



Evaluation of the P.A.R.T.Y. accident prevention program

Compact accident research

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Preliminary remarks

P.A.R.T.Y. stands for Prevent Alcohol and Risk Related Trauma in Youth (www.party-dgu.de). Accidents are among the most frequent causes of the deaths of young people [1]. The P.A.R.T.Y. accident prevention program is designed to make young people aged 15 to 18 aware of the consequences of high-risk behavior on the roads and thus prevents accidents. The core of the program is the P.A.R.T.Y. day. School classes spend a day experiencing the various stages through which a trauma patient goes in a trauma hospital.

The aim of this study was to evaluate the effectiveness of the German P.A.R.T.Y. program. School students taking part in the P.A.R.T.Y. program were surveyed at several points in time, and their responses were compared with those of a control group (school students not taking part in the program). Following the evaluation study, in a workshop the results and the consequences for the further development of the program were discussed with those responsible for the program and other experts. The results are presented in detail in UDV research report no. 53, "Evaluation des Unfallpräventionsprogrammes P.A.R.T.Y." (Evaluation of the P.A.R.T.Y. accident prevention program) [2].

The P.A.R.T.Y. accident prevention program

The P.A.R.T.Y. accident prevention program is designed to make young people aged 15 to 18 aware of the consequences of high-risk behavior on the roads. The aim is to reduce casualties and fatalities among young people as a result of accidents. The program has been running successfully in North America and Australia for 30 years. In Germany it was taken up by the Deutsche Gesellschaft

The P.A.R.T.Y. accident prevention program

für Unfallchirurgie (DGU, a German society for trauma surgery) and adapted to suit circumstances in Germany. The program was launched by Akademie der Unfallchirurgie GmbH (AUC) in 2012, and is now running at 35 trauma hospitals nationwide.

The core of the program is the P.A.R.T.Y. day, during which school classes spend an entire day in a trauma hospital (figure 1). During their visit they experience the stages through which a seriously injured patient goes in the hospital.

After being welcomed by their P.A.R.T.Y. instructor, who is usually a trauma surgeon at the hospital, the participants attend two half-hour presentations on trauma and prevention. The trauma presentation is usually delivered by the trauma surgeon, and the prevention presentation by a police officer. After a short break, the students then experience the various stages through which a seriously

injured patient goes. Three groups are formed, each of which go through the four stages – ambulance, emergency/trauma room, intensive care unit and normal ward – in a different order. Each group is accompanied by a P.A.R.T.Y. guide, who is usually a member of the medical or nursing staff at the hospital. The participants are given an insight into the care provided to seriously injured patients at each stage by a member of the nursing team or medical team who works there. They spend around 20 minutes at each stage. All three groups then come together again to be given an insight into the work done by physiotherapists and to experience what a lengthy and difficult process rehabilitation can be following a serious injury. After a lunch break, they meet with a former trauma patient for about 20 minutes. During this meeting the students also have the opportunity to ask questions. The P.A.R.T.Y. day concludes with a session in which the participants reflect on the day.

