



The Effect of Gratitude on Individuals' Effort – A Field Experiment

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Abstract

This study uses a real-effort survey experiment to investigate whether expressions of gratitude induce reciprocal behaviour and hence significantly increase individuals' effort. I extend existent literature by exploring non-pecuniary gifts that signal different degrees of gratitude, all combined with an interpersonal element. Based on a formal model, I hypothesize that a greater amount of gratitude is accompanied by higher levels of provided effort. The results show that appreciation in form of a thank you note positively affects reciprocal effort choice, compared to receiving no gratitude. An even higher level of gratitude conveyed in form of a video clip, however, does not impel subjects to provide more effort. Moreover, while I detect women to behave more reciprocally than men, this effect is least present in the gratitude treatments. These insights provide valuable implications for experimental research as well as for organizations and modern labour markets, emphasizing that non-monetary gifts, such as expressions of appreciation, are a cost-effective tool for human resource management to determine workers' effort.

Keywords: Gratitude; non-pecuniary gifts; gift giving; reciprocity; personnel economics.

1. Introduction

Various research studies in personnel economics have highlighted the importance of deepening the understanding of what motivates people to devote time and effort to their work (Kube et al., 2012; Carpenter and Gong, 2016; Kovach, 1987; Lazear, 2000). This question is of great interest as highly motivated workers are the key for long-term success for many organizations. Data from numerous studies in management and organizational psychology have shown that individuals who feel valued and treated fairly by their employer are more encouraged to work well (Kovach, 1987; Baker et al., 1988; Bradler et al., 2016). This phenomenon can be explained by the consequential development of social-exchange relationships between supervisor and subordinate which triggers effective work behaviour and organizational commitment (Rhoades and Eisenberger, 2002). According to Akerlof (1982) famous gift-exchange theory, treating workers kindly (e.g. by paying above clearing market wages) leads to positive sentiments towards the employer and induces employees to reciprocate positively to the "gift" by working harder. Economists have so far primarily focused on purely financial gifts as a main mean for valuing individuals' work which is in line with early management theories that stress the role of financial incentives as a main drive to impel motivation and performance (Fehr et al., 1993; Fehr and

Falk, 1999). These theories lead back to the homo economicus model of humanity initiated by neoclassical economists in the later 20th century (Aspromourgos, 1986). The construct of the homo economicus is based on the idea that individuals act out of pure self-interest in order to achieve the highest possible well-being for him or herself. However, latest research streams argue that the homo economicus perspective cannot explain all observed behavioural regularities. More precisely, psychologists and sociologists challenged the view of neoclassical economists by demonstrating that there are other sources of employee motivation besides monetary rewards (Bandura, 1986; Stajkovic and Luthans, 2003). Indeed, a substantial body of recent empirical findings in behavioural economics strongly suggest that gift exchange can be triggered by non-monetary elements. In particular, mounting evidence anticipates that purely non-financial gifts such as individual expressions of appreciation, social recognition, and management attention significantly induce higher effort which in turn associates with increasing performance¹ (Bradler et al., 2016; Ellingsen and Johannesson,

¹Remarkably, a small amount of literature contrarily reports detrimental effects of non-monetary incentives. Hammermann and Mohnen (2014), for example, show in a real-effort experiment that the performance of subjects who received a monetary prize exceed those of participants in pursuit of a non-monetary incentive.

2007; Kirchler and Palan, 2018; Kosfeld and Neckermann, 2011; Kube et al., 2012). A recent study by Kirchler and Palan (2018), for instance, states that compliments elicit reciprocity and might be preferable to financial gifts. Kube et al. (2012) provide strong evidence that individual's effort is lower for a financial, than for a non-financial gift of equal value, suggesting that non-pecuniary elements might be more effective when it comes to triggering reciprocity. Further evidence on the effectiveness of non-monetary gifts is provided by Vogelsang (2019), who claims that the gift of more leisure time has a positive effect on employee's performance. Similarly, evidence from a field experiment conducted in China reports that allowing employees to work from home may be seen as a gift and is as such reciprocated by working harder (Bloom et al., 2015). In a study on worker performance, Kosfeld and Neckermann (2011) highlight the motivating power of social recognition and public awards. This is in line with Bradler et al. (2016) who argue that recognition, especially when provided exclusively to a subset of high performers, can be a cost-effective tool for increasing average work effort. Nevertheless, as social awards provide selected recipients with public status, they contain an extrinsic component and differ therefore from purely intrinsic non-pecuniary rewards (Frey, 2007).

While the existing literature provides valuable insights on the effect of several non-financial gifts on the reinforcement of reciprocal behaviour, much less is known about the effect of differing levels of gratitude expressions in particular².

Subsequently, the present study attempts to fill this gap and addresses the following research question: Does the expression of gratitude induce reciprocal behaviour and hence increase individuals' effort, and more specifically, do efforts significantly differ for varying gratitude levels?

A field experiment was used to explore the extent to which different forms of gratitude expressions, in combination with a personal touch, elicit reciprocity. Gratitude is conveyed via a thank you video and a thank you message, both transmitted electronically to the recipient. A handmade element was included in both settings to signal the recipient that the experimenter invested time and effort to show appreciation³.

The paper proceeds as follows: After providing a thorough understanding of the meaning of gratitude and its interrelation with the concept of motivation, a formal model outlining the behavioural mechanism behind gratitude is presented. Section 2 continues by demonstrating the relevance of gratitude, particularly in times of new work, and thereafter proceeds with a brief overview of present literature on

gratitude in the economic context and the corresponding development of the main hypotheses. Section 3 and 4 provide an overview of the experimental design and outline research results of the field experiment. In the subsequent discussion, the results are critically reviewed and assessed. Limitations and suggestions for future research follow. To emphasize the importance and added value of the study, the final part of the discussion poses implications for organizations modern labour markets.

2. Theoretical Foundation

The following section provides a definition and conceptualization of gratitude and further emphasizes its interrelationship with the concept of motivation. Subsequently, the study immerses into the underlying behavioural mechanism of reciprocity, conceptualized in a possible toy model. Thereupon, the relevance of gratitude in the context of new work is examined. The last part of the section provides a brief overview of empirical evidence and delineates the hypotheses of the underlying paper.

2.1. The meaning of gratitude

As a relatively new field of study, researchers still need to agree on a general definition for the construct of gratitude⁴. While it seems to be a well-known and common terminology, there are numerous concepts and behavioural descriptions that fall under the notion of gratitude. The Cambridge University Press (2019) defines gratitude as "a strong feeling of appreciation to someone or something for what the person has done to help you". As the word has its roots in the Latin term *gratia* meaning graciousness and gratefulness, all derivations must relate to kindness, generosity, the act of gift-giving, or receiving something as gratuity (Pruyser, 1976). From a psychological perspective, gratitude is defined as a positive and interpersonal emotion which strengthens people's social resources and preserves social relationships (Frederickson, 1998; Algoe et al., 2008). Being classified as an emotion, Emmons and McCullough (2004, 9) argue that gratitude is an attribution-dependent state that results from two stages of information processing: "(a) recognizing that one has obtained a positive outcome; and (b) recognizing that there is an external source for this positive outcome". According to this classification, positive benefits are determined by external parties, underlining gratitude's feature of being an other-oriented emotion which may imply "prosocial behaviour by focusing attention on the need and deservingness of the benefactor" (Tsang, 2006, 141).⁵

²In the underlying study, I strive to investigate the effect of gratitude expressions that are without any tangible or extrinsic value. To my knowledge, the only related study using an intervention of immaterial type is a field study by Grant and Gino (2010) who examined the effect of gratitude expressions on university fund raising.

³Investigating gratitude expressions in form of an electronic message in combination with an interpersonal element instead of face-to-face communication or e-messages without any personal touch is the main difference to the experimental setting of Grant and Gino (2010).

⁴Although the terms gratitude, recognition, thankfulness, and appreciation are often used interchangeably in the literature, I merely refer to the terms gratitude, (worker) appreciation, and recognition as substitutes throughout this paper.

⁵Prosocial behaviour can be understood as a social behaviour that occurs when individuals act to benefit other rather than themselves.

Apart from studying gratitude within the domain of emotions theory and thus referring to gratitude as a state of feeling grateful, psychologists further depict gratitude as a personality trait (Wood et al., 2008). Gratitude on the dispositional trait level is regarded as a strength of character which refers to a general orientation towards a positive perception of daily life events. Noteworthy, various scholars detected a positive association between perceiving positives in life and individuals' levels of subjective and psychological well-being (Hill and Allemand, 2011; Wood et al., 2008; McCullough et al., 2004).

Moreover, taking a closer look at the process of gratitude highlights the importance of differentiating between sender and receiver of gratitude (see figure 1). While the sender expresses gratitude and kindness, the latter experiences gratitude which ideally leads to the urge to reciprocate and behave in the benefactors' interest (Blau, 1964). According to Grant and Gino (2010, 947):

“Expressions of gratitude signify that a beneficiary values, needs, appreciates, and accepts one's assistance rather than rejecting or devaluing it.”

Last but not least, the management scholars Brun and Dugas (2008) propose a classification of the concept of recognition into four non-exclusive approaches, namely: the ethical dimension, the humanistic and existential view, the psychodynamic school, and the behavioural perspective. Differentiating between these dimensions does not only provide interesting insights about the respective elements of gratitude, but further elaborates on the sender's motive of expressing appreciation.

The ethical perspective for instance promotes the idea that gratitude stems from the thought of human dignity and social equity. Their concept of appreciation is founded on the theory that employees have to be noticed as persons and not as instrumental entities for the organization. While the humanistic and existential view is closely related to the ethical view, their discourse does not focus on organizational justice as a central theme. Rather, this approach emphasizes the need to create proper working conditions within the company to enable humanistic existential appreciation.

This is in contrast to the view of work psychodynamics who highlight the importance of recognising individual's contribution to a result – their work performance – and secondly appreciating people's actual effort – their job dedication – which is irrespective of the final results of their work. Lastly, the behavioural approach to appreciation considers expressing gratitude as an instrument for rewarding performance with the aim of highlighting the efficiency, the outcome, or the value of individuals' performed work for the organization. Thus, it takes an evaluative role which results in a form of conditioning human behaviour and can be as such assigned to the behavioural school of thought (Brun and Dugas, 2008).

In light of the research aim of the underlying study, the examination of gratitude in the present field study corresponds

best to the psychodynamic outlook of gratitude and will be regarded accordingly in the present paper.

2.2. Gratitude and human motivation

In the past, motivation psychologists attempted to explain human behaviour and further strived to find reasons of why an individual takes a specific course of action (Rosenstiel and Nerdinger, 1980; Heckhausen and Heckhausen, 2018). In general, they differentiate between the two related concepts of motives and motivation. Motives are defined as characteristic value dispositions which are the concrete cause for taking actions and thus constitute an individual's enduring willingness to act. Some motives are congenital, while others evolve over the course of life. Although motives provide reasons for human actions and their direction, they have to be activated by a stimulus to initiate individual acts. The term motivation, which originates from the Latin word *movere*, refers to the current orientation towards an operational objective and builds the foundation for target oriented human behaviour (Nerdinger, 2014). A person's motivation emerges when he or she is in a situation that stimulates his or her personal motives and thus leads to action. Hence, the motivation of an individual does not only depend on the presence of situational influences and the respective individual itself but further is conditioned by the interaction of these two (Heckhausen and Heckhausen, 2018).

