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## Take Your Eyes off Me. The Effect of the Presence of Witnesses on the Conduct of Rescue Operations

Nie patrz mi na ręce. Wpływ obecności świadków na realizację zadań ratowniczych

Не смотри мне под руки. Влияние присутствия свидетелей во время спасательных действий

### ABSTRACT

**Aim:** During rescue operations, firefighters function in a social setting, and therefore they remain under social influence and exert it themselves. One of the subtle manifestations of social influence is the social facilitation effect in changing the speed and quality of operations as a result of being watched by other people. This phenomenon seems to be explained by the attentional model, which predicts that in the presence of third parties attention is narrowed, which may lead to deterioration of, or improvement in, task performance (depending on conditions). The authors addressed the research question whether firefighters are affected by to the phenomenon of social facilitation during rescue operations – the presence of bystanders affecting the performance of their tasks.

**Design and methods:** To answer the question of whether, during rescue operations, firefighters may be subject to the phenomenon of facilitation induced by the presence of bystanders, we conducted an exploratory qualitative study based on 18 partially-structured interviews inspired by the phenomenological method, with rescuers from the State Fire Service. The interviewees' responses were subjected to content analysis in terms of the behaviour of bystanders witnessing their activities. Interviews were analysed according to IPA with the use of qualitative data analysis software Atlas.ti.

**Results:** Our analysis of the interviews suggests that social circumstances during rescue operations are conducive to the occurrence of the phenomenon of social facilitation. The collected data indicating the witnesses' impact on firefighters allowed two different types of bystander behaviour, which impair the work of firefighters during operations: documenting actions of firefighters by witnesses (e.g. by recording) and conscious hindering of fire-fighting operations. The collected material also allows us to draw the conclusion that, for the rescuers in these situations, the presence of witnesses is emotionally charged – the witnesses evoke emotions (such as fear of consequences).

**Conclusions:** The results suggest that the course of rescuers' operations is influenced by bystanders. In addition, we identified some factors that especially hinder these activities. From a practical point of view, the filming of rescue operations by bystanders seems to be the most problematic. It is likely that this practice, which has a negative impact on the course of rescue activities, will intensify in the near future. Thus the system should be prepared for the increasing pressure from witnesses, and in particular should provide training to equip rescuers with the skills necessary to minimise the negative consequences of the audience effect.

**Keywords:** audience effect, social influence, rescue operations, social facilitation

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### ABSTRAKT

**Cel:** Strażacy podczas działań ratowniczych funkcjonują w otoczeniu społecznym, w związku z tym pozostają pod wpływem społecznym i sami go wywołują. Jednym z subtelnych przejawów wpływu społecznego jest efekt facylitacji społecznej polegający na zmianie w szybkości i jakości wykonania zadań w wyniku bycia obserwowanym przez inne osoby. Zjawisko to zdaje się wyjaśniać model uwagowy, który przewiduje, że pod wpływem obecności osób trzecich zawężeniu ulega uwaga, co może prowadzić do pogorszenia lub poprawy (w zależności od warunków) wykonania zadania. Autorzy postawili hipotezę, że strażacy podczas działań ratowniczych podlegają zjawisku facylitacji społecznej – obecność osób postronnych wpływa na przebieg wykonywanych przez nich zadań.

**Projekt i metody:** Aby odpowiedzieć na pytanie, czy strażacy podczas działań ratowniczych mogą podlegać zjawisku facylitacji wywołanemu przez obecność osób postronnych, przeprowadzono eksploracyjne badanie jakościowe oparte na osiemnastu inspirowanych metodą fenomenologiczną i częściowo-ustrukturyzowanych wywiadach z ratownikami Państwowej Straży Pożarnej. Wypowiedzi badanych analizowano pod kątem zachowań osób postronnych będących świadkami prowadzonych działań. Treść wywiadów była rozpatrywana zgodnie z wytycznymi IPA, przy użyciu oprogramowania wspomagającego analizę jakościową (Atlas.ti).

**Wyniki:** Analiza wywiadów pozwala przypuszczać, że okoliczności społeczne podczas działań ratowniczych sprzyjają występowaniu zjawiska facylitacji społecznej. Zgromadzone dane, wskazujące na oddziaływanie świadków zdarzenia na strażaków, pozwoliły na wyodrębnienie dwóch grup zachowań osób postronnych, które w szczególności pogarszają funkcjonowanie strażaków podczas działań: dokumentowanie działań przez świadków (np. poprzez nagrywanie) oraz świadome utrudnianie działań. Zebrany materiał pozwala również na wyciągnięcie wniosku, że dla ratowników w tych sytuacjach obecność świadków jest nacechowana emocjonalnie – świadkowie wzbudzają emocje (np. lęk przed konsekwencjami).