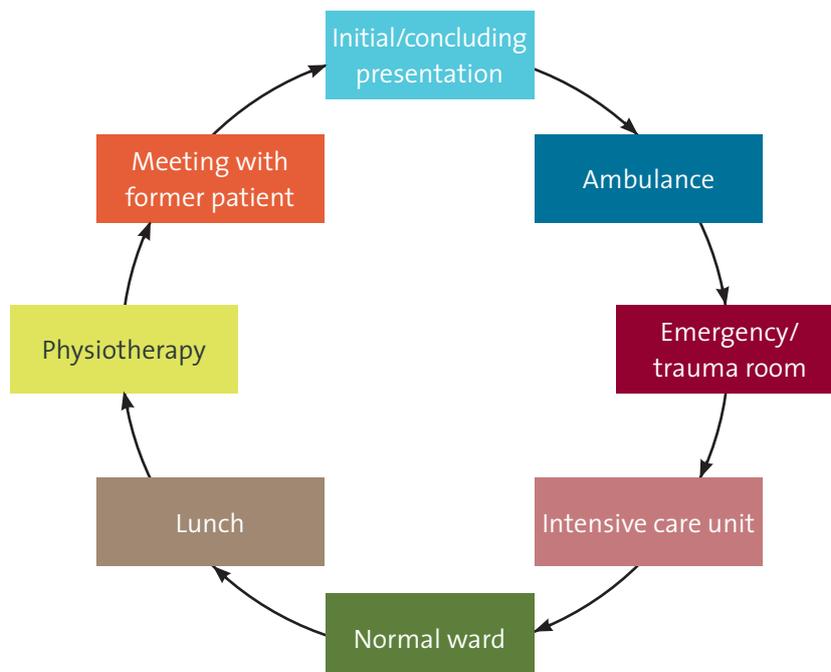


Figure 1: Flow chart of a P.A.R.T.Y. day in Germany

Possible mechanisms involved

Possible mechanisms involved

Up to now there hasn't been an explicitly formulated theory or model of how the P.A.R.T.Y. program is supposed to influence young people's behavior. This is necessary, however, in order to better understand the program's effectiveness and be able to improve it. The following possible mechanisms were identified in the literature.

The P.A.R.T.Y. program as an appeal to fear

Appeals to fear are descriptions of the negative or painful consequences of high-risk behavior. One example would be a head injury sustained in a cycling accident as a result of not wearing a bicycle helmet. This is supposed to motivate people to wear a helmet. Appeals to fear often combine vivid real-life stories with shocking images and films. They are often used in road safety work in order to draw attention to things that generally do not appeal to people (such as the importance of wearing a bicycle helmet).

However, appeals to fear are not easy to manage. They can have two opposite effects. On the one hand, fear can motivate people to change their behavior. On the other, the negative emotions that accompany fear can trigger psychological defense mechanisms and reactance such as:

- denial: "That's not true";
- ridicule: "An absurd film";
- neutralization: "That won't happen to me";
- minimization: "That's a terrible exaggeration".

Appeals to fear do not motivate people to change their behavior (e.g. the use of a bicycle helmet) unless they trigger a feeling of vulnerability (fear of a head injury) **and** people are persuaded that they themselves can counter the threat (of a head injury) effectively by adopting the desired behavior (wearing a helmet) [3].

Anticipated regret is discussed in the literature as another emotion that motivates people to change their behavior [4]. Regret is a negative emotion that occurs when we imagine that our current situation would have been better if we had taken a different decision. Anticipated regret is when we regret doing, or failing to do, something in the future (for example, "I will regret it if I don't wear my bicycle helmet tomorrow and then have an accident").

The P.A.R.T.Y. program as a knowledge-based intervention

Besides triggering emotions, the P.A.R.T.Y. program also imparts specific knowledge. Ajzen's theory of planned behavior (TPB) [5] describes how such information is processed and how it influences behavior. The intention to behave in a certain way plays an important role in this. Such an intention depends on:

- the individual's attitude toward the behavior;
- subjective norms (i.e. the subjectively perceived social pressure to behave in this way); and
- perceived behavioral control (i.e. how easy or difficult the person perceives this behavior to be).

For example, the more positive an individual's attitude is toward bicycle helmets, the stronger the perceived social pressure to wear a helmet is, and the easier it appears to be to do so, the more likely an individual is to form the intention to wear a helmet. And the stronger the individual's intention to wear the bicycle helmet is, the more likely it is that he or she will actually wear it.

The P.A.R.T.Y. program as a social norms-based intervention

A P.A.R.T.Y. day always involves a whole school class. The students thus learn what their classmates think about high-risk behavior on the roads, what they think is the right and wrong behavior, and what they regard as “cool” or otherwise. These group norms are crucial in determining each individual’s behavior [6]. They include:

- **injunctive norms**, which involve perceptions about which behaviors in a society are approved or disapproved of;
- **descriptive norms**, which indicate which behaviors are typical for most members of a group (of classmates, for example).

