

Crossing boundaries

Identifying antecedents of intra- and inter team learning processes in the Dutch criminal justice system



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Author

Marie Louise ter Horst, MSc
University of Twente
Contact: jmlterhorst@gmail.com

First supervisor

Rike Bron
Educational Science and Technology
University of Twente

Second supervisor

Dr. Maaïke Endedijk
Educational Science and Technology
University of Twente

Commissioned by

Dutch National Police Force,
Quality program Police- Public Prosecution Service
Wim van Amerongen
Patricia Pasker

UNIVERSITY OF TWENTE.



Abstract

The conviction of a criminal act and the settlement of criminal cases requires an accurate and precise processing of work proceedings throughout the entire criminal justice system. Therefore it is important to avoid rework of criminal cases. Rework is the duplication of work because it does not meet the standards. The prevention of rework is essential to expedite the processing time of a criminal case and to keep the quality of the criminal justice system up to standard. Collaboration and interaction within teams (intra) and between teams (inter) are vital for the effectiveness of work proceedings and thus preventing rework. Team learning processes can stimulate such collaboration and interaction (Edmondson, 1999; Bresman, 2010). Therefore this research has investigated whether the intra and inter team learning processes within and between teams contributes to the self-rated team effectiveness of crime investigation teams of the National Police. In order to investigate how team learning processes can be improved antecedents of intra and inter team learning were investigated.

The research has been conducted by means of an online survey among 301 Police officers derived from 49 crime investigation teams of the Dutch National Police. Participants of the research evaluated intra and inter team learning processes, team learning antecedents and team effectiveness in their own team. The data were analyzed by means of descriptive statistics and several multi-level models to adapt to the stratified structure of the data.

The results of the study showed that intra as well as inter team learning processes were significant related to an improvement of effectiveness in teams. The absence of an interaction effect showed that both team learning processes have an independent relation to team effectiveness.

In addition, antecedents of intra and inter team learning processes were identified, divided into intra team level factors, inter team level factors and organisational level factors. The results showed that intra team level factors (safety, potency and identity) were strongly related to intra team learning processes. While potency was the only factor related to inter team learning processes. These indicated that when team members feel free to speak up, feel confident about their performance and identify with their team, this will result an improvement of intra team learning processes in the team. While for inter team learning processes, mainly the feeling of confident in the work proceedings proved to be. With regard to the inter team level factors, goal interdependency was the only factor related to intra team learning. While boundary spanning leadership and goal interdependency were related to inter team learning processes. Goal interdependency was notably more strongly related to inter team learning processes, compared to boundary spanning leadership. Indicating, not

particular interaction but a feeling of unity and a shared overarching vision of the team is important for inter team learning processes of teams. Finally, the organisational factors learning culture and identity were positively related to intra team learning processes while the learning culture was the only factor related to inter team learning processes. Organisational hierarchy was neither related to intra nor to inter team learning processes.

In sum, the results of the study showed that intra as well as inter team learning processes can contribute to the effectiveness of teams in the criminal justice system. The study contributes to the current literature by comparing intra and inter team learning processes, their relation to team effectiveness and their antecedents into a single study. In addition, the study is of applied value for work processes in the criminal justice system. The results of the study should be used to stimulate intra and inter team learning in the teams, in order to improve the effectiveness of teams and reduce the amount of rework in the criminal justice system.

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Preface

Working on this project was a valuable learning experience. However, it would not have taken place without the help of the Police organization and my supervisors. First, I would like to thank the Police organization for all the openness and kindness I received during the research period. The variety of interviews in various departments of the organisation allowed me to adjust the study to the context of the Police organization. In particular, I was impressed by the dedication and passion of Police officers for their work. This commitment shows that Police officers aim to carry out their work in the best possible way and to help citizens the best way they can.

In addition, I would like to thank Ruth van Veelen for her close involvement in the project and the feedback I received during the project. Together we were able to structure all the impressions and information I received from the Police organization into a clear defined research model. Therefore, I was able to adjust the research to the current developments in the Police criminal justice system. Finally, I would like to thank Rike Bron and Maaïke Endedijk for their supervision and useful feedback. I have really enjoyed the project and I am looking forward to put all the knowledge and skills I have learned into practice!

Marie Louise ter Horst, May 2016

1. Introduction

In the Dutch criminal justice system, more than 75% of the criminal affairs remain unsolved (De Koning, 2014; Rekenkamer, 2012). One of the main problems for this critical percentage is that the processing time of criminal cases is too long. This is problematic because criminal offenders are not convicted for their crimes and victims are left in uncertainty about the settlement of their case. A too long processing time results in the dismissal of these cases. The expiring date of a criminal case is two years. When a criminal case expires, it will be automatically dismissed. As a result criminal offenders will not be prosecuted. Therefore, the Dutch Ministry of Safety and Justice aims to settle two-thirds of all the small criminal cases within a month (Ministerie van Veiligheid en Justitie, 2015).