To gain an even better understanding of motivation, it is sensible to take a closer look at content theories which focus on the various categories of goals and needs which motivate people. In his two-factor theory about job factors, the American psychologist Herzberg proposed that there are two sets of factors affecting employee's attitude about work (Gawel (1997)). More precisely, he differentiates between hygiene factors (e.g. supervision, interpersonal relations, and salary) which can, if absent, cause dissatisfaction and motivators which enrich a person's job and provide positive satisfaction (e.g. recognition, achievement, and responsibility). Motivators hence arise from the intrinsic condition of the work while hygiene factors can be referred to as extrinsic elements to the job itself. With respect to this theory, it seems of high importance to eliminate job dissatisfiers while at the same time improve on motivating factors to increase subjects' motivation to provide higher effort and performance.

Another content theory of motivation includes Maslow's hierarchy of needs. The humanistic psychologist depicts that individuals have needs which can be brought into a hierarchical order (Maslow, 1987). The base of the pyramid form physiological needs such as nutrition and sleep, followed by security needs which include occupational certainty, health, and housing conditions. The next two levels comprise the need of love and belonging as well as the need for appreciation and respect. Self-actualization forms the top of the pyramid and refers to the desire of becoming “everything one is capable of becoming” (Maslow, 1987, 64). With respect to the present investigation, the need for interpersonal relationships as well as the desire for recognition and self-esteem

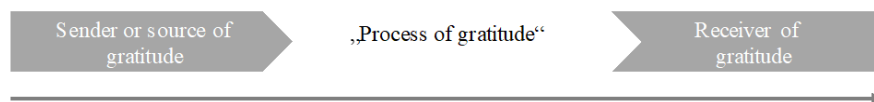


Figure 1: Process of gratitude

are particularly important and can, at least theoretically, explain human motivation for individuals' behaviour. Nevertheless, one question remains unanswered: Through which behavioural mechanism might the expression of gratitude spur individual's motivation to subsequently exert higher work effort?

This phenomenon can be explained by the renowned social norm of reciprocity. Reciprocity is a powerful determinant of human behaviour and social preference that refers to the social norm of responding towards (un)kind treatments likewise. The receipt of a benefit may therefore induce the norm of reciprocity and in this way lead to an act of kindness on the receiver's part (Falk and Fischbacher, 2006). In their extensive research on reciprocity experiments, Dufwenberg et al. (2001) outline the difference between direct reciprocity and indirect reciprocity. While direct reciprocity embodies the principle: "I am nice to you and you are nice to me", the latter involves a third party and thus involves benevolent acts towards a stranger. Scholars basically distinguish between two types of indirect reciprocity namely, downstream reciprocity and upstream reciprocity. Downstream reciprocity is built on reputation and refers to the assertion that an individual who was kind in the past has a higher chance of receiving kindness in the future. Upstream reciprocity, in contrast, is based on a recent positive experience. In particular, it captures the idea that the recipient of an altruistic act may feel motivated to reward the benevolent actor or a third party (Nowak and Sigmund, 2005). However, as I am interested in taking a closer look at gratitude and its effect on direct reciprocal behaviour towards the benefactor, I do not refer to indirect reciprocity in the underlying paper.

Following the vast amount of laboratory experiments and field studies emphasizing the omnipresence of reciprocal behaviour, reciprocity has become an established construct in the field of economics (Fehr et al., 1993). Notably, Emmons and McCullough (2004) outline reciprocity as the underlying principle behind the gift-exchange approach. As depicted earlier, the economic literature on manager-employee reciprocity has mainly focused on "wages as employer's means of exchange in reciprocal relationships with workers" (Bradler et al., 2016, 3088). However, as noted before, employees do not solely care about financial incentives but further value other non-monetary rewards such as recognition, respect, and private compliments communicated by the supervisor. Conveying these characteristics into a formal model, one may suggest the following utility function of a worker (Bradler et al., 2016; Dur et al., 2010; Sliwka and Werner, 2017):

$$U_i = w + \beta e + r\alpha e - C(e)$$

where w represents the base salary of the agent. Individual's provided effort is indicated with e , while β incorporates other intrinsic motives of the subject to exert effort. Worker's degree of reciprocal inclination is defined by r . With respect to the research subject of the underlying study, α indicates the amount of received gratitude. The final component of the equation refers to the associated effort costs (e.g. invested time or mental exertion) and is defined as $C(e) = \frac{1}{2}e^2$. Worker's utility increases when the parameter α is positive, which is the case when expressed gratitude is experienced. Contrarily, when no appreciation is expressed towards the individual, α will be zero. According to economic theories, employees will choose an effort level to maximize utility U_i . Differentiating the utility function with respect to e , results in the worker's optimal effort level $e^* = \beta + r\alpha$. Accordingly, an individual's optimal effort level is increasing with the amount of gratitude received, depending on the individuals' preference for reciprocity. Contrarily, when no appreciation is expressed towards the individual, α will be zero and individual's optimal effort will merely be determined by the parameter β . From a labour market perspective this would imply that individuals work harder and put forth additional effort when they are exposed to gratitude than when they receive no appreciation⁶.

2.3. Relevance of gratitude in the context of new work

While there are numerous reasons for organizations to focus more on non-monetary bonus domains, appreciative expressions become particularly important in today's digital age and times of modern working societies. New communication technologies, changing workforce demographics, and the current rise of alternative work arrangements shape current and future workplace (Katz and Krueger, 2019). Increasing opportunities for flexible working arrangements (FWA), for example, enable employees to work where, when, and sometimes even how they choose (Lewis, 2003). Correspondingly, face-to-face communication in manager-employee relationships diminishes, while the use of online communication tools constantly accelerates. With respect to the conducted survey in the underlying field experiment, more than 67% of the participants ($n = 140$) have reported that their employer offers the opportunity of FWAs and 40% of them mentioned to make use of home office arrangements regularly ($n = 56$). However, the resulting physical distance may not only impede employee control and monitoring but further obstruct social relationship building between supervisor and subordinates (Lewis, 2003; Prutchno et al., 2000). In particular,

⁶Assuming that $r > 0$.

Gajendran and Harrison (2007) highlight the undermining effect of telecommuting on the depth of ties with colleagues and supervisors. This is particularly alarming, since good manager-worker relationships are claimed to be a vital incentive to motivate employees to work well (Agell, 2004).

To counteract this destructive effect, a sensible approach could be the use of gratitude. By appreciating workers effort verbally, individuals perceive that their actions matter and feel valued which in turn strengthens the social-exchange relationship between manager and employee (Grant and Gino, 2010). This is in line with research results from positive psychologists who state that:

“Gratitude connects people ... gratitude not only creates and smoothens interpersonal relationships, it also fulfils important cohesive functions for society and culture as such” (Emmons and McCullough, 2004, 204).

While, to the best of my knowledge, there is no study investigating the relationship between gratitude and relationship building within the FWA context, I merely assume the positive association between the two constructs to emphasize its relevance in present work settings. With respect to the dynamic shift of today's working environment, it is hence crucial to understand the importance of non-pecuniary elements, especially gratitude, as not only a performance-enhancing substance to promote employee motivation but further its supportive function in social relationship building (Korzynski, 2013; Emmons and McCullough, 2004).

2.4. Empirical evidence and hypotheses development

Although it is undeniable that gratitude is omnipresent in social life, academic literature so far provides little evidence on responses to gratitude expressions within the gift-giving domain in organizations and its subsequent effect on employee performance. Moreover, the existing literature narrowly concentrates on the impact of financial gifts. This is not surprising, since rewarding an individual with a monetary payment is assumed to be the most explicit and unambiguous way of endowing. The act of giving a non-financial gift, on the contrary, is implicit and more context-specific which results in limited generalisability of empirical results (Bradler and Neckermann, 2019). Nevertheless, the rapid changes in technology and communication channels within modern labour markets as well as latest empirical findings underline the relevance of gratitude and demand for future research. Likewise, results of a variety of employee surveys propose that workers strive for appreciation and recognition from their employer and monetary compensation is only considered of secondary importance. This accords to Wiley (1997), who finds that “full appreciation for work done” was the only motivating factor which continuously ranked among the top two motivators for employees in the U.S. during the second half of the 20th century.

One of the early experimental studies investigating the effect of gratitude was conducted by the psychologist Clark

(1975). In a field experiment, he demonstrates that female participants who were thanked for giving a “confederate” directions to the university library, were more likely to help on a subsequent occasion (e.g. to pick up books that the “confederate” dropped in the street) than were subjects who were cut off and told “nevermind, I’ll ask another person” prior to the subject’s completing the direction. This infers that subject’s recent past experiences determine their prosocial behaviour in the future, as they are more likely to expect to be thanked (punished) again. Further field experiments emphasize that the reinforcement effect provoked by expressions of gratitude extends as well into the economic context. Rind and Bordia (1995), for instance, studied the effect of server’s “thank you” on restaurant tipping. They conducted a field experiment in an upscale restaurant and find an 11% increase of tipping when the waiter showed gratitude by writing “thank you” on the back of the checks compared to when he didn’t express gratitude at all. Another study experimentally tested the effectiveness of handwritten thank you notes on the response rates of physicians’ mail surveys and reports an increase of response rates of 40.7% in the treatment group compared to the baseline group (Maheux et al., 1989).

While these studies demonstrate that individuals who are thanked for prior efforts are motivated to “work harder” in favour of others than are subjects who have not been thanked for their efforts of providing benefits, a few things remain uncertain. First, the results do not provide sufficient proof whether the severe effects arise through the mechanism of reciprocity; and secondly the influential impact interpersonal elements might have had on the outcomes remains unstudied. These issues are addressed by a study providing evidence on appreciation as a gift which is most closely related to the present investigation (Bradler and Neckermann, 2019). The scholars conducted two field experiments that explore effort levels of subjects in response to monetary gifts and worker appreciation. Their findings show that gratitude in form of a thank you note positively affects agent’s reciprocal behaviour. More precisely, they detect that a combination of appreciation and monetary payment as a gift works less well than appreciation or money alone. Additionally, their experiments indicate that subjects’ responses are highly sensitive to the presence of interpersonal elements since they report substantial performance increases when combining the gifts with a personal touch. Interestingly, they argue that it is not the interpersonal element alone which stimulates the sizable impact on performance but that the personal touch influences the way in which the presentation of the gift affects the behaviour of the individual. Thus, the personal touch rather functions as a signal and does as such trigger a framing effect⁷. This assumption accords with intention-based reciprocity models which assert that recipients evaluate the kindness of an action not only by its material consequences but also by what the action signals about the donors

⁷Based on Tversky and Kahnemann (1981), the concept of framing refers to a cognitive bias where individuals decide on options based on their labelling.

underlying intention (Falk and Fischbacher, 2006). The results of Bradler and Neckermann (2019) complement and underpin very well the findings of Kube et al. (2012) research on gift-exchange in the workplace with reciprocity as the underlying currency. Kube and his colleagues not only report a significant higher impact of non-financial gifts than of purely monetary gifts, but further claim that providing individuals with a cash gift in form of an origami (i.e. a banknote was nicely folded and wrapped) yields a 30% greater output compared to the baseline group who merely received the banknote without any interpersonal element attached to it. Given the outlined empirical findings and considering the earlier presented toy model, which assumes that subjects receive a positive utility from receiving gratitude, I firstly anticipate individuals to respond positively to receiving an expression of gratitude and secondly and more specifically expect a thank you note combined with a handwritten signature to increase their work effort⁸. Hence, I hypothesize:

Hypothesis 1: The expression of gratitude, independent of its particular form, elicits reciprocity and leads to higher effort compared to no expression of gratitude.