**Wnioski:** Uzyskane wyniki wspierają hipotezę o wpływie osób postronnych na przebieg wykonywanych przez ratowników działań. Dodatkowo wskazano czynniki, które w szczególności sposób te działania utrudniają. Z praktycznego punktu widzenia szczególną uwagę przyciąga problem filmowania akcji ratowniczych. Można przewidywać, że to negatywnie wpływające na przebieg działań zjawisko, będzie w najbliższym czasie się nasilać. Rodzi to konieczność przygotowania systemu na coraz większą presję ze strony świadków zdarzeń, zwłaszcza poprzez szkolenie ratowników w zakresie minimalizowania negatywnych konsekwencji efektu audytorium.

**Słowa kluczowe:** efekt audytorium, wpływ społeczny, działania ratownicze, facylitacja społeczna

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## АННОТАЦИЯ

**Цель:** Пожарные во время спасательных действий работают в социальной среде. В связи с этим они подвергаются социальному влиянию, а также сами его создают. Одним с тонких проявлений социального влияния является эффект социальной фасилитации, заключающийся в изменении скорости и качества выполнения задач в результате нахождения под наблюдением других лиц. Это явление объясняет модель внимания, согласно которой под влиянием присутствия третьих лиц ограничивается внимание, что может привлечь к ухудшению или улучшению (в зависимости от условий) выполнения задачи. Авторы представили гипотезу, что пожарные во время проведения ими спасательных действий подвергаются эффекту социальной фасилитации и присутствие третьих лиц влияет на ход выполняемых ими действий.

**Проект и методы:** Чтобы ответить на вопрос о том, могут ли пожарные во время спасательных действий находиться под влиянием фасилитации, вызванной присутствием посторонних лиц, было проведено исследование на основе восемнадцати частично структурированных интервью с пожарными Государственной Пожарной Службы, подготовленных с учетом феноменологического метода. Ответы респондентов были подвергнуты анализу согласно поведению посторонних лиц, которые были свидетелями проводимых действий. Содержание интервью было проанализировано в соответствии с рекомендациями интерпретативного феноменологического анализа (IPA), с использованием программного обеспечения, поддерживающего качественный анализ (atlas.ti).

**Результаты:** Анализ интервью предполагает, что социальные обстоятельства во время спасательных действий способствуют возникновению социальной фасилитации. Собранные данные, свидетельствующие о влиянии свидетелей события на пожарных, позволили идентифицировать две группы поведения третьих лиц, которые особенно ухудшают работу пожарных: документирование действий свидетелями (например, путем видео-записи) и сознательное усложнение действий. Собранный материал также позволяет сделать вывод, что у спасателей в этих ситуациях присутствие свидетелей вызывает эмоциональное напряжение (например: страх перед последствиями).

**Выводы:** Полученные результаты подтверждают гипотез о влиянии посторонних лиц на ход действий выполняемых спасателями. Кроме того, указаны факторы, которые особенно мешают в этих действиях. С практической точки зрения особое внимание уделяется проблеме съемок спасательных работ. Можно предсказать, что это явление, негативно влияющее на ход действий, будет в ближайшем будущем усиливаться. Это приводит к необходимости подготовки системы на увеличивающееся давление со стороны свидетелей инцидентов, в частности, путем обучения спасателей того, как они могут свести к минимуму негативные последствия эффекта аудитории.

**Ключевые слова:** эффект аудитории, социальное влияние, спасательные действия, социальная фасилитация

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## Introduction

Participation in rescue operations is associated with physical and psychological risks and difficulties, therefore improving training for firefighters also includes psychological factors. The qualitative research on the experiences of firefighters participating in rescue operations shows that one of the most difficult

challenges they meet is the presence and inappropriate behaviour of witnesses and bystanders. These must be regarded primarily as hindrances of a psychological nature, although study participants also stressed the resulting physical threat to the health and life of both the witnesses and themselves, as well as a threat to the success of the rescue operation. An important skill for firefighters is therefore the ability to deal with

bystanders during their operations. The main area of interest is the psychological aspects of the presence of witnesses; one of these may be the social facilitation effect, which is the topic of this paper.