An important reason for the delay of criminal cases is the duplication of work proceedings in Police teams. Criminal files drafted by crime investigation teams of the Dutch National Police are often sent back by the Public Prosecution Service (PPS) because they do not meet the required standards. Subsequently, Police teams need to revise the files and resend it to the PPS. This process, called rework, can be repeated several times before the file meets the required standards. In Figure 1, a schematic representation of the process of rework is provided. Rework has a major impact on the delay of a criminal case due to the extra effort and time spent on the case. In addition, rework restrains Police teams from processing new cases. The consequences of rework are critical because there is not enough staff capacity within the teams to process the entire influx of criminal cases in the Netherlands. For example, research in the Police organisation has shown that nearly one third of the criminal cases, that require further investigation, remain (temporarily) unprocessed through understaffing (Kop, 2012). It is of great importance that Police teams and teams of the PPS will reduce the amount of rework to a minimum, due to the large influx of criminal cases, the shortage of capacity in the teams and the harmful effects of the delay of cases for victims. Despite efforts by both the National Police as well as the PPS, the delay of criminal cases through rework is still a frequently occurring problem¹ within the criminal justice system (Ministerie van Veiligheid en Justitie, 2015). Therefore the National Police

¹ Due to different administration systems of the National Police and the PPS, the exact amount of rework in the criminal justice system is unknown. However, research of the Rekenkamer (2012) estimated the amount of rework is between 18%- and 50%. During personal interviews this percentage was confirmed by supervisors and team members of crime investigation teams and teams of the PPS.

and the PPS aim to optimize work proceedings in the criminal justice system and reduce this percentage of rework in Police teams².

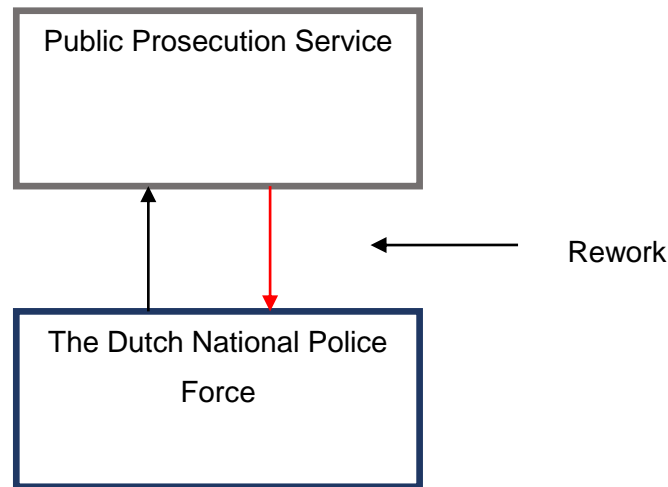


Figure 1: Simplified schematic representation of the process of rework between the Police and the PPS in the Dutch criminal justice system.

The draft of a criminal file is a highly complex process in which multiple individuals within and between teams in the criminal justice system have to share and combine their professional knowledge and skills with each other. It is a complex task because every case is unique and requires a different approach and working method. Therefore it is important that Police officers of Police teams collaborate with each other during the draft of the file and combine their knowledge and skills. Besides this process of sharing and collaboration within Police teams, the draft of a criminal file requires interaction and collaboration between teams of the Police and the PPS. For example, it is necessary that both teams consult each other on the required work methods and keep each other informed about new developments and insights about the case. The abovementioned processes of collaboration and learning from each other are referred to in the literature as team learning. Team learning ensures that the knowledge present in teams is used to adapt and improve work proceedings. The nature of work proceedings in the criminal justice system are highly suitable for the implementation of team learning for several reasons. At first, team learning is most important to enhance team effectiveness in a environment of complex tasks where standardization is not applicable (Sanner & Bunderson, 2015). The draft of a criminal file is a complex process that requires a versatile application of professional knowledge and skills by different officers and between various teams. Moreover, every crime case is different and therefore Police officers cannot

² in the context of the national project *'Strengthening criminal justice services'*².

use the same 'trick' in every file. Therefore, they need to learn how to apply their knowledge in different situations, instead of mastering of a specific task or skill. Secondly, the draft of a criminal file is a team effort instead of the sum of individual efforts. Collaboration and interaction within and between teams is of great importance during the draft of a criminal file. Specifically, if individuals do not interact with each other, they will miss essential information and knowledge and will not be able to perform their work properly. Team learning focuses on the team level instead of merely individual learning (Senge, 1990). Therefore it is, in the context of the criminal justice system, preferable over individual learning interventions.

The beneficial effects of team learning are extensively demonstrated in various studies, both the relationship between intra team learning on effectiveness as well as inter team learning and effectiveness has been demonstrated. For example, research of Boon, Raes, Kyndt & Dochy (2013) investigated team learning behaviors in Police- and firemen teams. The research showed that team learning behaviors within teams (intra team learning) were positively related to team effectiveness. Specifically, teams in which more intra team learning behaviors occurred, indicated that they learned more from each other during the work. In addition they evaluated their performance better. Although the research of Boon et al. (2013) showed the added value of team learning for the Police context, the research focused primarily on team learning within the team (intra team learning). While collaboration and interaction between Police teams and the PPS (inter team learning) is also required for the settlement of a criminal case. Research of Bresman (2010) showed that inter team learning processes contributes to the effectiveness of pharmaceutical teams. However, the interaction between both forms of team learning remains relatively unexplored. While the integration of both intra and inter team learning processes into a single study is highly important to understand work proceedings in the context of the criminal justice system.