Hypothesis 2: The expression of gratitude in form of a thank you note combined with a handmade element elicits reciprocity and leads to higher effort compared to no expression of gratitude.

While the use of an appreciative note at the end of a survey is a common practice and hence may be considered as an expected gift, recent research streams emphasize the power of surprising gifts in gift-exchange relationships (Rogers and Frey, 2014; Macera and te Velde, 2018; Neckermann and Yang, 2017). Gilchrist et al. (2016), for instance, provide evidence that the way in which a monetary gift is structured is essential when eliciting reciprocity. Specifically, they delineate a significant productivity increase of 20% when providing workers with a higher wage that includes a salient gift (\$3 + \$1) compared to paying the same above market-wage (\$4) per se. Likewise, using a laboratory experiment, Sliwka and Werner (2017) demonstrate that individuals provide higher effort under increasing wage profiles, that are not communicated in advance and hence are unexpected by the agent, than when wages stay constant over time. Similar results are reported by Gneezy and List (2006) who find that worker effort is substantially higher for the “gift” treatment, who received a surprising wage increase, than for the “non-gift” treatment. However, the positive effect is only present within the first period and vanishes after the initial few hours. With respect to the current study, implementing

a surprising gratitude expression in form of a personal video to induce reciprocal behaviour seems plausible. Latest insights on the personal nature of videos, reported by Beute and Pacinelli (2019), highlight the use of simple videos as the most innovative way of building trust and strengthening relationships within the context of customer and service experience. According to a survey they conducted, customers not only felt more valued but further stated that a video message is much more personal than a voice message or email. Furthermore, the authors claim that videos are a useful tool to exceed expectations on the receivers’ part. By integrating a personal video message, one breaks the common pattern of being “...just another number, ..., or another phone call” (Beute and Pacinelli, 2019, 71). Although the authors study the impact of personal videos on accelerating sales and improving customer experience, I transfer their findings to the context of the underlying study and thus propose, that:

Hypothesis 3: The expression of gratitude in form of a personal video elicits more reciprocity and hence leads to higher effort than a thank you note or no expression of gratitude.

Beyond evidence on the linkage between gratitude expressions and workers effort provision, latest work in behavioural economics have gathered substantial proof that make evident that gender is another relevant determinant of behaviour which should be considered in economic decision-making processes. In general, research results of gender differences in social differences are mixed. While some scholars assume women to behave more reciprocal than men (Croson and Buchan, 1999; Snijders and Keren, 2001; Eckel and Grossman, 1996; Heinz et al., 2012) other studies find no gender differences in the extent and form of social preferences (Bolton and Katok, 1995; Eckel and Wilson, 2004; Cox and Deck, 2006). A reasonable explanation for these competing findings relies on the observation that female participants are more sensitive to social cues in the experimental context than are male participants. Hence, already a little difference in the experimental design or in the subsequent implementation have a greater impact on the behaviour of female responders than respectively on male recipients (Croson and Gneezy, 2009).⁹ In a dictator game experiment, scholars find that women are affected more strongly by the first-movers decision than men (Eckel and Grossman, 1996). More precisely, they demonstrate that females are more likely to accordingly punish or reward previous actions. Further evidence is provided by Ben-Ner et al. (2004a) who carried out a two-part dictator game to obtain evidence on the propensity towards reciprocity. They find that women primarily depend their decisions on the amount they received in the former round and moreover reciprocate significantly more than men. In support of this, a more recent work on the tendency of women to

⁸Kube et al. (2012) and Bradler and Neckermann (2019) used a thermos bottle and a thank you card, respectively, to express appreciation. Both gifts are considered as non-pecuniary but contain a tangible value. The set-up of the underlying experiment differs to the two above mentioned investigations as the present intervention is without any tangible or extrinsic value.

⁹Examples of differences include economic (e.g. size of payoff) and psychological variables (e.g. level of anonymity between participant and experimenter).

behave more reciprocally than men, provides sufficient proof of the existent gender difference (Heinz et al., 2012). The economists implemented a modified dictator game, in which recipients move before dictators by conducting a real-effort task. Recipients effort choice thus resembles the first move decision in the trust game (Berg et al., 1995). In a next step, dictators decide on how much of the generated money to take and likewise decide on the amount to return to the recipient. The experimental findings confirm their hypothesis that female dictators show more reciprocity by significantly decreasing their taking-rates than male dictators, who generally demonstrate to be more selfish. Notably, this treatment effect is considerably larger, when first movers decide for providing high effort in the initial step and thus generate more money for the dictator to decide on.

To complement the outlined laboratory studies, Dittrich (2015) conducted a large-scale online experiment with heterogeneous subjects. The behavioural economist questioned the general reliability of effects found in laboratory experiments due to their typically homogenous samples. He concludes that though these studies make a great contribution to the general understanding of behavioural differences between female and male subjects, their findings are not necessarily robust if other variables (e.g. income, age) are included. To combat the problem of robustness, he conducted an anonymous online experiment in a heterogeneous population. Interestingly, his findings are in contrast to the previous outlined evidence from laboratory experiments. He does not only reject the assertion that women are more reciprocal than men, but rather elaborates that male subjects behave in fact more reciprocally than female subjects. Motivated by the varied outlined literature on gender differences above, it seems particularly interesting to investigate whether the underlying experiment may evince a significant gender difference in behaviour. Even though I do not conduct a laboratory experiment, I assume a rather homogenous sample in the underlying study and thus expect congruent results to the laboratory experiments outlined above (Heinz et al., 2012; Eckel and Grossman, 1996; Ben-Ner et al., 2004a). On the basis of this argumentation, I accordingly suggest that:

Hypothesis 4: On average, women show more reciprocity than men and are thus more likely to respond to gratitude by putting forth more effort than men.

3. Research Methodology

The following chapter provides a detailed overview of the conducted empirical study. In a first step, the methodology and data collection as well as the experimental design of the online survey are outlined, followed by a detailed description of the sample pool.

3.1. Methodology and data collection

In order to validate or reject the above proposed hypotheses, a quantitative research design was chosen. The quantitative approach, in contrast to a qualitative research method,

is suitable when aiming to infer characteristics, behaviours, and attitudes of a large sample size (Kothari, 2004). Furthermore, as it yields quantitative data, it is usually associated with a deductive approach where the focus lies on using data to test general conclusions and theories (Saunders, 2011). Since the goal of the underlying paper is to observe and understand individual's behaviour with respect to receiving gratitude, this method of research seems appropriate. An online survey experiment was carried out, as field experiments in general allow for clearly identifying causal relationships, by manipulating the independent variable (here: level of expressed gratitude) and observing the ensuing effect on the dependent variable (here: level of induced effort) while at the same time not losing external validity (Harrison and List, 2004). Additionally, in contrast to gratitude scenarios in laboratory experiments, studying gratitude in a field experiment brings higher psychological realism, causes greater involvement of participants, and in total entails less artificialness than gratitude scenario studies (Tsang, 2006). Besides that, surveys present an ideal setting to study how non-pecuniary gifts elicit individual's willingness to exert additional effort, due to its underlying voluntary and time-consuming characteristic. To collect data for the analysis, participants were asked to follow a link to the online survey experiment on the platform Sosci Survey (www.sosciurvey.de). Since conducting behavioural experiments online requires technical reliability, I trusted in the software Sosci Survey as it is not only widely used among economic research but further provides its users with an excellent and time-efficient online support. The survey link combined with an introductory message about the research project was distributed via social platforms such as Facebook, LinkedIn, and Xing to ensure diversity within the sample and avoid any kind of selection bias. Approaching personal and business contacts to participate and further share the survey within their respective network complemented the data collection strategy. This sampling method is referred to as convenience sampling and belongs to the non-random sampling techniques, as it is often practically impossible to collect data from the entire population that is to be considered. Although convenience samples limit the extent to which findings can be representative for a population (Feild et al., 2006), it is often used in social and behavioural research as it is very feasible, prompt, and economical with respect to time and financial resources. Subjects were not told about the underlying experiment within the survey, but instead were simply provided with the information that the survey was part of a research project for a master thesis and that participation will take approximately 6-8 minutes. Employing an unobtrusive data collection method brings the major benefit of not having to be concerned about the Hawthorne effect, an effect that modifies participants behaviour when they are aware of being part in an experiment compared to their behaviour without this knowledge (Adair, 1984). Finally, to avoid priming effects, I did not indicate the main research theme of the project in the survey but instead framed the questionnaire under the topic of employee motivation in the context of new work. The online survey was

active for a little over 2 weeks from 14th November to 2nd December 2019.

3.2. Online survey experiment design

The underlying field study encompassed two successive questionnaires, whereby respondents had the choice to end or continue their participation after the first form. In between the two questionnaires, the gratitude intervention is implemented. The main interests of observation lie in the investigation whether subjects continued after the intervention, in the examination of disparities between the different treatment groups, and lastly in the comparison of behavioural differences within treatments, before and after implementing the gratitude manipulation. Thus, the underlying study employs both, a between-subject and a within-subject design.

The first questionnaire comprises a total of 15 questions¹⁰. It begins with a cover letter introducing the research institute, the aim of the research, and the resulting need of participation to support the experimenters' project. After the introduction, a few questions regarding respondents' employment status, flexible-work arrangements, and existing means of communication within their employers' organization follow.¹¹

These questions are intended to arouse interest in and stimulate reflection on the topic of new forms of work and changing communication tools within organizations. Making respondents think about the tremendous shift of today's working environment, provides a good foundation for the subsequent real-effort task. To complete the task, respondents are asked to write down all keywords that come to their mind when thinking about work-life-balance. By this, subjects have to exert some degree of actual effort by thinking about the topic and correspondingly writing down notions. The task allows to measure the quantity of data entry by assessing the number of entries of each respondent, in which one entry corresponds to typing one word in the presented free-text field. Since I am interested in the level of effort provided, the quantity of data entry serves as an appropriate measure in the analysis. The first questionnaire ends with questions regarding individuals' intrinsic motivation, their inclination towards reciprocity, and items on socio demographics. The prior described phase is referred to as working period 1 in the following. At the end of working period 1, the treatment intervention takes place. Depending on the treatment, which is randomly distributed, the respondents are either thanked for participating in the survey, via a note or by

means of a personal video, or however receive no appreciation at all for their provided effort (see 3.2.1). Every participant is shown only one "end of survey" slide while all of them link to a second form that respondents were asked to fill out to support the experimenters project. The second questionnaire, which I refer to as working period 2 in the following, begins immediately with a second real-effort task. The task is very similar to the exercise in working period 1 with the only difference that subjects are urged to type notions that relate to the term employee motivation. It is assumed that the effort needed to come up with keywords that relate to the concepts of work-life-balance and employee motivation is similar high. Both terms are widespread and neither age-, gender- or subject-specific, which suggests same prerequisites for the entire subject pool. Similar to working period 1, the main effort measure is the quantity of data entries. The subsequent questions collected data on whether individuals' feel appreciated by their current supervisor and on how much salary they would be willing to sacrifice in exchange with more gratitude expressed by their supervisor. To ensure that the gratitude manipulation was effective, the final part of working period 2 asked respondents to indicate the extent to which the experimenters note or video, respectively, expressed gratitude and appreciation. This assertion estimates individuals' perception that the experimenters' communication expressed gratitude. Working period 2 ends with a final slide, which was the same for all treatment groups, thanking for participants' time and support.