In this paper we present a selected part of results from the broader research project designed to describe and understand the experience of active participation in rescue operations. Especially the psychological states and their possible influence on the conduct of rescue operations were of our interest in the project. This part concerns firefighters' experience of witnesses' presence during rescue operations. Although the aim and method of our research were basically exploratory, the interpretative-phenomenological approach that we adopted allowed us to draw from existing concepts and theories in the later steps of our qualitative data analysis, whenever it facilitated better understanding of the phenomenon in question [1]. Therefore, we decided to propose an interpretation of the experience of witnesses' presence during rescue operation in terms of social facilitation theory. The results based on reports on subjective experiences interpreted in the course of research do not show whether the effect of social facilitation occurs in this context. However, they may be an interesting starting point for further qualitative and quantitative analyses and experiments, focused precisely on social facilitation, identifying outcomes potentially important for practice.

In this paper our focus is not on the general characteristics of the firefighters' experience of rescue operations, but we rather explore its relatively narrow segment, which is understood here in terms of the social influence to which firefighters are exposed during their operations. We focus on the facilitation effects and social inhibition, which, as suggested by the theory of social influence, can affect firefighters' efficiency. The following sections present the analysis of the psychological situation firefighters find themselves in, as viewed from a societal perspective, a brief review of the literature on the beneficial and harmful effects of the presence of witnesses, and selected results of our own research concerning witness behaviour experienced by firefighters that, according to our interpretation, could result in social facilitation or inhibition. The last section presents some practical conclusions and outlines future research directions.

Because of the explorative nature of this study, special emphasis was placed on gathering data from participants representing various specializations and levels of experience.

## Are firefighters affected by social influence?

Social influence is defined as a process which induces changes in individual behaviour, opinions or feelings, as a result of what other people do, think or feel [2]. According to this definition, people interact with each other in a continuous and mutual fashion, and the only condition for social influence is the existence of a social relationship between a minimum of two people. The will to influence any party is not necessary, nor is the awareness of the fact of being subject to influence.

However, the widespread phenomenon of social influence should not be equated with more specific concepts such as social influence techniques [3] and conformity [4]. The effects of social influence may not always be presented as spectacular proneness to making obvious mistakes under group pressure, as in the classic experiments by Asch [5], or increased susceptibility to granting requests as a result of the application of the techniques of social influence (e.g. "Fear-Then-Relief" [6], [7]) investigated in recent years. In everyday life we succumb far more often to the much more subtle interactions with other people, which may have specific consequences.

Given the fact that firefighters remains in contact with many people during rescue operations, it is expected that they will be subject to social influence. This has also been noted by other researchers – for example Kassin, Fein and Markus [8], who postulate participation in exercises aimed at preventing the adverse effects of the presence of observers during real rescue operations. These exercises may be carried out both by conventional methods and through virtual reality simulators.

One of the phenomena studied extensively in the field of social influence is the twin effect of social facilitation and inhibition. These effects involve the unconscious tendency to change one's behaviour due to the presence of observers. Asking questions about the circumstances, causes and consequences of the social facilitation effect in the context of firefighters, who almost never work in isolation, seems to be justified.

## The effect of social facilitation

The phenomenon of social facilitation/inhibition (sometimes also called "the audience effect" or "the facilitation effect") is defined as the tendency to change one's behaviour due to the influence of observers [9]. The first researcher to describe the effect of social facilitation was Norman Triplett [10], who compared the times achieved by cyclists depending on whether they took part in a race alone or in a group. He discovered that people riding in a group achieved better results than those racing individually. This phenomenon explained the existence of "hidden" capabilities, which are activated in the presence of other people.

This effect was first described in the 19th century, but perhaps the most groundbreaking results were published by Zajonc, Heingartner and Herman in their 1969 paper [11]. The results they obtained gave rise to the identification of the "other side" of the effect: social inhibition – they provided evidence for detrimental consequences of an audience presence in some conditions. This phenomenon is also well-established in studies far beyond the typical psychological laboratory [11].

Growing interest in the duality of the nature of the audience effect, which could lead to both improvement in, and deterioration of, efficiency, has resulted in numerous empirical papers. According to the results of a meta-analysis of 241 studies on this effect [12], the presence of third parties increases the speed and accuracy of execution of simple, well-learned tasks, but decreases these when the tasks are complex and poorly trained/rehearsed.