The current study

The current study investigates intra and inter team learning processes and their relation to team effectiveness in crime investigation teams of the Dutch National Police. Those teams are highly suitable to investigate the relationship between intra and inter team learning processes because they are responsible for the final draft of criminal records before the reports will be sent to the PPS. Which means that those investigators during their work have to interact and collaborate with colleagues of their own team and with teams of the PPS. The study makes a contribution to the existing team learning literature for several reasons. At first, the study integrates intra and inter team learning processes and their relation to team effectiveness into one research. An integration of both forms of team learning into a single study is scarce (see for exception Bresman & Zellmer-Bruhn, 2013; Wong, 2004; Chan, Pearson & Entekin, 2003). In addition, the precise interaction between both forms of team

learning remains ambiguous. For example, research Chan et al. (2003) among pharmaceutical teams showed that both team learning processes contribute separately to team effectiveness. While research of Wong (2004) among teams in different fields of professions showed that inter team learning processes impedes intra team learning processes from achieving a high level of group effectiveness.

Secondly, within the current team learning literature, research on intra and inter team learning in the specific context of public safety is scarce (see for exception, Boon et al., 2013). Most research on team learning is conducted in the health sector (e.g. medical teams; Edmondson, 1999), the field of education (Van den Bossche, Gijssels, Segers & Kirschner, 2006) and in multidisciplinary teams in organisations (van der Vegt & Bunderson, 2005). This contextual focus is likely to influence the scope of the team learning literature. For example, research of Shanahan (2000) has shown that the specific organisational culture of the National Police (e.g. a hierarchical structure, trust, loyalty) affects the learning culture of the organisation. Therefore, integration of intra and inter team learning into a single research in crime investigation teams is required to identify the beneficial effects of team learning in the context of the criminal justice system. In addition, the study is necessary to reveal the relation on team effectiveness and the potential reduction of rework.

However, despite the proven effects of intra and inter team learning on team effectiveness, the literature states that the beneficial outcomes of team learning are not self-evident (Edmondson, Dillon & Roloff, 2007). This is because team learning is a process influenced by a multitude of factors. A variety of studies have revealed factors that stimulate or counteract team learning processes in teams (Boon et al., 2013; Bresman & Zellmer-Bruhn, 2013). Insight in those factors will reveal the antecedents of team learning, which can be used to develop interventions to stimulate intra and inter team learning in teams. Therefore, in order to be able to understand and implement team learning in the Dutch criminal justice system, antecedent of team learning needs to be investigated. The research divides the factors into intra team level factors, inter team level factors and organisational factors.

Alongside the theoretical understanding of intra and inter team learning processes, the research will provide insight in the operation of these learning principles in an organization with a hierarchical structure such as the Dutch National Police Force. The outcomes of the research can be translated into practical advices to enhance team learning processes, improve the effectiveness of teams and therefore reduce the amount of rework within crime investigation teams.

Based on these assumptions the following research question will be investigated:

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1. *What is the influence of intra- and inter team learning processes on team performances in Dutch Police teams?*
2. *What is the influence of intra team level, inter team level and organisational level factors of team learning on inter and intra team learning processes in Dutch Police teams?*

2. Theoretical framework

This research examines intra and inter team learning processes, their outcomes and their antecedents in crime investigation teams of the Dutch National Police. In the following paragraph, the theoretical concept team learning will be discussed and exemplified in the context of crime investigation teams. In addition, team learning processes (knowledge sharing, feedback and learning from mistakes) will be explained. Subsequently, team learning outcomes (team effectiveness) and team learning inputs (antecedents) will be discussed. See Figure 2 for a schematic representation of the conceptual model.

Team learning as a model

Team learning and its benefits for team performance are widely discussed in literature (e.g., Dochy, Gijbels, Raes & Kyndt, 2014; Akgün, Lynn, Keskin & Dogan, 2014; Bell, Kozlowski & Blawath, 2012 in review). Ever since Senge (1990a) stressed the importance of team learning for both individual learning in organizations as well as organisational development and growth, the literature on team learning has expanded. The focus on team learning resulted in an extensive overview of team learning processes, their outcomes and their antecedents. Due to the complexity of team learning the concept is usually modeled (e.g. Huang, Lai, Kao & Sung, 2014). Modeling is necessary to receive a conceptual understanding of team learning. In addition, it contributes to an understanding of the interrelations between team learning and the factors related to team learning.

The IPO framework

A commonly used framework in the literature for team processes is the Input-Output-Process (IPO) model. The IPO-model was first introduced by Hackman (1974) and served as a framework to structure and integrate team processes, their antecedents and their outcomes into an exploratory model, see Figure 2. Although the model was developed in the 70s, nowadays it still serves as a framework for recent work on team learning (e.g., Bravo, Lucia-Palacios & Martin, 2016).