Methodology

In the 2016/17 academic year, a quasi-experimental longitudinal study was carried out in which the subjects were surveyed at three points in time (figure 2). 19 P.A.R.T.Y. days at seven different trauma hospitals were included in the study. 19 school classes took part. 11 parallel classes served as the control group.

A total of 908 school students were surveyed, including 574 of them at all three survey points in time. Their average age was just under 16. 50 percent were boys, and 50 percent girls.

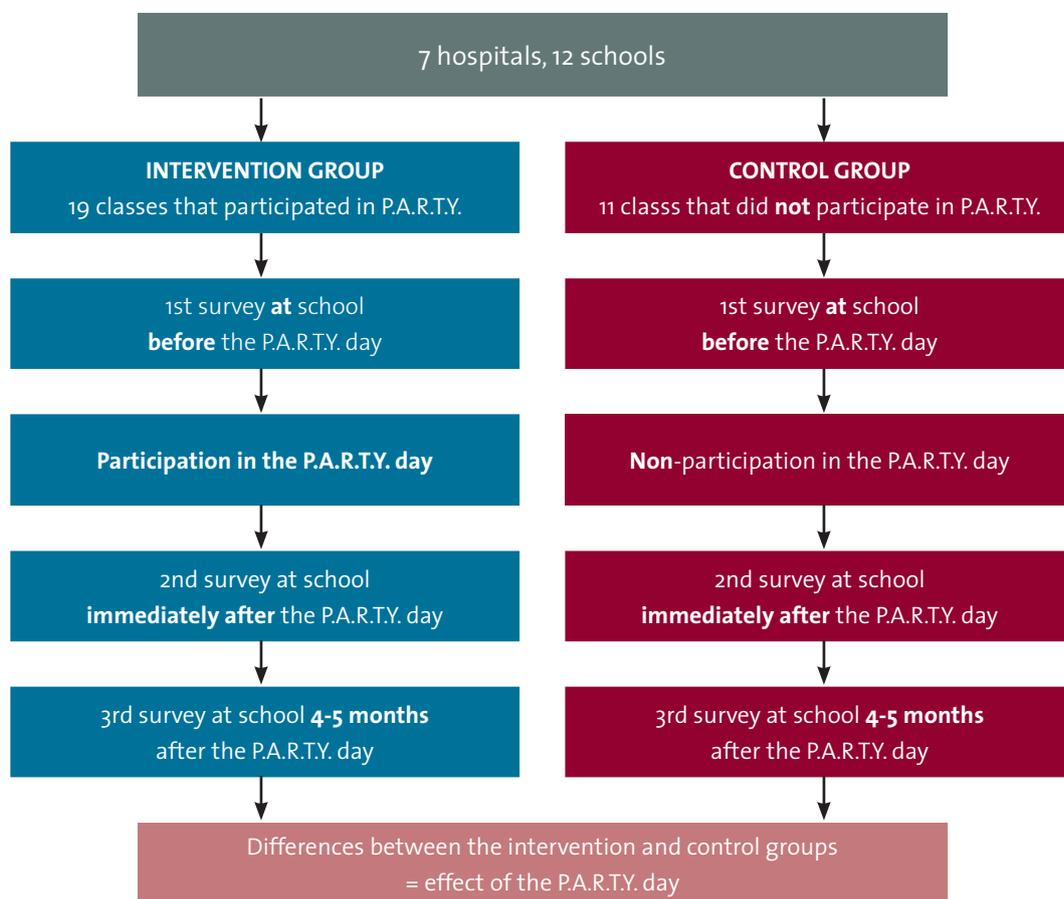


Figure 2: Design of the evaluative study

Methodology

Table 1: Scales used in the questionnaire, with measures of reliability

	Scale	Number of items	Internal consistency		
			α T0	α T1	α T2
Effectiveness criteria	Prosocial behavior	3	.51	.65	.61
	Violation of traffic rules	3	.65	.74	.72
	“Dangerous game”	4	.75	.77	.74
	Self-protective behavior	3	.78	.81	.80
	High-risk cycling	4	.63	.67	.72
Determinants	Intention to follow traffic rules	3	.85	.89	.85
	Attitude toward traffic rules	3	.76	.80	.82
	Self-efficacy with regard to traffic rules	3	.58	.65	.60
	Descriptive norm with regard to traffic rules	2	.79	.86	.84
	Injunctive norm with regard to traffic rules	2	.72	.77	.77
	Sense of vulnerability on the roads	2	.72	.81	.75
	Perceived severity of an accident	2	.66	.79	.74
	Perceived susceptibility to an accident	2	.79	.82	.82
	Anticipated regret about accidents	3	.81	.85	.84
	Empathy	4	.69	.81	.78
	Emotional detachment	3	.72	.73	.77
	Personal norm with regard to traffic rules	2	.77	.84	.84

In order to measure the impact of the P.A.R.T.Y. program, the students were asked to complete a questionnaire at all three survey points in time. The questionnaire contained items designed to verify the program's effectiveness and items indicating the supposed mechanisms involved (table 1).

Results

Acceptance of the P.A.R.T.Y. program

The students rated the different stages of the P.A.R.T.Y. day by giving them German school grades from 1 to 5 (table 2). All modules were rated “good” (2) or “very good” (1). The best ratings were given for the meeting with the former trauma patient, the trauma room, the ambulance and the normal ward.

Table 2: Students' ratings of the stages of the P.A.R.T.Y. day

Stage	Ø grade at T1	Ø grade at T2
Trauma presentation	2.1	2.1
Police presentation	2.3	2.4