An interesting trend in recent years has been the study into the facilitation effect in interaction with virtual reality. Results of Murray et al. [13] and previous research (e.g. [14], [15], [16]) provide evidence not only on the shift in the effectiveness of actions due to the influence of third parties, but also on the ability to summon this effect using computer-generated “observers”.

Psychological literature abounds in research reports documenting the occurrence of the facilitation effect using different operationalisations of variables, but from the perspective of this study, the authors decided to limit themselves to presenting the above few examples. They are connected by the fact that the dependent variable is not in their case psychological in nature (e.g. solving arithmetical problems) but remains in close connection with the activities of firefighters; in each of the three studies the effectiveness of the operations was determined not only by mental acuity, but also by the ability to motivate oneself to perform physical exercise.

### The mechanism of social facilitation and inhibition

As mentioned previously, the audience effect may cause either deterioration of, or improvement in, a given action. Attempts to explain this duality have been based on different approaches; one of the two most important ones is that put forward by Zajonc [17], who sees the mechanism of the observed interaction in the growth of excitation due to the influence of the observer. In contrast, the second approach (Baron [18]) postulates that the presence of observers affects the functioning of attention, forcing greater concentration, which can lead to better or worse performance of the tasks under certain conditions. Despite its theoretical character, this dispute may be crucial for formulating a hypothesis concerning the relationship between the presence of witnesses and the occurrence of facilitation or inhibition in firefighters.

Proponents of Zajonc’s concept argue that the presence of observers causing deterioration in task performance is mediated by physiological arousal. In other words, it can be expected that a third party observing the actions of the subjects raises the firefighters’ level of stimulation. It is known that increased stimulation leads to an increase in the likelihood of a dominant reaction in given circumstances. For example, if experienced firefighters undertake medical rescue operations, their prevailing response (as a result of multiple exercises and acquired experience) is first the assessment of the airway, breathing and circulation, and only then further medical assessment (based on the document *The principles of organisation of medical rescue in the national fire and rescue service*, July, 2013, procedure no. 2). Following Zajonc’s line of reasoning, the greater their agitation, the more likely they are to use frequently practised procedures in the correct order. In contrast to professionals, untrained witnesses trying to help may proceed in a different way, giving vent to natural curiosity, for example looking at harmless injuries attracting their attention prior to the assessment of the airway, breathing and circulation. According to the predictions of Zajonc’s model, the greater their stimulation, the greater the likelihood of a dominant response – in

this case an incorrect one. Difficult tasks, according to Zajonc’s approach, are those that have not been rehearsed.

Baron proposes a different mechanism for inducing the effect of social facilitation. According to his definition, a task defined as difficult is one that is complex and requires an attentional selection of stimuli – for example, ignoring unnecessary information. This model predicts that a third party may act as a distractor and force the individual to save their attention resources. Distracting attention from the task may affect performance in two ways. If the task is simple, all that is necessary for its implementation is readily available information, the task will be performed faster and more efficiently – thanks to the filtering of unnecessary clues. However, if the task is complex and its implementation requires consideration of many factors, filtering out some important clues means it will lose quality and pace. Using the previous example, it can be expected that firefighters can perform better in the presence of a third party with an uncomplicated case; they will perform the procedure faster partly because their limited attention will not allow them to search for rare symptoms, which in this case are not present. However, if the injured person exhibits unexpected symptoms (i.e., injuries are seemingly harmless but in fact require increased attention), this limited focus can lead to a deterioration in task performance.

The difference between these two approaches lies in the understanding of the difficulty of the task and the observed central point of different situations. Zajonc’s approach focuses on the differences in the learned tasks, while according to Baron, these differences affect the proposed mechanism for explaining the phenomenon. In the context of rescue operations this is not a trivial dispute. It is easy to see that if Zajonc were right, then for the facilitation effect to occur it would be necessary to increase the stimulation of firefighters performing in the presence of third parties. During rescue operations, firefighters may be subject to extreme stimulation, which manifests itself as a significantly increased heart rate. According to Barnard and Duncan’s research [19], this may be an average increase by 47 beats per minute in response to the alarm signal itself. Taking this into account, it is difficult to expect further significant growth in stimulation due to the influence of third parties, thus it would be difficult to expect the social facilitation effect. If Baron’s model was, in turn, correct, a similar restriction should not take place because the focus is not on the growth in stimulation, but rather on avoiding distraction. Firefighters’ mental situation in this case allows us to expect opportunities for active allocation of attention resources because, according to the results of other authors, the attention of firefighters is more extensive than intensive (specific distinction of types of attention: [20]). This means that they do not focus exclusively on one task, but rather cover the entire area of activity, so there is a reserve of attention in the event of the need for further concentration.