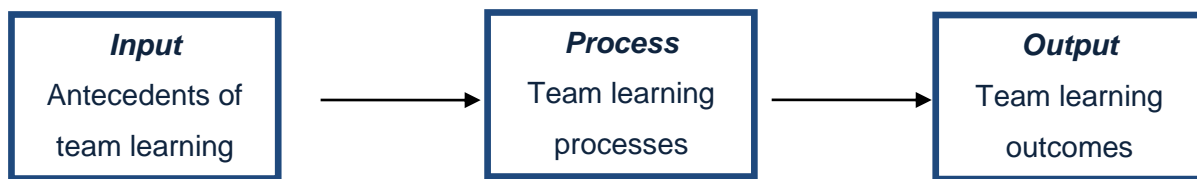


Figure 2: Schematic representation of the Input-Output-Process (IPO) model (Hackman, 1974)

The IPO structure is extremely useful to investigate team learning processes in a practical setting such as the criminal justice system. The model acknowledges that team learning is not an isolated process but influenced by various (input) factors in the team's environment. Therefore, the model clarifies which factors can stimulate or counteract team learning. This gives a complete overview of the concept of team learning and provides a basis for interventions aimed to influence team learning processes in teams. Therefore, an IPO model which integrates intra and inter team learning is useful to reflect the context of the criminal justice system. However, most models in the literature focus on team learning within or between teams separately (see for exception Bresman & Zellmer-Bruhn, 2013; Bresman, 2010; Wong, 2004; Chan et. al., 2003). In order to understand the interaction between both forms of team learning and their unique predictive value for team outcomes, combining both intra and inter team learning in one research paradigm is required.

The IPO model of Decuyper, Dochy & Van den Bossche (2010) focuses on intra team learning but has integrated the need for interaction with other teams into the model. Beside the input, process, and output structure, the model has defined interaction and exchange with other teams (i.e., boundary spanning behavior) as one of the pillars for team learning processes in the teams. Due to the interactive nature between the Police teams and teams of the PPS, the inclusion of boundary spanning behavior into the model is highly important to understand work proceedings in the criminal justice system. Therefore, the model of Decuyper et al. (2010) will be used as a framework to investigate the concept of team learning in the criminal justice system. However, in order to fit the model to the context of the research, inter team learning processes will be included in the model. With regard to the input variables of the model, research of Haar, Segers and Jehn (2013) stresses the importance of context-specific input factors in the model of Decuyper et al. (2010), if the model is used in applied research. The inclusion of such factors allows to investigate team learning processes and their related outputs in an applied setting such as the criminal justice system. Therefore, in this study, specific input factors which are related to the context of the criminal justice system are selected for the model. The factors are based on the current literature while taking into account the specific context of the criminal justice system. Finally,

the output variable of the model will be defined as team effectiveness. Both the Dutch National Police as well as the PPS aim for an improvement of work proceedings and the reduction of rework in the criminal justice system. Team effectiveness is a suitable measure to identify the quality of work proceedings in teams. In addition, it is a common used output measure in the current literature of team learning (Lemieux-Charles & McGuire, 2006). Therefore, team effectiveness will be used as output variable in the research model.

The inputs variables of team learning, the team learning processes and the outcomes variables will be specified and adjusted on the specific situation of the crime investigation teams. They will be discussed in the following section.

The process of team learning

A variety of definitions and perspectives on team learning processes are present within the team learning literature. The definitions vary from their level of detail and abstraction. For example, Wilson, Goodman and Cronin (2007) defined team learning as *'a change in the group's repertoire of potential behaviour'*. While Edmondson (1999) defined team learning as *"an ongoing process of reflection and action characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions, p353."*

Edmondson (1999) defines team learning as a specific group process where team member learn from each other through different sets of behaviours. The definition is useful because the concept of team learning is reduced into clear defined behaviours. This is useful for investigating the concept in an applied setting such as the criminal justice system. Therefore, the definition of Edmondson (1999) will be used in this research to define team learning processes. However, the definition will be adjusted to the context of the criminal justice system. Which means that the most important team learning processes required for the draft of a criminal file will be included. For example, the definition of Edmondson (1999) does not contain knowledge sharing, while the transfer of knowledge is an essential process for the draft of a criminal file. In addition, team learning processes in the criminal justice system can take place within as well as between teams. Therefore, in this research intra and inter team learning processes will be distinguished in the definition. Based on Edmondson (1999) and with regard to the context of the criminal justice system this study will define team learning as *'the process in which team members within and between teams share their knowledge, provide and receive feedback from their colleagues and learn from the mistakes they make.'*

These processes are expected to be crucial for Police officers in order to learn from their colleagues as well as from other teams during their work. The learning concepts are not

self-evident processes but inter-related by each other. Therefore, knowledge sharing, feedback and learning from mistakes should not be seen as separate processes, but should be approached as the integrated concept named team learning processes. The team learning processes and their justification will be discussed in the following section.

Knowledge sharing, feedback and learning from mistakes

Knowledge sharing can be defined as the exchange of knowledge, opinions, beliefs and ideas with others (Wang & Noe, 2010). It can be seen as one of the core features of team learning because knowledge sharing in teams provides a basis for new learning processes in the team. Knowledge sharing of individuals, distributes the individual knowledge among team members or other teams. Subsequently, the knowledge becomes part of the collective mental model of the team. This collective knowledge of teams provides, in result, the basis for new learning processes such as feedback of reflection on action. Research has shown that knowledge sharing processes of teams are related to an improvement of the performances of teams, (see for review, Wang & Noe, 2010; Witherspoon, Bergner, Cockrell & Stone, 2013). Specifically research among Norwegian police investigation teams has shown that knowledge sharing has a significant influence on the improvement of the primary work activities of those teams (Dean, Filstad & Gottschalk, 2006). Based on this prior work, it can be expected that knowledge sharing, as a part of intra and inter team learning processes, can contribute to team effectiveness in Police teams. Specifically, Police officers have to share and combine their work proceedings within their team in order to gather and combine all the information required for the criminal file. Additionally, between teams of the Police and the PPS, it is important to align and adjust the content and level of detail of the files. Both forms of knowledge sharing bring new information, insights and knowledge in the team. Therefore, it sets the basis for further processing of information between team members and provides a basis for other learning processes in the team such as feedback and learning from mistakes.