Ambulance	1.7	1.8
Trauma room	1.7	1.7
Intensive care unit	2.0	2.0
Normal ward	1.9	2.1
Physiotherapy	2.0	2.1
Meeting with former trauma patient	1.4	1.5

Effectiveness of the P.A.R.T.Y. program

The evaluation revealed considerable differences between individual P.A.R.T.Y. days in practice despite their uniform structure. Local circumstances and the everyday

routine at the hospital have to be taken into account when running a P.A.R.T.Y. day. For example, it is not possible in all hospitals for the young people to experience using rehabilitation aids (wheelchairs or bandages, for example) when having lunch. Different doctors and nursing staff approach the young people in very different ways, and so on.

In order to take these differences into account, a meta-analysis was selected as the evaluation strategy. In other words, the various P.A.R.T.Y. days were regarded as local variants of the P.A.R.T.Y. program. By means of a meta-analysis, we examined whether there was a generalizable trend across the different local variants. The effect size of the different P.A.R.T.Y. days was calculated on the basis of the scales. The mean of the various effect sizes was then calculated.

Taking as an example the effect on self-protective behavior immediately after the P.A.R.T.Y. day (T1), the procedure and results of the meta-analysis are illustrated. The effect sizes of the different P.A.R.T.Y. days and the mean effect size across all P.A.R.T.Y. days are shown in a forest plot below (figure 3). The black and gray squares indicate the size of the effect for each P.A.R.T.Y. day. The size of the boxes indicates the weighting of the individual P.A.R.T.Y. days in the meta-analysis (in other words, the level of impact of the individual days on the analysis). This depends on several factors for example the design and sample size of the individual P.A.R.T.Y. day.

The lines running through the boxes indicate the confidence interval (95%) of the effect size. The underlying figures for the effect size and the confidence interval of the effect size are shown on the right. Negative effect sizes indicate a positive change. This is because the mean value of the post-P.A.R.T.Y. day surveys is subtracted from the mean value of the pre-P.A.R.T.Y. day survey (T₀). By contrast, a positive effect size indicates that the change since the initial survey is negative.