### Behaviour of witnesses which may cause the social facilitation effect

Other research on the facilitation effect provides additional information on the likelihood of it occurring in specific

situations. Many papers on this topic have shown that the determining factor is not so much the mere presence of others, but the extent to which they focus their attention on the individual. In other words, sometimes the very fact that someone is present during the execution of a task is not enough, because it is necessary that they focus their attention on the activities of the individual. This phenomenon occurred in the research by Huguet et al. [21]: the audience, which itself was evidently occupied with its task, did not affect the effectiveness of the subjects in a statistically significant way. Circumstances that clearly improved the performance of the task occurred when the third parties watched the actions of the subject; in this particular situation a strong social facilitation effect was revealed. This fact may also be relevant to the specific situation of rescue operations. It can be expected that the presence of other people involved in their tasks (e.g. other rescue operatives) will only slightly affect the occurrence of the facilitation effect. However, bystanders – who by definition are not involved directly in the operation – can cause this effect. The question arises: can these witnesses, provided that their presence is noticed by firefighters, constitute a source of the social facilitation effect for the rescuers? The answer for this question was the central objective of the qualitative data analysis described below.

## Method

We conducted 18 semi-structured interviews, inspired by an interpretative-phenomenological approach (IPA) [1], based on an interview guide serving as a reference for collecting detailed descriptive qualitative data on fire-fighters experience of participation in rescue operations. The sample included operatives from the National Fire Brigade with a wide range of length of service, rank and type of tasks performed in the service (rescue operatives, firefighters, drivers, commanders, instructors), and members of the Voluntary Fire Brigade (three out of 18 people). Because the process of recruiting experts or members of public trust professions to qualitative interviews may be challenging [22], we opted for relatively relaxed criteria and a compound scheme of recruiting participants. We invited firefighters to participate in the research mainly by snowball sampling, although every round of sampling was purposefully started separately in the firebrigade unit we managed to involve in cooperation with our research team following permission from the unit's commander.

The only criteria adopted in snowball sampling was, first, active participation in rescue operations of all firefighters in the group and, second, the variety of functions and types of duty related to the seniority of participants (we directly asked them to contact us with colleagues having various work experience). The reason for this was not a presupposition of any specific relationship between seniority or function in the fire brigade and subjective experience of participation in rescue operation, since we had no basis for any such hypotheses. Instead, we wanted to obtain data giving access to as wide a range of firefighters' experiences as possible. Because of the exploratory character of our research, we had no reasons to initially restrict

the group to participants with any specific work experience or type of duty. We intended to get detailed descriptions of their subjective experience of participation in rescue operations, as diverse as possible, in order to gain some initial understanding of the phenomenon in question. To meet the requirements of the adopted approach, the number of participants was initially determined as 15-30. IPA methodology consists of idiographic as well as nomothetic phases and demands very detailed analysis. Therefore, the number of participants must be restricted and at the same time large enough to provide sufficient material for identification of at least initial tendencies in the data. Finally, we interviewed 18 participants because at this stage we seemed to have achieved data saturation.

Following the confidentiality principles and research ethics, all subjects agreed in writing to participate in the interviews, which were audio-recorded with their consent. All of the interviews were conducted in similar, comfortable conditions, by one researcher with no other witnesses. During interviews, lasting from 30 to 90 minutes, participants were asked to recall one or more events in which they had participated in the past and to describe how they had experienced it. The fully transcribed qualitative interviews, which served to reconstruct the practices and experience of participation in rescue operations, were analysed according to IPA [1] with the use of qualitative data analysis software Atlas.ti. One of the themes emerging from the exploratory analysis was the role of bystanders, witnesses, victims and other individuals in the course of operations. Here we focus entirely on this theme by presenting five major categories of firefighters' experience related to social influence, interpreted in light of the facilitation/inhibition theory. Our study was conducted on the basis of a positive opinion from the Ethics Committee of the Applied Psychology Institute at the Jagiellonian University, and was conducted in compliance with the rules of ethics.

## Results

Presentation of the results is structured around five categories of firefighters' experience interpreted in light of social influence theory that we expressed as questions referring to the theory of social facilitation.