While knowledge sharing brings new knowledge into the teams, feedback contains the current beliefs and opinions of employees about the work. The concept of *feedback* refers to one's opinions, underlying values and criteria about what is important about work. In addition feedback entails to the information provided to an individual about its effectiveness. For example, information about how the present state of an individual relates to standards and goals on performance (van Woerkom & Croon, 2008; Nicol & Macfarlane-Dick, 2006). Feedback is an essential element of team learning because it stimulates double loop learning. Instead of attempting to solve a problem without questioning the goal or nature of the problem (single loop learning), feedback instigates the collective reflection on the existing schemes and mental models (double loop learning). This process

of collective reflection stimulates a shift in the understanding of the existing procedures, goals or schemes (double loop learning) (Schön, 1983; Edmondson, 1999). Thus, feedback enhances sustainable change in teams and fosters a continuous development of work proceedings. In addition, research has shown that feedback processes are positively related to team effectiveness, (see for meta-analysis Anseel, Beatty, Shen, Lievens & Sackett; 2015). Given the positive results of feedback on team effectiveness it is expected that feedback as a part of team learning processes contributes to team effectiveness in crime investigation teams. Teams, namely, need to reflect on their work proceedings, in order to tackle the rework problem in the criminal justice system.

The process in which team members share their knowledge and provide each other with feedback, may elicit a process in which team members learn from their mistakes and adjust and improve their work proceedings. Learning from mistakes indicates the reflection on, and the correction of errors and false assumptions (Tjosvold, Yu & Hui, 2004). It is an essential process of team learning because it provides teams insight in their fallacies and stimulates them to break down inadequate 'routinization'. As a result teams will learn how to adjust their thinking patterns of behaviors. Research has shown that these processes are related to team effectiveness (Tjosvold et. al., 2004). Feedback and learning from mistakes are closely related to each other because they are both a form of reflection (van Woerkom & Croon, 2008). However, the focus on errors distinguishes learning from mistakes from feedback. Feedback is aimed at the reflection on opinions, values and behaviors in general to stimulate improvement and adaption of the current work proceedings, goals and standards. Learning from mistakes by contrast is aimed at avoiding the reoccurrence of mistakes in the future by reflection on that specific mistake. Research has shown that learning from mistakes improves team performances and enhances team effectiveness because it stimulates teams to discover new methods and reflects on their existing schemes (Tjosvold et. al., 2004). Research of Edmondson (2004) among patient care groups has shown that the willingness to openly discuss mistakes was the most important predictor of the detection of errors compared to the frequency of errors made in the teams. Just as for health care teams, a mistake made in Police teams will have a major impact for people who are involved in the case. This might be a reason for Police officers to hide their mistakes. However, valuable learning opportunities will be. In addition, if the police teams are able to learn from their mistake, they might be able to transform errors into an opportunity of improvement. This will, in turn, contribute to the improvement of work processes in the criminal system.

Taken together, in the current research we investigate the extent to which crime investigation teams engage in both intra- and inter team learning processes. The learning

processes are composed of the subcomponents: knowledge sharing, feedback and learning from mistakes. In the next section the expected outcomes of team learning processes will be discussed.

Team learning outcomes

According to the current literature, there are numerous team learning outcomes (Decuyper et. al., 2010). For example, there are 'soft' team learning outcomes focusing on an improvement of the features of the team (e.g. team cohesion, team knowledge). In addition, there are 'hard' performance outcomes focusing on quantifiable improvement of team performances (e.g. team effectiveness, goal achievement) (Hackman, 1974). The aim of the current research is to provide insight into the quality of work proceedings of crime investigation teams and provide possible solutions for the reduction of rework in the teams. Hence, in this research the team learning outcomes will be team effectiveness and will be defined as a 'hard' outcome of team learning.

Team effectiveness is the most common team learning outcome variable used in applied team learning research and can be defined as the extent to which the joint effort of team members contribute to the achievement of the team goals (Katzenbach & Smith, 1993). Despite the use of team effectiveness measures in many studies, the concept is not uniform. Together with studies in different teams and contexts, different measures for team effectiveness have emerged. For example, research of Weert and Pilot (2003) in student teams defined effectiveness as the extent to which the teams were able to generate innovative ideas. Moreover, in health care teams, team effectiveness is defined as a composition of the concepts patient care (e.g., quality of care, patient satisfaction), personnel (e.g., training, job satisfaction), and management (e.g., cost-effectiveness) (see for review Lemieux-Charles & McGuire, 2006). Due to the specific context of the Police organisation and nature of work proceedings, the definition of team effectiveness in this research will be adjusted to the context of crime investigation teams. Specifically, effectiveness teams will be conceptualized to include the following aspects: Effectiveness of work proceedings, satisfaction on quality of work proceedings by the PPS teams and satisfaction on quality of work proceedings of the team members themselves. These aspects of effectiveness are commonly used in the team learning literature (Lemieux-Charles & McGuire, 2006). Finally the amount of rework per team be used as an extra indicator of team effectiveness.