Results

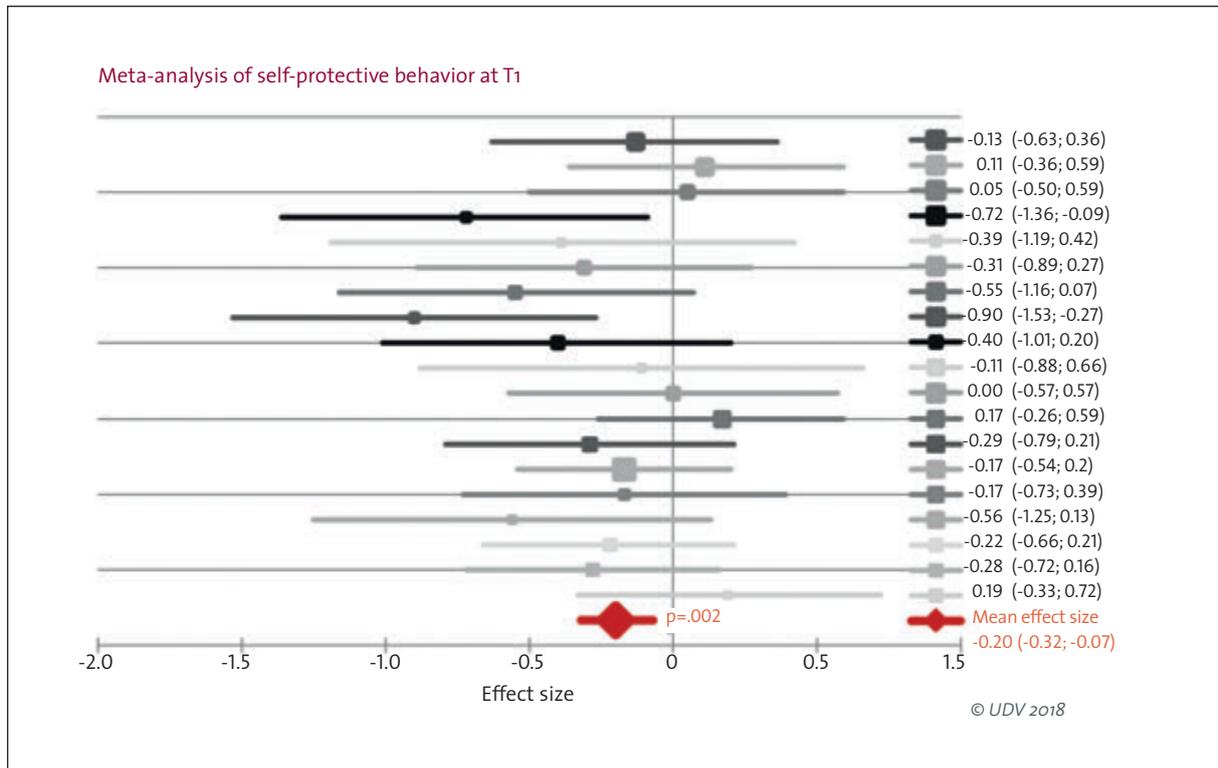


Figure 3: Forest plot of the meta-analysis for self-protective behavior immediately after the P.A.R.T.Y. day (T1)

The effect sizes for the self-protective behavior of the various P.A.R.T.Y. days (T1) range from 0.19 to -0.90. This reflects the differences in how the P.A.R.T.Y. days were implemented and indicates why meta-analysis is an appropriate analysis method. On average there is a small positive effect on self-protective behavior in the post-P.A.R.T.Y. day (T1) survey. The average mean effect size is -0.20 (table 3).