**Do firefighters notice the presence of bystanders?** This seemingly trivial question concerns the basic condition of the facilitation effect: the awareness of the presence of witnesses. This category is built around a contrast found in firefighters' reports of routine events with relatively low risk vs. those in which the risk to the lives of the participants increases their motivation. On the one hand, awareness of the presence of bystanders and the problems this entailed was one of the most frequently discussed topics. Common statements concerned their being fully aware of the presence of witnesses, especially when their behaviour attracted attention (e.g. Participant 3: "You don't see those people, except it's also a question of their behaviour. Because if we know that we have to act, we have orders, and then someone suddenly enters that zone or behaves badly, they also attract our attention"; Participant 16: "Because generally once you've run out of water, then all those onlookers

also start creating stress. Everyone is shouting, everyone knows best, even though they aren't doing anything and are just causing extra stress"). On the other hand, when firefighters are highly motivated during a particularly dangerous event, they do not even notice the bystanders. In such situations, the awareness of the presence of witnesses is very low, especially in highly experienced personnel. In those cases, the likelihood of the facilitation effect influenced by bystanders appears to be lower. It is notable that firefighters actively seek and exchange information on whether they expect to see bystanders, which may be evidence of the fact that they experience it as a problem, including the facilitation effect/social inhibition (e.g. Participant 1: "Of course there is a whole communication network telling us that media are arriving at the scene, that people are calling in to ask what's going on, telling us to get ready. So it serves as useful information for us, helping us prepare for the arrival of the press at any moment"). It is also notable that bystanders are sometimes actually asked for help with minor and safe tasks, in a way engaging them with the rest of the rescue team and shifting their role from "observers" to "participants"; this means we should ask about how the likelihood of the social facilitation changes in such a situation.

**Do firefighters think that the bystanders focus on the rescue operatives?** According to the evaluation apprehension model devised by Cottrell [23], the presence of bystanders may be insufficient to bring about the social facilitation effect; it only occurs when the actors anticipate that they will be assessed by witnesses. Empirical studies confirm that the mere presence of people who are not showing any interest in the actors may be insufficient to cause the facilitation effect, and the key element is the bystanders' attention, e.g. [24]. In this light, if firefighters believed that the bystanders focus their attention on them, this would increase the likelihood of the facilitation effect in this context. This is not as obvious as it sounds, since many rescue operations include events of particular interest to bystanders. In the subjective view of firefighters, rescue operations could be more attractive than their participants; on the flip side, firefighters may believe that they are the main source of interest. Rescue operatives report that they can feel it when bystanders focus their attention on them. This is described verbally (e.g. witnesses trying to interact with firefighters, Participant 1: "Sometimes they want to ask something, you know. And sometimes they want to say they've seen something. Sometimes they are people who took part, maybe as witnesses: 'You wouldn't believe what I've seen, I know better, that's not how it was'"). Sometimes, statements of witnesses describing their interest in rescue operatives are not aimed at them directly (e.g. Participant 1: "The crowd had already assembled, and you could hear in the distance, 'Hey! Guys, grab some buckets, the firefighters can't put the fire out!'"). Additionally, reports of non-verbal responses reveal a strong sense of being the centre of witnesses' attention (e.g. documentation of rescue operations; Participant 6: "There are crowds of onlookers filming everything. In the beginning it's like... how can I describe it... It means a sense of uncertainty, because when someone films your every move then it doesn't matter what you're doing, you know you're being

recorded"). There can be no doubt that the attention of bystanders is perceived as being focused on firefighters.

**Are there any interactions between firefighters and bystanders?** If interactions do occur between firefighters and bystanders, it makes social facilitation in rescue operations all the more likely. Interviews with firefighters reveal many statements on various degrees of interaction (verbal, physical; e.g. attempts to strike up a conversation as quoted above, or bystanders entering the area of the rescue operation). In many reports, the participants also reported actively avoiding interaction, most frequently citing marking and isolating the incident, screening off the area where help is being given or asking people trying to engage to talk to other operatives (e.g. Participant 1: "So then, if those people really have something constructive to say, we ask them to talk to the police"; Participant 4: "It makes us extra sensitive to keep an eye on bystanders, who often get in the way of rescue operations. They come over, ask questions, you know. We're supposed to be doing our job, making decisions, and these people sometimes wander around, so we have to work with the police who are also called to these situations, specifically to work together and get them to remove such people from the site"). Isolating and screening off the area where help is being given has become or at least is becoming a permanent element of procedures forming part of rescue operations; it can be regarded as practical and expected evidence for the existence of social inhibition. Many years of experience indicate that the presence of bystanders makes it difficult for firefighters to focus their attention on carrying out their actions quickly and efficiently; this means that even without naming the effect, solutions have been introduced to minimise the intensity of social inhibition.