Based on the current team learning literature it is expected that the team learning processes in crime investigation teams are positively related to the effectiveness of teams. However, the beneficial outcomes of team learning processes are not self-evident. The learning curve in teams depends for example on the team composition and the environment

of the team (Edmondson et. al., 2007). Research of Boon et al. (2013) has shown that team learning processes in the teams are positive related to team effectiveness. Therefore, team learning processes of the current study are expected to contribute to an improvement of team effectiveness in Police teams. Based on these team learning processes and the team learning outcomes the following hypothesis can be stated:

Hypothesis 1: Intra and inter team learning processes are positively related to team effectiveness.

Team learning inputs

There are numerous antecedents of team learning processes identified in the literature, see for overview Decuyper et al. (2010). As stated before, research has shown that in order to understand team learning processes and their related outcomes in a practical setting, context related factors should be identified and included in the research model (Haar et. al., 2013; Zellmer-Bruhn & Gibson, 2006). Therefore, the input factors of team learning processes in this study are selected, while taking into account the specific context of the Police organization and based on the existing team learning literature. In order to structure the factors, the team learning inputs are divided into factors present *within* the teams, (intra team level factors), factors with regard to the interaction *between* crime investigation teams and teams of the PPS (inter team level factors) and factors on the level of the Police organization (organisational level factors).

Intra team level factors

Intra team level factors can be defined as factors that take place within the team. In this study, the intra team factors studied are psychological team safety, team potency and team identification.

Psychological safety can be defined as the shared belief among team members that the team is safe for interpersonal risk taking (Edmondson, 1999). Research has shown that psychological safety is essential for team learning behaviors to occur. The feeling of safety in teams prevents team members from concerns with regards to potential embarrassment or threat when speaking up or making mistakes in the team (Decuyper et. al., 2010; Van den Bossche et. al., 2006; Edmondson, 1999). A lack of psychological safety in teams prevents team members to open up and therefore inhibits team learning behaviors (Edmondson, 1999; Decuyper et. al., 2010). Research in a military contexts as well as in the police organization has shown psychological team safety is a highly important factor to facilitate team learning processes. Due to the specific culture in which trust and loyalty are perceived as core values of the organization (Paoline, 2003). For example, Police officers indicate that

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trust in their colleagues is essential because they have to protect each other in dangerous situations.

Aside from a collective feeling of psychological safety, the collective belief of team members that their team can be effective is highly important. This process can be defined as team potency (Shea & Guzzo, 1987). Team potency has been indicated to be vital for team learning processes to occur, because it contributes to the level of self-confidence of teams. It is through this feeling of confidence that teams will have the courage to apply the things they have learned into practice during their work. Without team potency, learning processes will be present in the teams, but will not be applied during the work. In addition, group potency help teams to regulate their team processes and therefore stimulates team learning processes (Gully, Incalcaterra, Joshi & Beaubien, 2002). Especially in the Police context, potency can be expected to be an important predictor of team learning. At the moment, the Dutch media criticizes the work processes in the criminal justice system (De Voogt, 2016). The negative publicity might affect the level of self confidence of Police teams and therefore reduced the feeling of potency in crime investigation teams. Research of Boon et al. (2013) and Veestraeten, Kyndt & Dochy (2014) have both showed that team potency is an important predictor of team learning processes in the Police context. Therefore, group potency will be included in the research.

Finally, team identification can be identified as the collective feeling of team members that they are attached to their group membership (van der Vegt & Bunderson, 2005). Research of Van der Vegt and Bunderson (2005) has shown that a high level team identification of team members resulted in a positive relationship on team learning and team performance. In addition, Edmondson et al. (2007). stresses the importance of team identification for team learning processes in teams. Based on these studies it is expected, team identification is positively related to team learning processes. Therefore identification will included in the research.

Hypothesis 2: Intra team level factors are positively related to intra and inter team learning processes.

Inter team level factors

Inter team factors can be defined as factors that are related to the interaction and cooperation with other teams, in this study specifically the interaction between crime investigation teams and teams of the PPS. The inter team level factors investigated in this study are goals and task interdependency and leadership boundary spanning. The factors will be discussed in the following section.

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Goal interdependency refers to the extent to which the personal benefits and costs of team members depends on successful goal attainment of other team members (van der Vegt, Emans, & van de Vliert, 1998). Both teams are dependent on each other because they have to collaborate to achieve this shared goal. For example, crime investigation teams and teams of the PPS are dependent in the detection and the conviction of a criminal. In addition, task interdependency can be defined as the interconnection among tasks, whereby the performance of one piece of work depends on the completion of other work proceedings (van der Vegt et. al., 1998). For example, crime investigation teams and teams of the PPS are task dependent in the draft of a criminal file. Because the PPS cannot start the conviction, if the criminal file drafted by the investigation teams is not completed. However, crime investigation teams are in reverse task interdependent on teams of the PPS. Because the investigation teams cannot finish the criminal file, when teams of the PPS do not specify their demands for the file with regard to the specific case. Summarizing, goal interdependency focuses on the interdependency on the overarching goals, not necessarily the tasks. While task interdependency focuses on merely the task instead of overarching goals.