Table 3 provides an overview of the mean effect sizes of all scales for both post-P.A.R.T.Y. day surveys. Overall, immediately after the P.A.R.T.Y. day (T1) there are statistically significant, but small, effects for the following behavioral indicators: prosocial behavior, self-protective behavior and high-risk cycling. Minus signs preceding the mean effect sizes indicate a positive change for the scale. This is because the mean of the post-P.A.R.T.Y. day surveys is subtracted from the mean of the pre-P.A.R.T.Y. day survey.

Small effects can also be seen for the determinants. The most significant effect, and the only one of a moderate size, is for the perceived severity of an accident.

However, at the second survey point (T2), four to five months after the P.A.R.T.Y. day, there are no longer any effects for the behavioral criteria (table 3). There are also no longer any discernible effects for the determinants. The only long-term effect is for the perceived severity of an accident.

Figure 4 illustrates how the effects on self-protective behavior diminish over time. It shows the increase in the mean value in the post-P.A.R.T.Y. day survey for the intervention group compared to both the value in the pre-P.A.R.T.Y. day survey (T0) for the intervention group and the post-P.A.R.T.Y. day survey (T1) for the control group. In

other words, the participants stated that they were exhibiting more self-protective behavior. By the second post-P.A.R.T.Y. day survey (four to five months after the P.A.R.T.Y. day), this value had sunk again to around the

same level as before the P.A.R.T.Y. day and for the control group. Consequently, no effect on self-protective behavior could be demonstrated in the second post-P.A.R.T.Y. day survey (T2) (see also table 3).

Table 3: Effectiveness of the P.A.R.T.Y. day

	Scale	Mean effect size	
		T1	T2
Effectiveness criteria	Prosocial behavior	-0.14*	n.s.
	Violation of traffic rules	n.s.	n.s.
	“Dangerous game”	n.s.	n.s.
	Self-protecting behavior	-0.20*	n.s.
	High-risk cycling	-0.23*	n.s.
Determinants	Intention to follow traffic rules	-0.23*	n.s.
	Attitude toward traffic rules	n.s.	n.s.
	Self-efficacy with regard to traffic rules	n.s.	n.s.
	Descriptive norm with regard to traffic rules	-0.24*	n.s.
	Injunctive norm with regard to traffic rules	n.s.	n.s.
	Fear/sense of vulnerability on the roads	-0.20*	n.s.
	Perceived severity of an accident	-0.61*	-0.37*
	Perceived susceptibility to an accident	-0.12*	n.s.
	Anticipated regret about accidents	-0.18*	n.s.
	Empathy	-0.27*	n.s.
	Emotional detachment	n.s.	n.s.
	Personal norm with regard to traffic rules	-0.21*	n.s.

