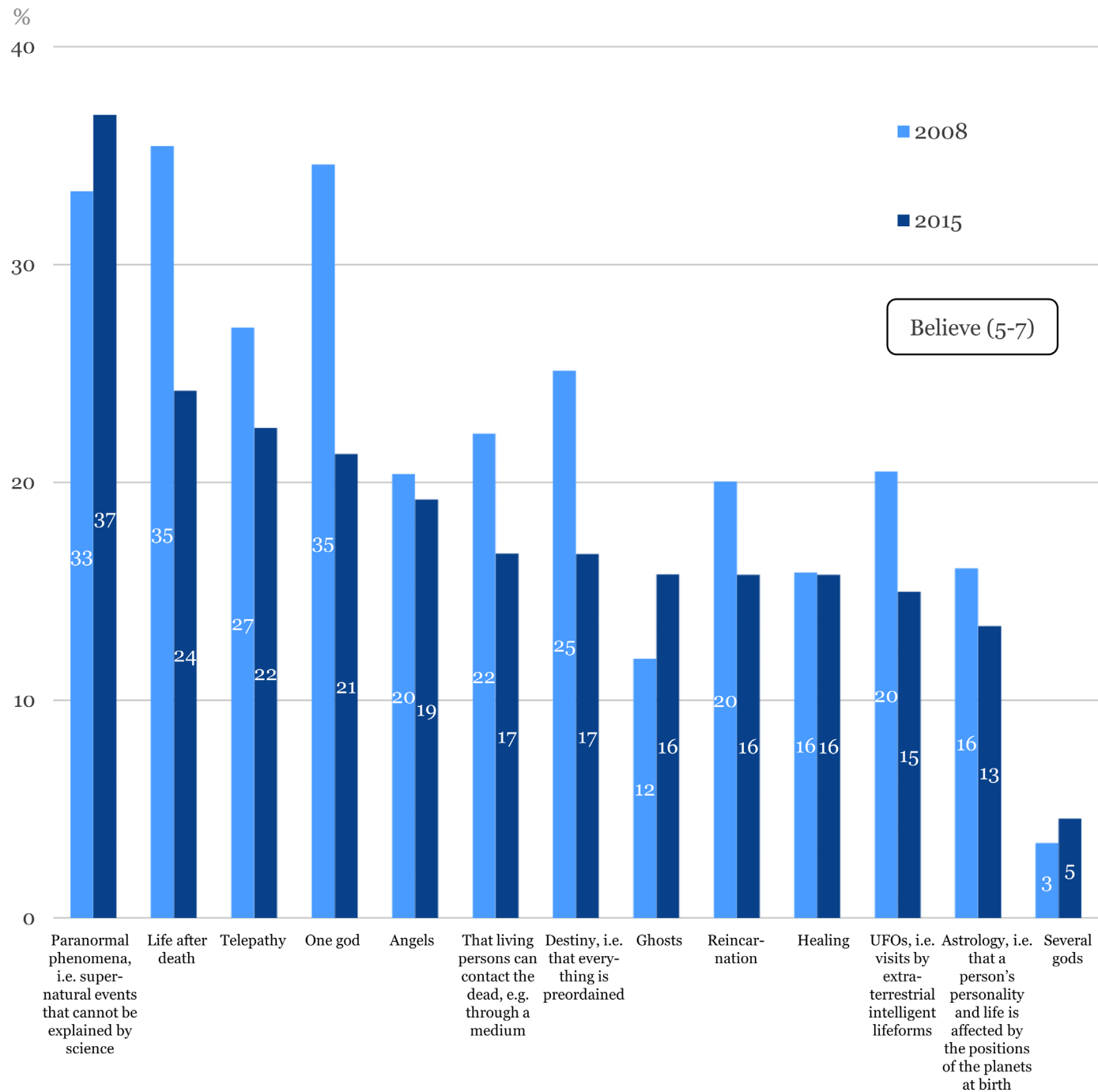
- a comparison with 2008

In general it appears that the beliefs in UFOs and in the supernatural have decreased since 2008.