Research has shown that both forms of interdependency are closely related to team learning processes in teams. For example, research of Wageman (1995) has shown that goal and task interdependency are related to the level of cooperative interaction in teams. In addition, research of Van den Bossche et al. (2006) and Decuyper et al. (2010) have shown that goal as well as task interdependency promotes learning processes of teams and contributes to an improvement of the effectiveness of teams. With regard to the police organization, research of Boon et al. (2013) classified goal and task interdependency as important indicators of team learning in Police teams. However, the study failed to prove the effects of interdependency due to a lack of internal consistency of the scales. In addition, the relationship between interdependency and inter team learning processes was not included in the research. However, in the context of the criminal justice system both forms of interdependency within and between teams are clearly present. Therefore, this study will investigate the relationship of goal and task interdependency on intra and inter team learning processes in crime investigation teams.

Besides interdependency, boundary spanning activities are relevant with regard to the interaction between teams. Boundary spanning behavior can be defined as the process of sharing information, views and ideas with others teams (Kasl, Marsick & Dechant, 1997). Research has shown that boundary spanning behavior in teams affects both the ability to bring information into the team as well as the effective dissemination of the learning processes in teams (Brooks, 1994). According to Van den Bossche et al. (2006) boundary spanning behavior is essential for team learning processes to occur because team

effectiveness is negotiated on the boundaries between the teams and the environment. Research has shown boundary spanning behaviors in teams are related to team learning as well as team effectiveness (Edmondson, 2002).

Ancona & Caldwell (1992) divided boundary spanning behaviors into three concepts, ambassadors activities, task coordinator activities and scout activities. Commonly, these three types of behavior describe boundary spanning behaviors within organizations. Ambassadors activities can be defined as activities in which the boundary spanners protect the team from pressure from outside the teams and persuade others to support the team. In addition task coordinators activities includes the interaction aimed at coordinating issues with members from outside the team. Obtaining feedback about team products and discussing problems are part of those activities. Finally, scout activities are defined as behaviors that involve scanning for new ideas and the requirement of information which can be useful for the team. In theory every team member can take the role of boundary spanner. In reality team leaders are often indicated as boundary spanners because they are responsible to establish and maintain contact with other teams. Research has shown boundary spanning behavior of leaders of a team is predictive for an improvement of intergroup attitudes and the implementation of boundary spanning behaviors between members of these teams (Richter, West, Van Dick, & Dawson, 2006). Collaboration and interaction between crime investigation teams and the PPS is crucial for team performances of both teams. Team leaders of the crime investigation teams have the responsibility to establish and maintain contact with teams of the PPS on behalf of their own investigation teams. Differences between boundary spanning activities of the leader on intra and inter team learning processes are little explored. Therefore an understanding of the impact of boundary spanning leadership on intra and inter team learning processes is needed.

Hypothesis 3: Inter team level factors are positively related to intra and inter team learning processes.

Organisational factors

Organisational factors can be defined as the factors taking place at the level of the organization. The factors in this research contain organisational hierarchy, organisational learning culture and organisational identity.

Organisational hierarchy can be defined as power and status differences among individuals in the organisation. Research has shown that hierarchy differences in organizations affects the feelings of autonomy of lower status employees. This disrupts a shared goal orientation of the employees and prevents them from taking risks and experimenting during their work

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(Bunderson & Reagans, 2011). This is alarming because these processes are essential for the occurrence of team learning processes in teams. For example, research by Bain (1998) stressed the importance of team autonomy for a rich and fruitful learning environment. The police culture is known for its specific culture in which hierarchy and status are widely present in the organization. Research has shown that the presence of this specific hierarchical structure in the Police organisation affects the learning culture (Shanahan, 2000). Therefore, it is expected that the presence of organisational hierarchy in crime investigation teams negatively affects the feeling of autonomy of team members. Subsequently, it is expected to counteract intra and inter team learning processes in crime investigation teams and reduce the associated effectiveness of the teams.

In contrast to organisational hierarchy, the learning culture of an organisation is expected to stimulate intra and inter learning processes in crime investigation teams. A learning culture requires an organization which facilitates and supports learning among their employees (Yang, 2003). Research of Marsick & Watkins (2003) showed that an organisational learning culture is related to job satisfaction of the employees and the motivation of those employees to apply the result of their learning process into their work proceedings. In addition a fruitful learning culture stimulates the responsiveness of employees and enhances team learning processes in the teams (e.g. knowledge sharing) (Edmondson, 1999). Based on these theoretical insights, it is expected that a learning culture in the Police organisation is essential to engage in intra and inter team learning processes. Therefore the organisational learning culture will be added to the model.

Besides the organisational learning culture, organisational identification of employees is expected to contribute to intra and inter team learning processes of crime investigation teams. The degree to which employees have a strong personalization with the organization, can be defined as organisational identification and involves a self-defining psychological link between the individual and the organisation (Van der Vegt & Bunderson, 2005; Edwards, 2009). Research has shown that organisational identification is predictive for work performances in teams and mediates the degree of organisational learning in the organization (Rose, Kumar & Pak, 2009). Police officers identify strongly with the Police organisation (Bradford et al., 2013). The identification of employees might enhance learning in the organisation and subsequently, stimulates learning within teams. Therefore, organisational identification will be included in the model.

Hypothesis 4: Organisational level factors are positively related to intra and inter team learning processes.