3.2.1. Treatments

In total, the field study comprised three treatments, which have been randomly assigned to respondents¹²

Baseline ($n = 69$)

Participants in the control treatment receive a short "Your responses have been recorded" message at the end of working period 1. Below this message, a further note appears which links to an additional questionnaire that is run to validate results of the prior survey. Alternatively, respondents can end the participation by simply closing the web browser. No appreciation from the experimenter is communicated. However, to embed a personal touch throughout all treatments, including the baseline treatment, a handwritten signature of the experimenter is placed underneath the above-mentioned message¹³.

GratitudeNote ($n = 65$)

Participants in the GratitudeNote treatment are shown the same message and handwritten signature as the control treatment, with the only difference that gratitude for the effort exerted to fill out the survey is expressed via the following note:

¹⁰Please refer to Appendix A1 for the complete version of the questionnaire.

¹¹In case participants are not currently employed, they are asked to refer to their former employer. All subjects who stated to not have been employed before, are excluded from the study and are not further considered. I suggest individuals who have been part of a classical manager-employee relationship before to behave differently towards gratitude expressions than do subjects who have not had a supervisor before. Further, since I aim to deduce implications for management I decided to focus on this criterion when defining the subject pool.

¹²Please see Appendix A2 for a visual representation and the exact wording of the experimental interventions.

¹³According to Bradler and Neckermann (2019) a handwritten signature is enough to present a personal touch. A personal touch was embedded in all treatments to rule out the possibility that the treatment effects might be entirely driven by the interpersonal element.

“Thank you very much for participating in my survey. Your results will be of great use for my work project and are highly appreciated!”. This appreciative remark is placed before referring to the next questionnaire, with the intent to induce reciprocity on the receivers’ part and hence to increase the probability of them to participate in the follow-up survey.

GratitudeVideo ($n = 73$)

The GratitudeVideo treatment is the same as the GratitudeNote treatment. The only difference is that instead of receiving the above described thank you note, participants are shown a video in which the experimenter expresses her appreciation for participating in the study. It is worth noting that the wording used in the video is identical to the phrasing of the thank you note. Further, as the video itself presents already a high degree of personal touch, participants were not additionally shown a handwritten signature on the bottom of the page.

3.2.2. Measures

Different measures have been considered as appropriate to quantify reciprocal behaviour and effort provision in response to the intervention in between working period 1 and 2. In general, the click and response rate of the second questionnaire after the gratitude intervention serves as a main proxy for reciprocal behaviour and can be assessed with a dichotomous measure of whether respondents voluntarily proceeded to the second questionnaire. To additionally assess precise levels of reciprocal behaviour in the form of effort induced, the number of data entries of the real-effort task in working period 2 are compared between treatments and further within treatments by comparing the quantity of words between the two working periods¹⁴. According to the previous proposed hypotheses, one would not only assume a higher probability to continue for treatment GratitudeNote and GratitudeVideo, but further a higher quantity of words in working period 2 compared to the former period. Overall, I assume the effort of both gratitude treatments to outperform the effort of Baseline.

Furthermore, since previous studies claim that individuals’ degree of reciprocal inclination influences subjects’ actions, I elicited a measure to control for this behavioural mechanism. The measure used builds on the work of [Perugini et al. \(2003\)](#) and includes several statements such as “If someone does me a favour, I am ready to return it”, “I go out of my way to help somebody who has been kind to me before”, and “I am ready to undergo personal costs to help somebody who helped me before”. Respondents were asked to indicate their level of agreement (or disagreement) using a 7-point Likert-type scale with 1 = strongly disagree and 7 = strongly agree.

¹⁴It is important to stress that I assessed effort by counting words and not notions. I presume that taking down notions which consist of more than one word to be associated with higher effort for the individual. Thus, if a key term consisted of more than two words (e.g. home office), two words were measured.

To assess whether participant’s general level of intrinsic motivation plays a role in the underlying investigation, a single-item measure was embedded asking participants about the number of surveys that have been completed voluntarily within the past 3-months. Respondents could choose between the response options “0”, “1 – 3”, “4 – 6”, “7 – 10”, “> 10”, and “I haven’t been asked to participate in a survey within the past 12 weeks”. Although this measure is rather superficial and obviously does not poll the full set of individuals intrinsic motivation, it provides an idea of the direction of present intrinsic motivation within the subject pool and hence might offer great insights and opportunities for future research¹⁵.

Furthermore, a manipulation check was incorporated in the questionnaire to test the effectiveness of gratitude expression in GratitudeNote and GratitudeVideo and thus to validate the online experiment. The manipulation check consisted of a single item, namely: “The thank you note (video) expressed gratitude and appreciation for my invested time and effort to fill out the survey.” Once again, participants answered on the same 7-point Likert scale as described earlier.

In general, Likert scales are devised as “series of statements expressing either a favourable or unfavourable attitude toward the concept under study”, where the respondent is “asked to indicate the level of her or his agreement or disagreement with each statement by assigning it a numerical score” ([McDaniel and Gates, 2013](#), 315). In particular, 7-point scales were embedded since they provide a more accurate evaluation of respondents’ true response compared to 5-point conditions in which participants may be more likely to interpolate ([Finstad, 2010](#)).

3.3. Sample

After removing participants who had aborted the survey before accomplishing the first survey, a total of 208 respondents remained in the data set¹⁶. 70% of the respondents were female participants ($n = 146$) and merely a percentage of 30% were male participants ($n = 61$). One subject indicated that he would prefer to not disclose his gender while no respondents stated the gender other. While the present study (inter alia) investigates gender differences in behaviour, participants who not clearly mentioned their gender ($n = 1$) were not further considered in the following analysis, leading to a total of 207 remaining respondents. All subjects were randomly allotted to one of the three treatment groups, presenting different degrees of gratitude (see 3.2.1). This resulted in three slightly different sample sizes. A total number of 65 participants were part of the thank you note treatment,

¹⁵Asking participants about the number of surveys filled in voluntary in the past weeks, seems to be a suitable measure for general intrinsic motivation as I assume the majority of respondents to be students who usually often encounter survey requests.

¹⁶In total, $n = 60$ participants dropped out of the first part of the study and were thus not further considered in the analysis. Participants dropouts may result from the actual effort required to fill out the first effort task and the requirement to answer every single item in the questionnaire in order to proceed.

whereas 73 individuals were assigned to the thank you video group, leaving a sample size of 69 subjects in the baseline group. The higher number of women participating overall in the study is well mirrored in all three experimental groups, by keeping up an average ratio of 70:30. The average age of participants is between 25 and 34 years ($n = 139$) and the majority of subjects participated by using their smartphone device ($n = 143$). Within the subject pool, 37% ($n = 77$) of the respondents were employed full time, while only 15% ($n = 31$) remarked a part-time employment. Further, 36% ($n = 76$) of the sample declared a temporary position as an intern, working student, or student assistant. The remaining 12% ($n = 24$) indicated the employment status other. Only subjects who are currently or have previously been part of an employment relationship were considered in the underlying experiment (see 3.2 for a detailed declaration). Furthermore, more than 65% ($n = 137$) of the subjects come from the business and economics context, followed by legal students and jurists ($n = 16$) as well as subjects with a psychological background ($n = 13$). The main area of study of the residual participants is distributed over the fields of agriculture, health sciences, humanities, education, engineering, and maths. Finally, 24% of all participants reported to have voluntarily participated in more than 3 surveys within the past 12 weeks, a measure which is interpreted as individuals' general level of intrinsic motivation in the following¹⁷. 11% of the respondents ($n = 22$) stated to have not been asked to fill out any surveys in the past and thus were excluded from the measure, which has to be kept in mind for further analyses. Table 1 displays descriptive statistics of the considered sample in detail.

4. Results

Following the research methodology this section presents the empirical results gathered from the study. The results are used to verify (reject) the formulated hypotheses discussed in the first part of the paper. The collected data were exported from Sosci Survey to the statistical program Stata, which allows for a detailed examination of econometric model analyses. Before carrying out analyses, the data set was prepared and cleared up¹⁸. I start by examining whether participants proceeded to the second questionnaire after being exposed to the gratitude intervention (effort proxy 1) and afterwards investigate individual's level of provided effort, analysing between and within-subjects (effort proxy 2).

4.1. Effort proxy 1

Figure 2 provides an overview of the number of subjects who voluntarily clicked on "next" redirecting them to the

second questionnaire and Appendix A3 displays descriptive statistics of the treatment effects.

At first sight, two outcomes become apparent. First of all, the treatment GratitudeNote seems to have a great influence on individuals' decision to proceed to the next questionnaire. More precisely, 56 out of 65 subjects in the GratitudeNote treatment decided to continue which significantly outperforms both, the continue click rate for the baseline group ($p = 0.038$, Fisher-exact test, two-sided¹⁹) as well as, opposed to my proposition, the click rate for GratitudeVideo ($p = 0.092$, Fisher-exact test). Secondly, contradictory to my hypothesis, no significant difference is observed when comparing the treatment for individuals' who were part of the GratitudeVideo treatment with the control group ($p = 0.711$, Fisher-exact test). Furthermore, pooling the two gratitude treatment groups²⁰ (this variable is considered as GratitudeAll in the following) and comparing it with Baseline yields no significant difference as well ($p = 0.167$, Fisher-exact test) which is liable to result from the considerable small number of individuals of the GratitudeVideo treatment who decided to continue. Moreover, the figure presented in Appendix A4 visualizes the mean continue click rate by gender. While 81% of all female participants proceeded to the second questionnaire, the continue click rate for male accounts only for 67% ($p = 0.046$, Fisher-exact test).

The ordinary least squares (OLS) linear probability model (LPM) reported in Table 2 complements these non-parametric findings. I estimate the results using a dummy for continue (1 if participants continue and 0 if not) as the dependent variable²¹. The independent variables are the specific treatments, a dummy for gender (1 for female and 0 for male), and interaction terms between the respective treatments and the gender dummy. I use Baseline, in which no gratitude was expressed, as a control group and compare the effects of each of the two other treatments to this setting.

The results indicate that subjects in the GratitudeNote treatment show a 15.9 percentage points higher likelihood of continuing the survey experiment than respondents in the control group ($p = 0.034$, column 4), while participants in the GratitudeVideo treatment only show a statistically insignificant higher probability of roughly 2 percentage points compared to Baseline ($p = 0.815$, column 4). Furthermore, GratitudeVideo is significantly different from GratitudeNote ($p = 0.056$, column 4, Wald test). Including the gender dummy results in minor changes of the treatment effects but reports that female respondents certainly are significantly more likely to proceed to the next questionnaire compared to male respondents ($p = 0.013$, column 5). This is in line with the earlier made proposition that women behave more

¹⁹If not stated differently, all statistical tests in the present study are two-sided.

²⁰By pooling gratitude, I aim to infer conclusions of the overall effect of appreciation on individual's effort.

²¹I applied LPM instead of logit or probit model for all dichotomous dependent variables. Although LPM assume linearity and thus may predict probabilities outside [0,1], they offer a more convenient interpretation of coefficients (Aldrich et al., 1984).