*=p<.05, **= p<.01, n.s. = not statistically significant

Results

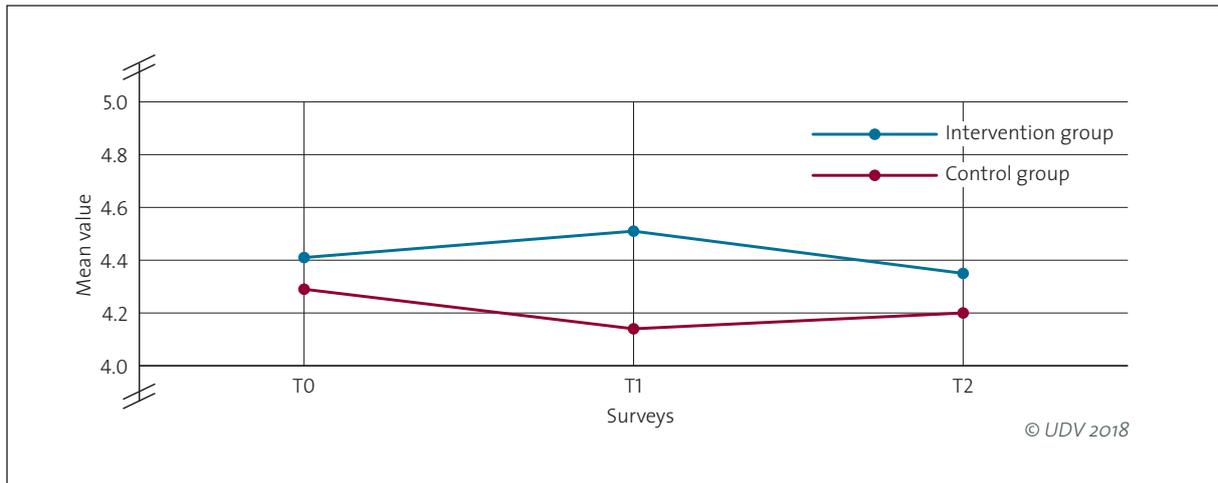


Figure 4: Line chart of the mean values for self-protective behavior before (T0) and after the P.A.R.T.Y. day (T1, T2)

Revised model of the mechanisms involved

In order to obtain possible explanations for the effectiveness or ineffectiveness of the P.A.R.T.Y. program, the possible mechanisms involved were examined empirically. For this path analyses were carried out. Path analysis tests how well relationships between scales observed in the survey data match the relationships assumed in the mechanisms involved. The differences between the mean values of the pre- and post-P.A.R.T.Y. day surveys (the first and second post-P.A.R.T.Y. day surveys separately) were used.

The survey data fits most closely with the assumptions of Ajzen's theory of planned behavior [5]. The greater intention to follow traffic rules expressed in the post-P.A.R.T.Y. day survey is accompanied by less self-reported negative behavior and more self-reported positive behavior. Self-efficacy is particularly important in connection with behavioral intention. The more convinced the students are that it isn't a problem for them to follow traffic rules, the greater is their intention to behave in this way.

In addition, the P.A.R.T.Y. program can also be viewed as a norms-based intervention. Here, too, the survey data fits the assumed mechanisms very well. As you would expect, the personal norm, which encompasses a person's values in relation to a particular behavior, has the strongest influence on behavioral intention. The descriptive norm, which is essentially based on how others are observed to behave, appears to be more important than the injunctive norm, which describes socially approved behavior.

However, the assumed effect of fear could not be confirmed. Thus, the perceived severity of accidents, for which the strongest effect of the P.A.R.T.Y. program was demonstrated, did not lead to a greater sense of vulnerability. The students evidently develop a stronger awareness of the consequences of accidents by taking part in the P.A.R.T.Y. program, but do not make a connection to themselves and their own (risk-taking) behavior. Instead, other emotional factors such as anticipated regret influence their behavioral intention.

Although the knowledge- and norm-based mechanisms fitted the survey data very well, they were not sufficient to explain the behavioral changes on their own. The final step was therefore to calculate a comprehensive, integrated model (figure 5). All of the scales were taken into account. However, only those scales that explained the students' behavioral changes best of all were included in the final model.

The results reveal that behavior can be positively influenced, above all, when positive changes are made to the elements of the theory of planned behavior. In addition, anticipated regret appears to play an important role. It is also clear that a positive change to self-efficacy has both a direct and an indirect influence on behavior through behavioral intention. The more convinced the students are that it isn't a problem for them to follow traffic rules, the more likely they are to follow them and the greater is their intention to actually do so.

If you compare the scales included in the comprehensive model with the scales on which the P.A.R.T.Y. program has an effect, you will notice, in particular, the discrepancy with regard to self-efficacy. In the comprehensive model there is a strong relationship between self-efficacy and the behavior and behavioral intention (i.e. the intention to follow traffic rules). However, no significant effect on self-efficacy could be demonstrated for the P.A.R.T.Y. program. This is a possible explanation for why the successes were only short-term. The influence of the P.A.R.T.Y. program on anticipated regret may explain the effects, however short-term, on behavioral intention and behavior.