Questions contradicting this trend are beliefs in the paranormal and in ghosts which seem to have increased since 2008 and, to a lesser extent, the belief in several gods.

Light blue bars show the percentage from a study in 2008 that responded to 5, 6 or 7 on a seven-point scale from 1 = "Disagree" 4, = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe each of the following?". Number of respondents: 2800. Source: Demoskop Panel in 2008.

Dark blue bars show the percentage from this study (5-11 May 2015) that answered 5, 6 or 7 on a seven-graded scale from 1 = "Disagree", 4 = "Neutral", to 7 = "Fully agree" to the question "Here are some statements regarding your beliefs. To what extent do you believe in the following?". Number of respondents: 1,113.



Correlations

There are correlations between most beliefs in "new age"-related phenomena, such as angels, telepathy, healing, reincarnation, dowsing and ghosts. If you believe in one of these phenomena it is likely that you believe in the others.

Confidence in the scientific method as a source correlates with the acceptance of the global warming, evolution, and that psychological treatment should be based in science.

If you believe that the terrorist attacks of 2001 were staged by the US government you are also likely to believe that the moon landings were staged in a movie studio and that the United States and the West intentionally provoked the crisis in Ukraine.

Belief in that "repressed memories" can be accessed through therapy is also correlated with the concept that alternative medicine cures "the whole person", while conventional medicine "only treats the symptoms".

Refusal of the theory of evolution correlates with beliefs in God, angels and healing.

If you believe in electromagnetic hypersensitivity then you often also believe in homeopathy, organic farming and alternative medicine. In addition, you are more likely to have concerns regarding genetically produced foods.

If you believe in UFOs you are more likely to believe in telepathy, astrology and that you can contact the dead through a psychic medium.

If you believe in creationism you usually also believe in a god and a higher power.

Only a selection of interesting correlations between various questions are reported here.

Summary and Comments

Methodology

The OnlinePanel of Demoskop consists of people in Sweden aged 18-89 years recruited via telephone from a random selection. The selection of respondents within the panel was randomly chosen via Internet and the number of participants, 1000 respondents, are in line with the practice for this type of research. From a methodological perspective there are problems with web panels partly because of non-response and partly since it excludes the part of the population that for various reasons do not have access to computers or the Internet. Web-based surveys are very common in these kinds of studies, so the problem is shared by a majority of opinion polls carried out.

Regarding the interpretation of the statistics one should consider the following aspect: In cases where significant differences between the groups are indicated, it still may not be an absolute truth. All statistical calculations have an estimated margin of error. It also means that there may be differences between the groups which are not shown in this study. Demoskop has used the so-called t-test to determine if the differences are statistically significant. This in itself contains a source of error which is characterized by repeated t-test on the same sample group which increases the likelihood that any of the significant results reported in fact can be attributed to chance.

The wording of the questions can be discussed in all opinion polls. The method of short survey questions does not give room to comprehensively defining all the concepts that can be included in an issue or in others ways can make the issue especially clear. An example is the statement: "Man can be divided into different biological races". It is semantically possible to answer "yes" to this question without believing that there is scientifically correct to divide humanity into races. It is obvious that in certain contexts, such as in the apartheid regime of South Africa, one "could" to do so. However, if the question is interpreted in this way it is fair to assume that the answers would not vary as much as it does between the various groups - in this case between sympathizers of different political parties.

Another question that can be interpreted in different ways is "Acupuncture is an effective treatment." There are studies that shows that the effect of acupuncture only comes from the placebo effect, but on the other hand a placebo can also be regarded as an "effect". Maybe the question could have been worded differently to clarify whether the method was effective beyond the effects of placebo.

Overall reflections

The attitudes of the Swedish public towards science, pseudoscience and superstition presents a rather mixed picture. Swedish people generally have great confidence in the scientific method. Over four-fifths agree that the scientific method is the best way to attain knowledge of reality. Many are also largely convinced that scientists are correct in that we are facing a global warming caused by human activities. Fear mongering about vaccinations does not appear to have influenced public opinion to any greater extent.