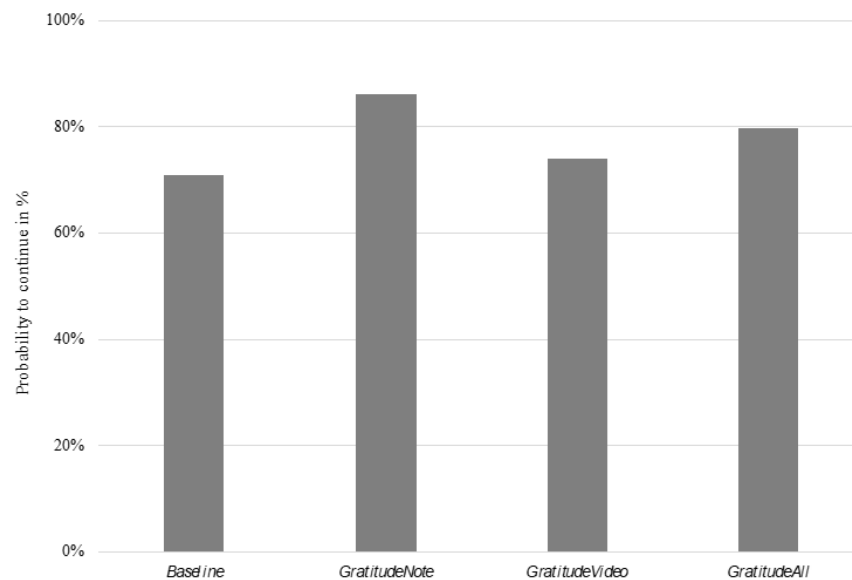
¹⁷The median response for this questionnaire item is "2" with the value "2" referring to "1-3" surveys completed within the past 12 weeks. With respect to a median split, I thus define any value below the median as "0" and every value above the median as "1".

¹⁸Please see section 3.3 for a detailed presentation of the adjusted sample pool.

Table 1: Subject characteristics of all treatments

Note: The table displays means with standard deviations in parentheses of relevant subject characteristics of the treatments.

	Control	GratitudeNote	GratitudeVideo	All
Female	0.71 (0.45)	0.75 (0.43)	0.65 (0.47)	0.70 (0.45)
Age (25-34 years)	0.62 (0.48)	0.72 (0.45)	0.67 (0.47)	0.67 (0.47)
Smartphone	0.69 (0.46)	0.70 (0.45)	0.67 (0.47)	0.69 (0.46)
Economics or business student	0.55 (0.50)	0.72 (0.45)	0.71 (0.45)	0.66 (0.47)
Full-time employment	0.30 (0.46)	0.46 (0.50)	0.35 (0.48)	0.37 (0.48)
Intrinsic motivation	0.24 (0.43)	0.27 (0.45)	0.20 (0.40)	0.24 (0.42)
Total number of participants	69	65	73	207

**Figure 2:** Overview of subjects click rate by treatments

reciprocally than men.

With respect to model 6, in which I included interaction terms, one can observe negative but insignificant coefficients for both interactions. Interestingly however, the probability estimates for all three main effects in this model, respectively GratitudeNote, GratitudeVideo, and gender have more than doubled in size. Thus, by implementing an interaction term one can deduct the partial effect which helps to understand the overall effects. These negative effects are included in the specific treatment probability coefficients in model 4 and 5, which explains the much smaller coefficients compared to model 6. Moreover, comparing coefficient estimates between model 3 and model 6 outlines that effect sizes are much larger when incorporating control variables. This may result from the inclusion of a dummy variable for intrinsic

motivation as a control variable which excludes 22 participants who stated to have not been asked to fill out any surveys in the past weeks, resulting in a reduced sample²². It is conceivable that the behaviour of these excluded participants varied widely from the average sample subjects in the experiments and have thereby distorted the results²³.

Dropping out intrinsic motivation as a control variable in model 7 supports this assumption as the given estimates

²²Please refer to 3.3 for a detailed description of the dummy variable for intrinsic motivation.

²³This effect is solely apparent for the regression model 6 including interaction terms and not already for model 3, in which I incorporate the exclusion of these participants already. Thus, the impact arises specifically by the interaction of the respective treatment and individual gender.

Table 2: Effort proxy 1 – Probability to continue

Note: Model 1-7 display coefficients from OLS regressions with robust standard errors in parentheses²⁴. The dependent variable is the continue dummy. All results are compared to the Baseline treatment. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone, for economics and business students, for intrinsic motivation, and for being fulltime employed²⁵. Model 7 includes all controls besides intrinsic motivation. $p < 0.1^*$, $p < 0.05^{**}$, $p < 0.01^{***}$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GratitudeNote	0.151** (0.079)	0.146** (0.069)	0.263* (0.150)	0.159* (0.074)	0.149** (0.072)	0.358** (0.162)	0.246 (0.151)
GratitudeVideo	0.029 (0.076)	0.036 (0.075)	0.130 (0.147)	0.019* (0.082)	0.025 (0.080)	0.183 (0.165)	0.127 (0.149)
Female		0.128* (0.068)	0.226* (0.128)		0.186** (0.074)	0.357** (0.135)	0.215* (0.128)
GratitudeNote x Female			-0.160 (0.169)			-0.283 (0.180)	-0.150 (0.170)
GratitudeVideo x Female			-0.135 (0.171)			-0.221 (0.186)	-0.139 (0.172)
Constant	0.710*** (0.055)	0.619*** (0.076)	0.550*** (0.113)	0.598*** (0.105)	0.464*** (0.119)	0.339** (0.140)	0.484*** (0.135)
Wald test: GratitudeNote = GratitudeVideo	$p = 0.072$	$p = 0.107$	$p = 0.335$	$p = 0.056$	$p = 0.093$	$p = 0.253$	$p = 0.395$
Controls	No	No	No	Yes	Yes	Yes	Yes
Observations	207	207	207	185	185	185	207
Adjusted R^2	0.014	0.028	0.024	0.016	0.048	0.053	0.017

hardly alter from model 3 in which I did not incorporate controls at all. However, taking a closer look at the adjusted R^2 delineates that the consideration of intrinsic motivation is essential for the explanatory power of the regression model (adjusted $R^2 = 0.053$ in column 6 and adjusted $R^2 = 0.017$ in column 7).

I replicated these OLS regressions with merely replacing the specific treatments by GratitudeAll to test whether the expression of gratitude, independent of its particular form, has an impact on individual's reciprocal behaviour. The respective regression results are displayed in Table 3.

It appears that GratitudeAll only has a significant effect on the continue dummy if the regression model includes the dummy for gender, the interaction term of GratitudeAll and gender, and additionally controls for all variables listed earlier ($p = 0.047$, column 6). Besides, one can observe a positive and significant effect for female subjects throughout all models, providing further support for the predicted gender difference.

With respect to the social norm of reciprocity and more specifically individual's preference for reciprocal behaviour, it is noteworthy that so far, I assumed reciprocal inclination to simply be greater than zero. However, relating to the for-

²⁴OLS makes the assumption that the variance of the error term is constant, meaning that they are homoscedastic. However, this condition is not always met, which is why I applied the Breusch-Pagan test for each regression model to test for heteroscedasticity and accordingly display robust or normal standard errors (Wilcox and Keselman, 2004).

²⁵These control dummies were chosen based on the frequency distribution displayed in Table 1.

mal model delineated in section 2.2, it is worthwhile to take a closer look at whether subject's effort choices alter when including their explicit degree of positive reciprocity (Sliwka and Werner, 2017; Altmann et al., 2008). As depicted earlier, I implemented a three-item measure for reciprocal inclination at the end of the first survey. To assess individual's preference for reciprocity, I centered mean responses from each respondent and included this proxy for positive reciprocity in the following regression models²⁶. Similar to the regression models in Table 2, I conducted OLS regressions with the continue dummy as the dependent and treatments as well as positive reciprocity as independent variables. Moreover, I included the two interaction terms: Treatment x positive reciprocity and Female x positive reciprocity. The outcomes are reported in Table 4.

The estimates prove that subject's reciprocal inclination positively and significantly influenced the probability to continue to the next questionnaire ($p = 0.071$, column 3). Furthermore, while the outputs provide evidence that positive reciprocity notably influences reciprocal behaviour of male subjects, inferring that men with a higher reciprocal inclination show more effort than less reciprocal men, this effect is severely weakened for female participants. More precisely, the effect size is almost quartered for women compared to men ($0.223 + (-0.167) = 0.056$, column 4). Interestingly,

²⁶Centering independent variables reduces multicollinearity in regressions that is caused by higher-order terms, such as interaction terms, and refers to the process of subtracting the overall mean. Though it is otherwise very common to standardize independent variables, I decided for centering the variable as resultant coefficients are more convenient to interpret.

Table 3: Effort proxy 1 – Probability to continue

Note: The table displays coefficients from OLS regressions with standard errors reported in parentheses. The dependent variable is the continue dummy. GratitudeAll is a dummy variable pooling both gratitude treatments. All results are compared to the Baseline treatment. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone to participate, for economics and business students, for individuals' intrinsic motivation, and lastly for being fulltime employed. Model 7 includes all control variables besides intrinsic motivation. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GratitudeAll	0.087 (0.062)	0.088 (0.062)	0.182 (0.114)	0.087 (0.069)	0.085 (0.068)	0.254** (0.127)	0.171 (0.115)
Female		0.137** (0.064)	0.226* (0.111)		0.195*** (0.070)	0.356*** (0.124)	0.216* (0.113)
GratitudeAll x Female			-0.132 (0.136)			-0.234 (0.149)	-0.130 (0.136)
Constant	0.710*** (0.051)	0.613*** (0.067)	0.550*** (0.094)	0.588*** (0.098)	0.449*** (0.108)	0.330** (0.132)	0.475*** (0.119)
Controls	No	No	No	Yes	Yes	Yes	Yes
Observations	207	207	207	185	185	185	207
Adjusted R^2	0.005	0.022	0.022	0.003	0.039	0.047	0.015

Table 4: Effort proxy 1 – The impact of positive reciprocity

Note: The table displays coefficients from OLS regression with standard errors in parentheses. The treatments GratitudeNote and GratitudeVideo are both compared to the Baseline group. Positive reciprocity is the centered mean response of individuals to the reciprocity proxy. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone to participate, for economics and business students, for individuals' intrinsic motivation and lastly for being fulltime employed. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1)	(2)	(3)	(4)
GratitudeNote	0.138* (0.072)	0.135* (0.073)	0.142* (0.077)	0.135* (0.077)
GratitudeVideo	0.032 (0.070)	0.026 (0.070)	0.021 (0.076)	0.005 (0.076)
Female	0.123* (0.064)	0.117* (0.064)	0.180*** (0.069)	0.174** (0.070)
Positive reciprocity	0.047 (0.038)	0.145* (0.081)	0.080* (0.044)	0.223** (0.090)
GratitudeNote x positive reciprocity		-0.059 (0.105)		-0.088 (0.111)
GratitudeVideo x positive reciprocity		-0.065 (0.086)		-0.032 (0.099)
Female x positive reciprocity		-0.098 (0.080)		-0.167* (0.093)
Constant	0.627*** (0.068)	0.638*** (0.068)	0.508*** (0.110)	0.517*** (0.111)
Controls	No	No	Yes	Yes
Observations	207	207	185	185
Adjusted R^2	0.031	0.026	0.061	0.064

no discernible effect is found when interacting the treatment dummy and the reciprocity proxy in neither GratitudeNote nor GratitudeVideo treatment ($p = 0.430$ and $p = 0.749$, respectively, column 4), implying that the treatment effects are not driven by positively reciprocal respondents²⁷.