**What kinds of behaviour have a particularly strong effect on the actions of rescue operatives?** The interviews we analysed feature two types of behaviour which clearly stand out for the participants: documentation of their actions, and deliberate, frequently malicious, hindering of their actions. This does not mean situations when the individuals cannot be held fully responsible for hampering rescue operations (for example out of grief or despair, or out of fear for their own lives), but rather those when the source of difficulties are the bystanders themselves. Although the social facilitation effect does not devote much attention to specific actions taken by witnesses, the strong focus on those issues means the topic cannot be ignored. Reports on how rescue operations are documented are consistent; one of the common motives is that of bystanders taking out their phones and recording the scene, even to the point of interrupting their previous activities (Participant 1: "It's really common for passers-by who have no part in the event to stop to look, peer in, take photos, use flash. For them it's really important to find out what happened"). Participants also reported other ways in which bystanders hinder their actions, frequently mentioning malicious verbal comments (e.g. Participant 4: "People who haven't the first idea of putting out fires or... of correct actions or procedures, who stand around and make comments or laugh"; Participant 16: "[...] these people shout [...], 'Go put the fire out there, that's where it's burning, don't just stand there!'") or violating basic safety principles

(Participant 5: "They push and shove because they desperately want to get their head in the window to see everything"; Participant 16: "And just being recorded on site of the operations when we're working, there are a lot of people wandering around, filming, gawping at us. They can just brazenly walk up to us and keep filming even though we're in a separated zone which they shouldn't enter") which frequently results in diverting the available resources when one of the rescue operatives has to leave their post to protect and herd away witnesses (Participant 8: "It also makes things more difficult, because one member of our team has to stop what they were doing"; Participant 4: "The role of this person is to gather those individuals, and tell them 'Please move along, please leave because this is the zone of operations,' right"). In both types of situations, the participants expressed their concern about the negative intentions of witnesses (e.g. Participant 7: "And now this person who was driving a different car can stand there filming and saying, 'Look, they're not helping that one there under that car'. And how am I supposed to know there's a pedestrian trapped underneath?"; Participant 9: "And in general bystanders don't know any of the sort of details firefighters simply need to think about. And when we have to think, that takes a second or whatever, so it's just a waste of our time. And someone goes, 'What are they doing?! Standing and looking! They could have done something by now!' Sure, maybe they could, but they could have died, or put someone else at risk of injury"). As well as natural sources of concern rooted in the context of their work and worry about malice (especially notable when it comes to filming, when firefighters expressed direct concern for their personal safety if the author of the recording chose to use it against them, e.g. Participant 6: "And anyone can post it online and later, I don't know, a supervisor, commander, colleague can see it and there will be consequences later"; Participant 16: "Luckily I have never found a video of myself online. But I think that it's personal for everyone, you know. We're already used to the fact that there's always someone with a mobile phone. We get photo reporters. They can get in anywhere, even when you explicitly tell them not to, they can squeeze through anyway. Even when you move them along they keep taking photos. You think after the end of the operation"), the emotional charge resulting from the presence of witnesses can also be regarded as evidence supporting the existence of social inhibition in this instance, perceived pre-reflexively as a general problem resulting from the presence of other people; the experience is described by firefighters as having the significance described above. If we take a look at the most powerful audience effect, we reveal a common characteristic which may be decisive in terms of the strength of the facilitation and inhibition effects. In those situations, the presence of bystanders has an emotional effect on firefighters: for example, they perceive their actions being documented as a potential risk of revealing real or perceived errors and fear the consequences of their being made public. Witnesses themselves frequently experience powerful emotions which can make them respond or act in certain ways, for example members of a victim's family may not come to terms with their injury or death and are highly distressed. It should

be noted that in its classical setting, social facilitation occurs "when the intensity of one animal's behaviour increases or decreases in the presence of another animal which does not otherwise interact with it" [25, p. 1]. This raises the question whether in situations of such a powerful effect of witnesses on rescue operatives we are not, in fact, dealing with an interaction which is a step beyond observation, and whether we are still dealing with the audience effect. There is no simple answer to this; on the one hand recording the actions of firefighters by bystanders is not an interaction per se, but on the other, it does involve stepping beyond normal behaviour. As such, it may be perceived as interfering in their work, which is clearly more than simple observation. Another important element is the aspect of recording the activities. In light of Cottrell's evaluation apprehension model [23], the very fact of recording video or taking photos of firefighters is clearly going to be perceived as direct evidence of being threatened by evaluation of witnesses, which should enhance the social facilitation effect.