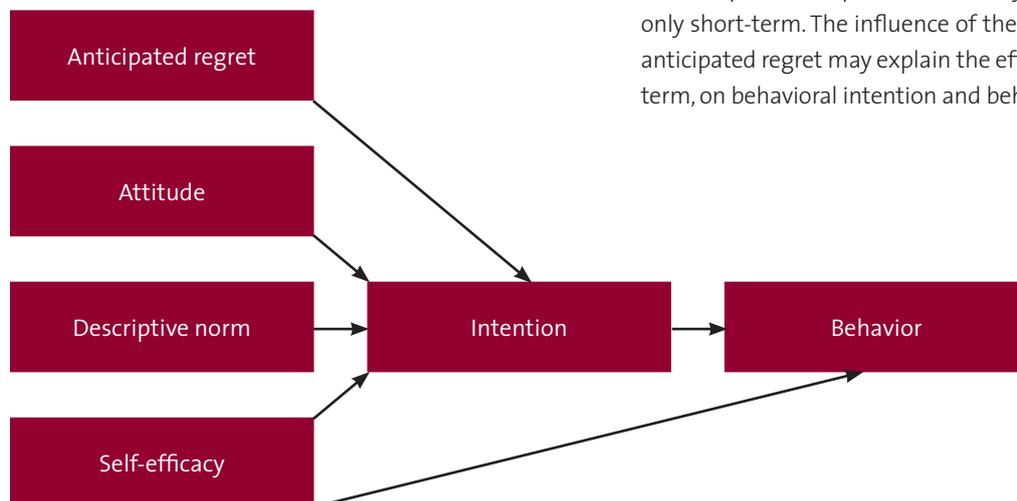


Figure 5: Revised theory of the mechanisms involved in the P.A.R.T.Y. program

Conclusions

The students' feedback and the demand from schools show that the P.A.R.T.Y. accident prevention program is very well received by the target group of young people aged 15 to 18. That is not something that can be taken for granted for road safety programs with this age group.

Unfortunately, it seems highly likely that the P.A.R.T.Y. program in its current form does not achieve its goal of reducing the high-risk behavior of young people on the roads. One important reason for this appears to be that the assumptions made about how the program works are at best insufficient. Up to now the program has been based, at least implicitly, on the assumption that the young people can be motivated to change high-risk behavior by means of strong emotions such as fear. But the results show that the appeal to fear may arouse their interest and attention and essentially "open the door". Long-term behavioral changes, however, require them to process their experiences in the hospital cognitively. In particular, the young people need to have feasible alternatives if they are to adopt less high-risk behavior. For example, they will be less likely to get into a car driven by someone who has been drinking alcohol if they have other options and also have strategies for how to handle possible group dynamics.

Recommendations

1. The P.A.R.T.Y. program should be fundamentally revised based on the revised model of the mechanisms involved. The appeal to fear should be reduced, and greater emphasis should be placed on self-efficacy.
2. Systematic preparatory and follow-up work on the program's content – at school, for example, or in combination with other road safety activities and organizations working on road safety – increases the chances of a long-term effect on behavior.
3. Organizing these days in a trauma hospital and involving whole classes has proved to be successful, on the other hand, and should be continued.
4. The effectiveness of new elements should be tested before they are included in the program.

Outlook

Following the evaluation study, the results and recommendations were analyzed in a workshop involving those responsible for the P.A.R.T.Y. program and other experts, and the consequences for the further development of the program were discussed. These include:

- providing teaching materials to schools to support preparatory and follow-up work;
- revising the structure of the program to offer more opportunities for self-reflection and discussion;
- collaboration and agreement on the content with external partners and coordination with their programs (for example, the campaign of the German road safety organization Deutsche Verkehrswacht aimed at young drivers);
- the establishment of a working group by the Deutsche Gesellschaft für Unfallchirurgie (DGU) with the aim of continually further developing the P.A.R.T.Y. program.

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