Concluding, examining effort proxy 1 provides empiri-

cal support for hypothesis 1 and hypothesis 2, meaning that gratitude per se increases subject's probability to behave in a reciprocal manner and more specifically, that gratitude in form of a note induces subjects to exert higher effort compared to no gratitude at all. However, contrary to my propo-

²⁷Replacing the treatment variables by GratitudeAll reports comparable

results with respect to economical and statistical significance. Appendix A5 reports the respective results.

sition, the video intervention does not seem to have a statistically greater impact on individuals' effort than GratitudeNote or Baseline, resulting in no evidence for hypothesis 3. Lastly, throughout all tests and regressions I detect a positive relationship between female subjects and the continue dummy, indicating support for hypothesis 4, namely that women show more reciprocity than men and hence provide more effort than male participants.

4.2. Effort proxy 2

In the following, I examine whether individual's level of provided effort differs between treatment groups as well as within-subjects, hence before and after treatment, by comparing the results of the real-effort tasks. Starting off with the between subject comparison, I assess the quantity of data entries in working period 2 and compare these between Baseline, GratitudeNote, GratitudeVideo, and GratitudeAll.

Figure 3 shows the average quantity of words entered in the second real-effort task, by displaying means and 95% confidence bands for the considered groups.

Subjects of GratitudeNote enter, on average, 10.9 words in effort task 2 which is significantly more than 7.9 words, that are taken down by individuals in the Baseline treatment ($p = 0.022$, Mann-Whitney-U (MWU) test). Furthermore, the expression of gratitude in form of a video results in an average of 8.6 words in working period 2, which is not substantially different to the mean level of effort provided by GratitudeNote ($p = 0.333$, MWU) nor by Baseline ($p = 0.172$, MWU). Pooling the gratitude treatments results in an average quantity of 9.8 words, which is significantly more compared to the entries by the control group ($p = 0.036$, MWU), who received no gratitude at all. Furthermore, the figure in Appendix A6 depicts the average effort in working period 2 for female and male individuals. As expected, women provide, on average, more effort than men ($p = 0.065$, MWU).

To estimate the causal effect of gratitude on the level of effort provided, I additionally estimated OLS regressions with the quantity of words in working task 2 as the dependent variable. The key independent variables are the respective treatments, a dummy for gender, and two-way interaction terms between the specific treatments and gender. The underlying regression results are reported in Table 5²⁸.

The first key observation is that the expression of gratitude via a thank you note has a sizable effect on the quantity of words provided in the real-effort task. In fact, although statistically insignificant, subjects of the GratitudeNote treatment provide on average approximately 3.5 more words in working period 2 than individuals of the Baseline group ($p = 0.130$, column 4). By further considering the gender variable and the interaction terms, the effect of the GratitudeNote intervention on the quantity of words increases in magnitude and gains in statistical significance ($p = 0.020$, column 6). This phenomenon has already been observed for

effort proxy 1. One possible explanation might be that by including the dummy variable for intrinsic motivation, the total sample reduces by 19 participants²⁹. Assuming those excluded participants to behave very differently from the average individual of the sample pool would explain these divergent estimates. Regression results predicted in column 7, in which intrinsic motivation was excluded from the controls, seem to support this thought.

Moreover, while coefficients for the GratitudeVideo treatment are also positive, indicating a positive influence of being exposed to the thank you video and effort provision, the effects are not significant and further not statistically distinguishable from the estimates of the thank you note intervention ($p > 0.1$, Wald test). Lastly, I find explicit evidence that female participants take down more words than male subjects, whereas I detect a negative but insignificant effect when studying the interplay of gender and treatments ($p = 0.061$, column 5 and $p > 0.1$, column 6).

Replicating the OLS regressions for GratitudeAll yields comparable estimates that are displayed in Table 6³⁰.

More precisely, pooling the gratitude treatments also yields an increase of subject's effort. However, this effect is only significant when including the gender variable, the interaction term between GratitudeAll and gender, and control variables ($p = 0.052$, column 6). The negative, though insignificant, estimate for the interaction term suggests that the magnitude of the treatment effect is at least partly driven by male respondents. Furthermore, as delineated earlier, the results offer substantial evidence for women behaving more reciprocally than men ($p = 0.061$, column 5). Nevertheless, the estimates in model 6 predict that the gender effect is mainly driven by female subjects who are part of the control group.

Similar to the analysis of the relationship between positive reciprocity and the provision of effort in section 4.1, I am curious about whether subject's inclination for reciprocity also played a role for the number of words taken down in task 2. Thus, I replicated the regression models displayed in Table 4 and replaced the dependent variable with the effort level in period 2. The key results are displayed in Table 7.

Surprisingly and in contrast to the findings of reciprocal inclination and effort proxy 1, I do not find that positive reciprocity significantly influences the level of effort exerted in working period 2³¹. With respect to the within-subjects observation, Figure 4 outlines the mean effort of task 2 compared to task 1 within-subjects by differentiating between Baseline, GratitudeNote, GratitudeVideo, and GratitudeAll³².

²⁹The dummy for intrinsic motivation excludes 19 participants who continued to the second form and stated to have not been asked to fill out any surveys in the past weeks.

³⁰The table depicted in Appendix A8 replicates Table 6 using log values.

³¹Estimating the regressions for GratitudeAll yields comparable insignificant outcomes. The regression outcomes are reported in Appendix A9.

³²It is relevant to remark that the within-subjects analysis solely considers individuals who continued to the second survey and finished effort task 2. Therefore, the sample size reduces to $n = 159$. Descriptive characteristics of the main results are summarized in Appendix A3.

²⁸The table depicted in Appendix A7 replicates Table 5 using log values. No substantial differences are detected.

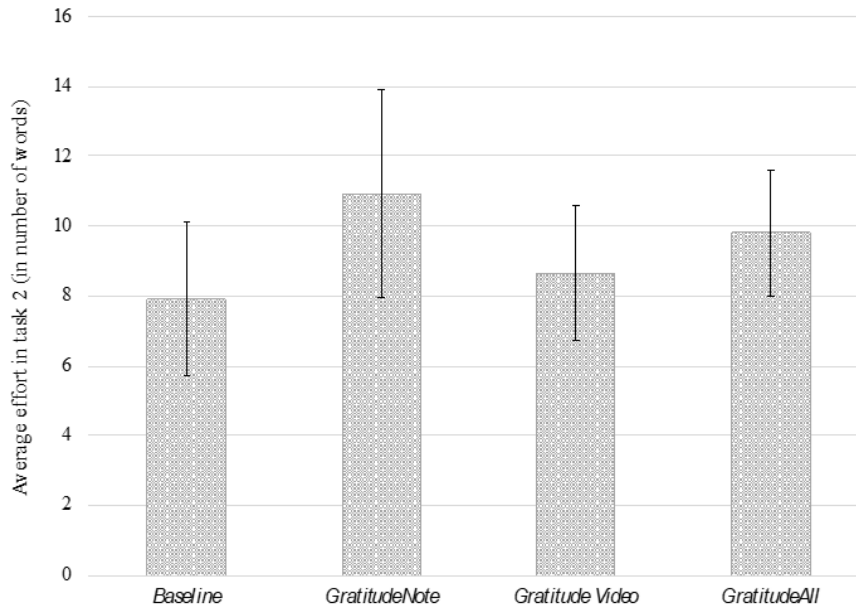


Figure 3: Average effort in working period 2 by treatment

Table 5: Effort proxy 2 – Quantity of words

Note: The table displays coefficients from OLS regressions with robust standard errors reported in parentheses. The dependent variable is the number of words provided in effort task 2. All results are compared to the Baseline treatment. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone to participate, for economics and business students, for individuals' intrinsic motivation, and lastly for being fulltime employed. Model 7 includes all controls besides intrinsic motivation. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GratitudeNote	3.013 (1.893)	3.033 (1.886)	2.874* (1.713)	3.568 (2.343)	3.708 (2.338)	5.102** (2.158)	4.102** (1.868)
GratitudeVideo	0.750 (1.490)	0.986 (1.448)	1.241 (2.154)	1.592 (1.942)	1.897 (1.905)	3.882 (3.882)	2.099 (2.288)
Female		2.611* (1.275)	2.682 (1.649)		2.723* (1.444)	4.328** (2.168)	3.767** (1.836)
GratitudeNote x Female			0.207 (2.955)			-1.662 (2.950)	-1.028 (2.696)
GratitudeVideo x Female			-0.362 (2.806)			-2.502 (3.709)	-1.072 (2.906)
Constant	7.898*** (1.127)	5.873*** (1.266)	5.818*** (0.817)	6.291*** (2.277)	3.787 (2.588)	2.297 (2.818)	3.979* (2.088)
Wald test: GratitudeNote = GratitudeVideo	p=0.212	p=0.246	p=0.514	p=0.305	p=0.337	p=0.664	p=0.393
Controls	No	No	No	Yes	Yes	Yes	Yes
Observations	159	159	159	140	140	140	159
Adjusted R ²	0.008	0.017	0.004	0.019	0.026	0.013	0.012

In addition, the figure displays 95% confidence bands, to represent the uncertainty of the estimates. First of all, one can observe that subjects who were part of the Gratitude-Note treatment provided approximately 2.5 more words in the second working period compared to the first working period ($p < 0.001$, Wilcoxon Signed-Rank (WSR) Test). Comparing the effort level of task 1 and 2 for GratitudeVideo appears to result in an increase as well, however the effort rises

by 1.4 words only ($p = 0.099$, WSR). Moreover, individuals of the Baseline treatment tend to provide less effort in the second task than in the first task ($p = 0.013$, WSR). Pooling gratitude treatments depicts an average effort increase of about 2 words in working period 2, suggesting that a gift in form of an expression of appreciation spurs individual's motivation to provide more effort, while not providing gratitude leads to a decrease of motivation to elicit effort ($p < 0.001$,

Table 6: Effort proxy 2 – Quantity of words (GratitudeAll)

Note: The table displays coefficients from OLS regressions with robust standard errors reported in parentheses. The dependent variable is the quantity of words in effort task 2. All results are compared to the Baseline treatment. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone to participate, for economics and business students, for individuals' intrinsic motivation, and lastly for being fulltime employed. Model 7 includes all controls besides intrinsic motivation. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GratitudeAll	1.902 (1.448)	2.035 (1.439)	1.948 (1.536)	2.635 (1.936)	2.862 (1.982)	4.425* (2.252)	2.952* (1.768)
Female		2.764* (1.330)	2.682 (1.638)		2.835* (1.498)	4.309** (2.141)	3.783** (1.827)
GratitudeAll x Female			0.114 (2.392)			-1.911 (2.797)	-0.836 (2.343)
Constant	7.898*** (1.123)	5.755*** (1.300)	5.818*** (0.811)	6.283*** (2.260)	3.677 (2.613)	2.318 (2.758)	3.899* (2.068)
Controls	No	No	No	Yes	Yes	Yes	Yes
Observations	159	159	159	140	140	140	159
Adjusted R^2	0.003	0.015	0.008	0.018	0.027	0.021	0.016

Table 7: Effort proxy 1 – The impact of positive reciprocity

Note: The table displays coefficients from OLS regression with standard errors in parentheses. The treatments GratitudeNote and GratitudeVideo are both compared to the Baseline group. Positive reciprocity is the centered mean response of individuals to the reciprocity proxy. Controls include several dummies, namely for being between 25-34 years old, for using a smartphone to participate, for economics and business students, for individuals' intrinsic motivation and lastly for being fulltime employed. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1)	(2)	(3)	(4)
GratitudeNote	2.967 (1.902)	2.991 (1.924)	3.702 (2.339)	3.682 (2.320)
GratitudeVideo	0.967 (1.449)	0.933 (1.474)	1.901 (1.898)	1.815 (1.891)
Female	2.595** (1.280)	2.586** (1.296)	2.776* (1.460)	2.896** (1.331)
Positive reciprocity	0.651 (0.651)	0.298 (1.409)	1.105 (0.985)	0.601 (2.370)
GratitudeNote x positive reciprocity		-0.491 (1.615)		-0.419 (2.124)
GratitudeVideo x positive reciprocity		0.433 (1.488)		1.790 (2.499)
Female x positive reciprocity		0.469 (1.335)		0.319 (2.377)
Constant	5.885*** (1.280)	5.906*** (1.277)	4.054 (2.707)	3.947 (2.706)
Controls	No	No	Yes	Yes
Observations	159	159	140	140
Adjusted R^2	0.014	-0.005	0.025	0.006

WSR).