It is notable that there is a large majority who agrees on the importance of basing psychological treatment on good science. Since there is an ongoing discussion about tightening legislation concerning who should be permitted to conduct such treatment, it is encouraging to note that there seems to be ample support for this among sympathizers of all political parties.

On the other hand there often is surprisingly great acceptance of ideas and doctrines that have no scientific support. Over forty percent believe in repressed memories, despite the high-profile debate in the media over the past few years. Over a third believe in paranormal phenomena. There is also great skepticism about GM crops and food, despite the consensus among researchers that the fear of these are greatly exaggerated.

It seems like about 10-25 percent of people have some kind of beliefs in most para-scientific ideas, such as ghosts, healing and angels. Several of these beliefs also seem to correlate - if you believe in one of them you also believe in others. It means that we have a fairly large group of people in our country whose perception of reality is completely opposite the science-based view. It may seem harmless, but people with such a view of life may easily get in trouble as they are particularly vulnerable to the teachings and practices mediated by charismatic individuals or cynical opportunists.

Regarding the conspiracy theories there seems to be a group which is mainly skeptical to the US and the western world. Those who believe that the moon landing was staged also more often believe that the terrorist attacks in New York in 2001 and the crisis in Ukraine were deliberately created by the US and the west.

Some political parties clearly stand out from the other regarding some issues. It is obvious that supporters of Miljöpartiet (green party) are more likely to accept all sorts of pseudoscientific phenomena. Quite surprising is their belief in angels. They share this belief with followers of Kristdemokraterna (christian democrats), but a question is if they have the same definition of angels as Kristdemokraterna.

That supporters of Kristdemokraterna have a prominent faith in God and related beliefs is perhaps not so surprising. It is interesting that almost a third of them reject the theory of evolution. The widespread belief in biological human races naturally raises questions concerning Sverigedemokraterna (anti-immigration, right-wing party), but quite a few from the other parties support this statement as well.

A potentially controversial but clear result from the survey is that women consider pseudoscientific alternative medical practices, the supernatural and religious phenomena more plausible than men. This could stem from a greater interest in these methods and phenomena. This interest is possibly fueled by misinformation from those who practice and provide alternative medicine, parapsychology and astrology, or in gender differences regarding how health care is provided.

The need for increased public education

Although Sweden generally has a high proportion of people with a scientific approach, and only a small proportion who believe in most of the pseudo-scientific phenomena, there is clearly a great need for information about the facts and circumstances. Inaccurate perceptions may lead to harmful decisions for the individual, as when people choose to rely on ineffective alternative medical therapies. A high confidence in pseudoscience can on a personal level mean that some people take life changing decisions based on astrology but the consequences can also be an impact on neighbors and the wider community. For example a denial of evolution can lead to decisions that are harmful for the environment, or to an increased risk of epidemic outbreaks.

The stratification of the participants in the survey enables to some extent an identification of groups or categories that could be targeted regarding information about facts and research. Since many of the issues raised in the survey are not dealt with sufficiently in the public schools, other forms of outreach in the form of public education on scientific methods and results are needed. This is what the Swedish Skeptics Association sees as its main task. There is also plenty of room for others to promote knowledge. This is necessary in view of the large number of players who are spreading pseudo-scientific notions for commercial or ideological reasons.

About VoF

Vetenskap och Folkbildning, VoF, (aka the Swedish Skeptics Association) is a Swedish national association that strives to promote knowledge and understanding regarding the scientific method and its application. Further we also dispute inaccurate and unfounded claims concerning questions that can be subject to scientific reasoning.

The association is not affiliated with any political party or religious doctrine.

Membership

The association accepts any members supporting its purpose. The yearly membership fee is 250 SEK. We also offer a reduced membership fee for family members and subscription-only affiliation to our magazine Folkvett (in Swedish only). Please visit our website at www.vof.se/bli-medlem/ to fill in your membership request.

Contact information

Please send any further questions to: info@vof.se

The Swedish Skeptics Association

Föreningen
Vetenskap och Folkbildning