**Do firefighters recognise the psychological consequences of the presence of witnesses?** The social facilitation effect does not assume that it will be consciously perceived; however, it seemed pertinent to ask whether this does happen with rescue operatives. Such a powerful perception of bystanders by firefighters unprepared for the interaction can not only contribute to a subtle social inhibition effect, but in certain cases it can cause irreparable harm to the rescue operation. Study participants can be divided into two groups: those declaring that such situations do not affect them (e.g. Participant 5: "If we're talking about getting stressed about other people's behaviour then sure, we often get it when someone under the influence of alcohol starts going on about something, raises their voice and so on. But I am not afraid of this sort of thing, it doesn't stress me out") vs. those who see it as a problem (e.g. Participant 1: "It can be stressful to know that you can make a mistake and then someone who has recorded it uses it against you"). However, this should not be used to conclude that resistance to the behaviour of witnesses is a constant; on the contrary, it depends on a range of factors varying between individuals and situations (e.g. the firefighter's experience, the significance and seriousness of a given rescue operation), especially given that the participants talked about taking part in many incidents. The motif of experience, in particular of serious rescue operations posing a threat which in turn increases the resistance to the inhibition effect, can support the theory about the benefits of training firefighters in acting while exposed to being witnessed by bystanders (for example using simulations).

## Summary

The paper presents the phenomenon of social facilitation and inhibition as one that potentially concerns firefighters during rescue operations.

Taking into consideration the specific tasks performed by firefighters (such as controlling the site of the operation), we

can posit that they may be more at risk of the phenomenon than other individuals who perform tasks which are equally physically demanding but which do not attract the attention from bystanders. Results of analyses confirm that firefighters and witnesses notice one another and occasionally enter into interactions. The main factors identified by firefighters as hindering their work are the fact of being filmed and witnesses' engaging in malicious interference. The former in particular is likely to become increasingly significant in the near future due to the growing access to devices which can be used for audio-visual recording. Therefore, social inhibition should be considered a possible negative consequence of video surveillance alongside other consequences such as decreased job satisfaction and affective commitment [26]. It is important to distinguish the purpose of recording, according to Welles, Moorman and Welner [27], monitoring perceived as aimed at development is associated with higher levels of job satisfaction, organizational commitment, and perceived obligation in comparison to monitoring intended to assess the person; in the case of video-recording performed by casual onlookers the perceived goal will be probably harmful in the majority of cases. Qualitative analyses did not suggest that firefighters were aware of the social facilitation effect *per se*. In the context of previous research, this comes as no surprise; for example, Murray et al. [13] identified the facilitation effect in rowers who were unaware of it themselves. However, this does not change the fact that firefighters' reports regularly mention witnesses who affect their actions by making them more difficult; this may suggest that firefighters intuitively perceive the facilitation effect.

Qualitative studies have a defined aim; they can be used to explore the entire issue at hand, but in and of themselves they do not provide a basis for drawing conclusions on the existence of the phenomenon in a larger population. In spite of the fact that qualitative analyses have identified factors which support the social facilitation effect, there is a need to conduct future standardised experiments with the participation of firefighters to allow us to learn whether the effect is present and what drives it. The next step should focus on counteracting the social inhibition effect and on promoting social facilitation where possible. Both aims can be achieved through experiments conducted during training courses through traditional exercises, simulations and using innovative tools such as simulators of rescue operations. This study forms part of a project designed to develop a prototype of such a tool.

Following the study, we can draw two practical recommendations. The first concerns the need to prepare systems for the increasing pressure from witnesses. Our results highlight potential problems resulting from the growing access to new technologies; when firefighters are aware of their actions and any mistakes' being potentially made public, they may tend to focus more on concealing such errors than on their work. The situation may get more difficult in the coming years given the increasing popularity of remote devices such as drones. The second conclusion concerns tools used in training; they must be devised in such a way that the participants can experience virtual pressure from witnesses in order to become accustomed to it. Tools which are likely to become especially useful

are virtual reality simulations, some of which are already used in the training on acting under social pressure (such as public performances [28]).

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