This picture is confirmed by regression analysis. To conclusively observe and compare subject's behaviour across time, it is reasonable to generate longitudinal data to run panel data regressions. Hence, I duplicated the dataset and specified panel and time variable. In a next step, I estimated fixed effects regressions to control for any time-invariant differences between the individuals to obtain the net effect of

the independent variable on the dependent variable (Torres-Reyna, 2007)³³. Since all variables besides the treatment variables (e.g. gender, studies, age) remain unchanged between working period 1 and working period 2, they are

³³More precisely, fixed effects estimates are within estimates while random effects estimates are a linear combination of both, within and between estimates (Charness et al., 2012).

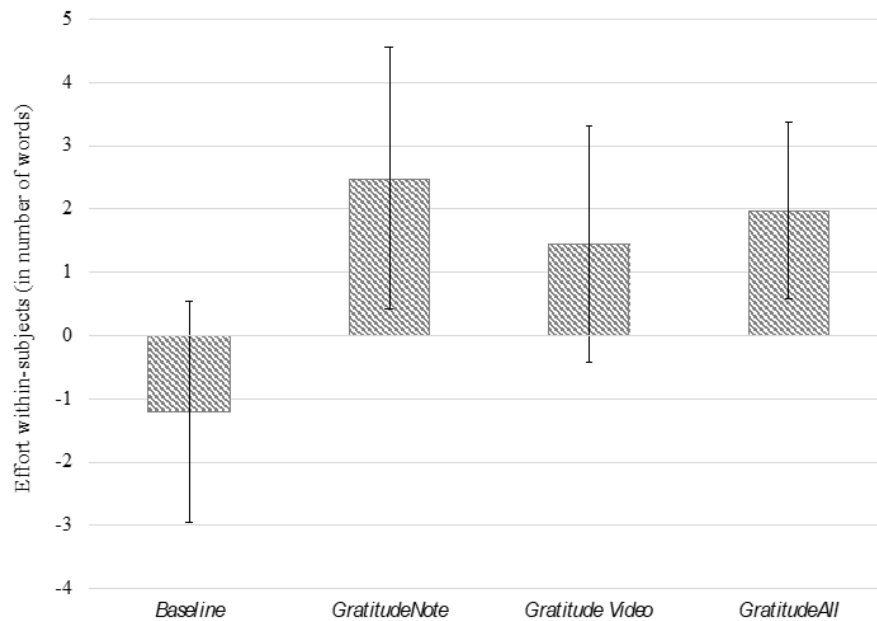


Figure 4: Effort within-subjects over time

omitted in the fixed effects model, which is why I only incorporate and report the results of the main treatment effects in Table 8.

Column 1 displays outcomes of the fixed effects regression with individual's effort in working period 2 as the dependent variable and the gratitude treatments as independent variables. Column 2 again accounts for fixed effects but replaces GratitudeNote and GratitudeVideo with GratitudeAll. Column 3 and 4 use the same specification however, instead of absolute figures, represent effort in logarithmized values. The results support the findings of the WSR test visualized in Figure 4 and show that individuals certainly behave reciprocally towards the thank you note by providing higher effort in the subsequent working task compared to their working effort in the period before being thanked by the experimenter ($p = 0.019$, column 1). However, expressing gratitude by means of a video leads to a smaller and statistically insignificant increase of effort in the following working period ($p = 0.129$, column 1). Overall it appears that individuals positively respond to expressions of gratitude, independent of note or video, in a reciprocal manner and put forth additional effort in return ($p = 0.006$, column 2). In sum, the key outcome of the analysis of effort proxy 2 are congruent to the results of effort proxy 1. Again, the statistical tests yield empirical support for hypothesis 1, hypothesis 2, and hypothesis 4 but, surprisingly provide no evidence for hypothesis 3. Accordingly, summarizing the results of the field experiment, I find the following:

1. Expressions of gratitude, combined with interpersonal elements, induce reciprocity and lead to the provision of higher effort compared to no expression of gratitude.
2. Expressing appreciation in form of a thank you note, signed by hand, results in a significantly higher recip-

rocal response than if the experimenter provided gratitude by means of a video or expressed no gratitude at all.

3. Women, on average, behave more reciprocally and accordingly exert higher effort, in response to an expression of gratitude, than men.

4.3. Robustness check

In order to validate the presented results, robustness checks are necessary to test whether the empirical findings are robust to different ways of measurement. Therefore, I investigated whether results for effort proxy 1 and 2 alter if additionally including the total time spent on the survey experiment. The respective results are displayed in Appendix A10 and show that results are, at least relating to their economical size, robust to adding an additional variable.

4.4. Manipulation check

In order to test the effectiveness of the gratitude intervention, participants' responses to the manipulation check were analysed. As delineated earlier, the manipulation check consisted of an item asking participants to indicate the extent to which the experimenter expressed appreciation on a 7-point Likert scale. The data show that the note worked as desired³⁴. More precisely, subjects reported that the experimenter showed gratitude for the invested time and effort to fill out the survey as compared to the neutral response of 4 (mean = 5.7, SD = 2.3). Moreover, this mean value is significantly different from Baseline (mean = 4.4, SD = 1.5,

³⁴Descriptive statistics for the manipulation check are subsumed in Appendix A11.

Table 8: Effort proxy 2 – Quantity of words (within-subjects)

Note: The table displays results from fixed effects regressions with robust standard errors reported in parentheses. The dependent variable is the quantity of words in working period 2 compared to Baseline and within-subjects in column 1-3. In column 4-6 the dependent variable is logarithmized. $p < 0.1$ *, $p < 0.05$ **, $p < 0.01$ ***.

	(1) Effort	(2) Effort	(3) In (Effort)	(4) In (Effort)
GratitudeNote	2.482** (1.052)		0.238*** (0.092)	
GratitudeVideo	1.444 (0.946)		0.168 (0.104)	
GratitudeAll		1.973*** (0.709)		0.204*** (0.069)
Constant	7.907*** (0.213)	7.907*** (0.213)	1.765*** (0.021)	1.765*** (0.021)
Wald test: GratitudeNote = Gratitude-Video	p=0.464		p=0.609	
Observations	366	366	366	366
Within R^2	0.054	0.051	0.052	0.051
Overall R^2	0.017	0.012	0.015	0.013

$p < 0.001$, MWU). Participants of the GratitudeVideo treatment, who saw the thank you video and thus are expected to score higher on the mean of the manipulation check, exhibited the highest mean of all three treatments (mean = 5.8, SD = 1.1). However, contrary to my expectations, this mean response is only statistically different from the average response of the control treatment, but not from the mean value of GratitudeNote ($p < 0.001$ and $p = 0.947$, respectively, MWU). This suggests that the video did not succeed in expressing considerably more gratitude than the note, which might explain some of the surprising results stemming from the analysis.

5. Discussion

5.1. Interpretation of results

The empirical results presented in section 4 show that expressions of gratitude matter and positively affect individual's reciprocal behaviour. While at first glance, the statistical tests support the behavioural intuition behind the basic hypothesis that gratitude induces reciprocity, other results did not lead to explicit and persuasive conclusions. For instance, it seems surprising that the expression of gratitude by means of a personal video did not elicit substantially higher effort compared to not expressing gratitude at all. In addition, considering the psychological mechanism behind individuals' response to gratitude, the empirical results show that reciprocal inclination certainly plays a role and may, at least to some extent, explain subject's behaviour, which will be discussed in the following.

First of all, the findings of the underlying paper provide evidence for hypothesis 1, indicating that individuals assign value to gratitude and accordingly behave in a reciprocal manner. This is in line with the results of earlier studies about

gratitude, that have emphasized the role of gratitude expressions as a moral reinforcer in enhancing subject's prosocial behaviour (Grant and Gino, 2010; McCullough et al., 2001). More particular and in support of hypothesis 2, expressing gratitude by means of a thank you note, combined with a handwritten signature, elicits reciprocity and significantly increases effort compared to when no gratitude was expressed. Although it is not clearly apparent, whether this effect was stimulated by the interpersonal element attached to the note, I anticipate subjects to have perceived the handwritten signature as something exceptional and thoughtful which then in turn unconsciously affected the way how the gratitude expression was perceived by the individual (Bradler and Neckermann, 2019). In contrast to what literature on surprising gifts propose, the results provide no proof that expressing gratitude in form of a video clip induces significantly higher effort than when expressing appreciation via a thank you note nor when not expressing gratitude at all. One explanation for this effect could relate to the intensity of the video itself, in other words that the appreciative expression by means of the personal video was too weak to considerably affect behaviour. This is partly confirmed by the evaluation of the manipulation check which delineates that though subjects perceived the video as an expression of gratitude, this perception is not substantially different to the perception of the thank you note. However, I detect a significant difference between seized gratitude level of the video message and the control group, inferring that the manipulation only partly failed and that there must be another cause for subject's effort choice. Another reason for the lack of a significant effect may relate to the phenomenon of gender-pairing, implying that subjects vary their behaviour depending on the gender of the individual with whom they are interacting. This assertion relates to the work of Ben-Ner et al. (2004b) who conducted a dicta-

tor game experiment and found that women on average give less to female recipients than to male recipients or to individuals about whom no gender information was provided. A reason for this behaviour may be that women perceive other women as a potential threat which triggers the expression of covert and low-key aggressions towards individuals of the same gender (Campbell, 1999). With respect to the present study, the knowledge of the experimenters gender thus would affect participants effort choice. As the personal video indeed provided the participant with the information that the experimenter is a woman, it is conceivable that female participants who were part of GratitudeVideo intentionally acted in a non-reciprocal manner³⁵. A brief look at the regression results in section 4 supports this possible explanation. Regarding effort proxy 1, being female and having seen the thank you video reduced the likelihood to continue to the next form by about 22 percentage points ($p = 0.237$, column 6, Table 2). Congruent findings provide the regression models for effort proxy 2. More precisely, the effect size of GratitudeVideo is reduced by 2.5 words for female subjects ($p = 0.501$, column 6, Table 5). Although these effects are both not statistically significant, they should not be neglected due to their considerably large magnitude. Thus, it is noteworthy that sharing information about the gender of the experimenter matters and potentially affects giving behaviour of female subjects.

Other reasons for the obtained results could relate to the issue that individuals might have felt that they are being manipulated or, even worse, might have perceived the personal video as a desperate and exorbitant exaggerated form of appreciating working effort of approximately 5 minutes and consequently felt kidded by the experimenter (Simonson et al., 1994). However, these are just assumptions that the present data cannot validate and thus remain potential causes.

As anticipated in hypothesis 4, women on average exerted more effort than men. Nevertheless, statistical tests show that this effect was most powerful and greatest in size for female subjects of the control treatment ($p = 0.005$, column 6, Table 3 and $p = 0.046$, column 6, Table 6, respectively)³⁶. Though this behaviour can be partly explained by the above depicted determinant of gender-pairing, this explanation primarily holds for the video rather than for the note treatment. Hence, I assume there to be further determinants predicting individual's behaviour, especially for women. One possible cause could be a personal relationship with the experimenter that might be more widely distributed among Baseline compared to GratitudeNote. However, since I did not incorporate a survey item asking for whether individuals personally know the experimenter, I cannot further verify this notion.

³⁵Participants of GratitudeNote and Baseline were not explicitly informed about the gender of the experimenter. Moreover, they were merely presented the name of the experimenter at the beginning of the experiment, which I assume is not enough to substantially influence female behavior.

³⁶Though the negative interaction effects between GratitudeAll and gender dummy are not significant, I perceive their impacts on behaviour relevant and hence take them into consideration in the present interpretation.

Finally, a leading explanation for individual's reciprocal behaviour is their reciprocal inclination³⁷. The key outcomes reported in section 4 provide evidence that subject's reciprocal inclination positively and significantly influenced the probability to continue to the next questionnaire. Furthermore, it became evident that the impact of positive reciprocity was stronger for male than for female subjects. This is contrary to the findings of Altmann et al. (2008) who observe no significant gender difference when investigating the relationship between person's reciprocal inclination and their trusting behaviour. In the present paper, no discernible interaction effect was found between the specific treatments and the measure for positive reciprocity, indicating that the impact of subject's reciprocal inclination on the probability to continue was more or less equivalent among treatments. This stands in contrast to the findings of Sliwka and Werner (2017), who demonstrate that certain treatment effects are driven by positively reciprocal workers. Surprisingly, the degree of reciprocal inclination is not significantly affecting effort choices in the second period, implying that more reciprocal subjects do not substantially exert higher effort in the second real-effort task than less reciprocal subjects³⁸. This suggests that respondent's degree of reciprocal inclination might not have been their exclusive motivation to provide extra effort in working period 2. Alternative motivations such as individual's interest in the real-effort task and survey topic or, as already stated, a personal relationship with the experimenter are conceivable.

5.2. Limitations and future research

As with most empirical research, the current study is not without limitations that have to be well considered to guide directions for future research. A central weakness of this paper relates to the methodology of the study. While field experiments in general promote higher external validity than laboratory experiments, there are severe disadvantages entangled to this experimental method. First of all, it is difficult to keep external determinants of individual's behaviour constant among all respondents. These include, for instance, whether individuals are interacting or communicating with someone while participating in the survey experiment. As the study requires a great amount of attention to correctly perceive the gratitude intervention, not being able to control for this factor may pose a significant weakness. Second, it is unfeasible to obtain the precise identity of the participants. Thus, it is possible that subjects completed the experiment with the help of other individuals or alternatively participated more than once which raises the potential challenge of validity of results. Another powerful determinant

³⁷Especially in a setting where effort is not enforceable, individual's reciprocal inclination gains in importance.

³⁸This may have also resulted due to the limited observation of merely those subjects that have decided to continue when analyzing effort proxy 2. It is possible, that the sample considered in effort proxy 2 ($n = 159$) exhibits less differences with respect to their reciprocal inclination than when referring to the overall subject pool considered in effort proxy 1 ($n = 207$).

which I couldn't control for was the environmental situation that surrounded individuals while taking part in the survey experiment. According to *Sukumaran et al. (2011, 3403)*:

Everyday physical environments and objects possess re-established associations with normative behaviours: people tend to act differently when they are in a church, for instance, as opposed to a football stadium.

This infers that the design of the environment is a source of situational norms that is assumed to shape actions which especially affect subject's (pro)social behaviour (*Aarts and Dijksterhuis, 2003*). Another shortcoming of online compared to laboratory experiments relates to the differences in selection bias which assumes individuals to self-select considering their reservation wage and opportunity costs of working time. With respect to the voluntarily characteristics of online surveys, subjects who decided to take part in my study already demonstrate a certain degree of willingness to benefit others. This implies that subjects in the present sample might generally be more helpful and cooperative than individuals of sample pools of laboratory experiments, where respondents commonly receive at least a show-up fee (*Arechar et al., 2018*)³⁹. This bias cannot be ruled out in the present study which limits external validity in terms of the representative nature of experimental participants. Given the fact that the majority of respondents are female students with a business or economics background and an age between 25 and 34 years further reduces subjects' representativeness. Since the above noted factors question the overall generalisability of depicted findings, it would be interesting to replicate the experiment in a controlled laboratory setting and compare results afterwards.

Another concrete limitation of this study refers to the narrow focus on subject's effort as the main outcome variable. While organizations usually not only attach importance to the quantity but further to the quality of work, I'd recommend researchers to additionally investigate the impact of gratitude on subject's performance to obtain a clearer picture of the overall effectiveness of appreciation as a non-monetary reward⁴⁰.

Further critical is the experimental feature of solely observing behaviour in a one-off interaction. Ample experimental studies demonstrate that performance effects, which have been found in one-shot settings, alter when considered in a repeated decision-making design (*Carpenter and Gong, 2016; Gerhards, 2015*). Transmitted to the context of the present study, one concern may be that recurring appreciation would no longer be perceived as personal and thoughtful and in worst case result in participants' doubt towards the sender's seriousness. Besides, decreasing effect sizes could

potentially arise due to the common condition of habituation, mental exhaustion, and increasing fatigue (*McSweeney, 2004; Brachet et al., 2012*). Contrary results are demonstrated by *Kirchler and Palan (2018)*, who show that reciprocal behaviour conditional on repeated non-pecuniary gifts de facto grows and becomes stronger over time. To draw reliable conclusions and thus provide significant implications for management, it is therefore highly recommended to extend the current experiment to a repeated interaction setting to analyse the stability of gratitude as an immaterial gift over time.

Moreover, as this study only provides a brief insight into the causal relationship between appreciative expressions and individual's effort choice, further research is needed to analyse moderating and mediating variables which may significantly influence the way gratitude worked in the underlying experiment. For instance, *Grant and Gino (2010)* argue that the positive effect of gratitude is mediated by the psychological mechanism of social worth. Likewise, research on interactive effects of social responses has shown that differences in need for approval moderated individual's subsequent helping behaviour (*Deutsch and Lamberti, 1986*). Examining whether such personality variables mediate or moderate the investigation of the present study setting would depict an interesting avenue for future research.

Lastly, I advise future research to consider the distinction of gratitude according to their source. This differentiation has been largely ignored by existing research streams on gratitude but is receiving increasing attention on the labour market. According to *Brun and Dugas (2008)* there exist four different types of sources. While appreciation may be conveyed vertically (e.g. by the supervisor) or horizontally (e.g. by a colleague) within organizations, it can originate from immediate stakeholder groups outside the organization (e.g. by a client), or alternatively stem from any other stakeholder party that stands in contact with the organization. Exploring whether subjects respond differently to expressions of gratitude, depending on its sender, appears to be not only an interesting approach for future research work but additionally may bear revealing implications for management practices.

5.3. Implications

The findings of the above presented experiment provide essential insights for present research and depict valuable implications for organizations.

First, this study corresponds to existent research on non-financial gifts by providing additional evidence that gratitude in form of a short note positively induces reciprocal behaviour and thus affects subject's effort choice. Second, as one of the first studies in this field, I stress the importance of examining differing levels of gratitude expressions. While my empirical analysis rejects the theoretical driven assumption that a thank you video elicits more effort than a thank you note, I find partly significant differences, though to the other direction, between the respective treatment effects. This finding adds to present research by suggesting that

³⁹The underlying survey experiment did not promise subjects to receive any kind of payment for their participation.

⁴⁰For example, *Kosfeld and Neckermann (2011)* and *Bradler et al. (2016)* define performance instead of effort as their main outcome variable.

the type of presentation and communication of gratitude indeed may induce systematic changes in behaviour and should not be neglected in further research on gratitude⁴¹. Third, I emphasize the importance of taking a closer look at gender as an explaining variable for reciprocal behaviour. While there is an on-going debate on gender-specific outcomes in academic literature, the findings of the present field study corroborate to existing research from laboratory experiments indicating that women behave more reciprocally than men (see e.g. [Heinz et al., 2012](#)). Moreover, since behaviour of female respondents varied strongly among the treatment groups, this study manifests the assertion that female subjects are much more sensitive to the context of a situation than male respondents which can, at least to some extent, explain the mixed results of gender differences in social preferences ([Croson and Gneezy, 2009](#)).

Besides, this study poses clear implications for management. First and foremost, the findings indicate that an expression of gratitude can be a strong motivator for individuals to put forth additional effort and can as such constitute a particularly cost-effective and convenient tool for organizations to stimulate employees' average effort. Since the experimental study investigated the effectiveness of gratitude in form of an electronic message, this managerial tool becomes particularly powerful in times of digital age, where agile working and the use of FWAs are becoming more and more common and communication mainly takes place via digital media. Moreover, appreciative messages do not only represent a noteworthy alternative to monetary incentives but further are thought to have social effects. In their work on functions of gratitude, [Algoe et al. \(2008\)](#) suggest gratitude to be an important determinant for relationship building and maintenance. Well-established social relationships between supervisor and subordinate are vital for organizations, not only because they incentivize employees to work well but further because they are assumed to promote worker's happiness ([Polak and McCullough, 2006](#); [Watkins et al., 2003](#)). Employing happy individuals is an essential cornerstone for organization's success, which has been underpinned by the latest movement in human resources of introducing "feel good managers", who are fully responsible for improving employees' happiness and general well-being in and outside the organization ([Frenking, 2016](#)).

6. Conclusion

Understanding the incentive effects of financial and non-monetary incentives on employee's motivation and performance is an omnipresent issue that expanded rapidly in the past decade. Although behavioural economists agree that individuals not merely hold selfish and materialist preferences, research on immaterial bonus domains is still scarce and incomplete. The underlying study is one of the first studies

in this research field investigating whether different levels of gratitude expressions – conveyed via the Internet – lead to different levels of effort individuals are willing to provide. To analyse how appreciation incentivizes subjects, I depicted a formal model of gift-exchange, where individuals derive utility from reciprocating a non-financial gift of gratitude with higher effort. The results of the underlying field experiment support the proposed theoretical model. Particularly, receiving a gift of appreciation via an electronical transmitted note increased individual's effort by approximately 20% compared to a gift of gratitude in form of a video clip, and by more than 25% compared to not receiving a gift at all⁴². However, the underlying regression models demonstrate that the observed difference of descriptive figures is only statistically significant between the note and control treatment. Furthermore, this study delineates noteworthy gender differences in social behaviour, revealing that women per se behave in a more reciprocal manner than men, whereas individual's degree of reciprocal inclination has a greater impact on effort for male than for female respondents. In conclusion, the underlying paper makes essential contributions to present research and further emphasizes the urgency for organizations to understand the beneficial features of the manifestation of gratitude.

⁴¹Pre-testing subject's perception of different types and forms of appreciative expressions could be a reasonable approach to avoid false conclusions.

⁴²These figures represent the average of the results of the two effort proxies reported in the descriptive statistics summarized in Appendix A3.

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