Intra and inter team learning as a model

The aim of the research is to investigate intra and inter team learning processes and their relation to team effectiveness in crime investigation teams of the Dutch National Police, hypotheses 1. In addition, the relation between antecedent of team learning an intra and inter team learning processes will be investigated, hypotheses 2, 3 and 4. An overview of the team learning model of the study is presented in Figure 3.

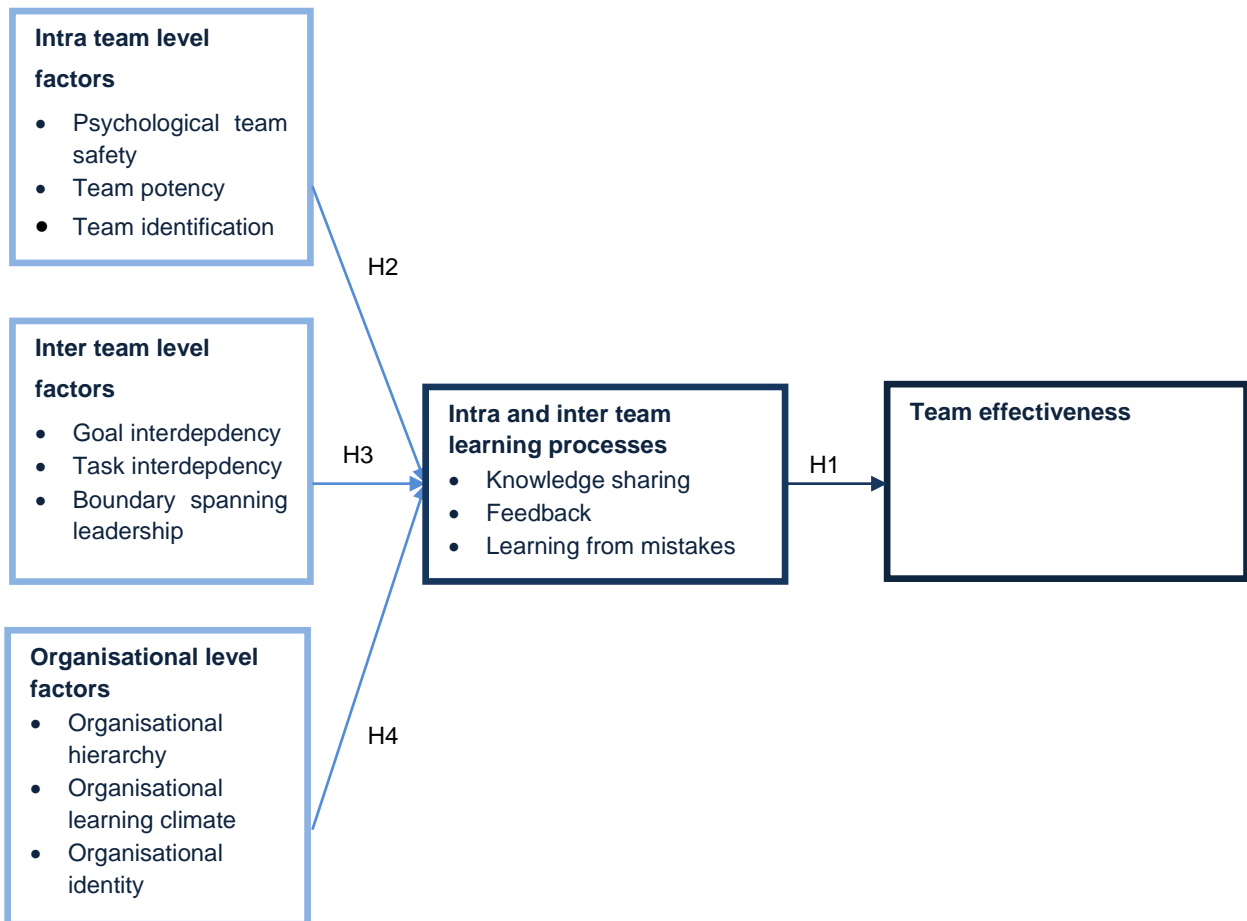


Figure 3: Schematic representation of the intra and inter team learning research model

3. Method

The purpose of this study was to provide an in-depth analysis of the intra- and inter-team learning model presented in Figure 3. Specifically, the study examines the relationship between team learning processes, their antecedents, and their outcomes among investigation officers of crime investigation teams of the National Dutch Police Force.

Research design

The study aimed to identify the relationship between inputs, processes and outputs of intra and inter team learning in crime investigation teams. A cross-sectional research design was chosen to investigate the relationships between the variables in the model at a specific point in time. Due to a high work pressure in the teams, there was limited period of time for the data collection in the teams. Given these work pressures, the cross-sectional research design is suitable for data collection among a large sample group in a short period of time (Neuman, 2005). Although the causality between the variables cannot be determined with a cross-sectional research design, the design is particularly suitable to investigate the relationship between intra and inter team learning processes, their outcomes and their antecedents (Neuman, 2005).

Sample

An online survey was conducted among investigation officers of high volume crime- (HVC) and small high impact crime- (HIC)³ investigation teams of the National Dutch Police Force. The exact number of investigation officers working in crime investigation teams of the police was not available during the research period, due to reorganizations of the police organisation. Hence, an estimation⁴ of both the amount of investigation officers and crime investigation teams was made. The total number of investigation teams was estimated at 168 teams, located in ten different regions. It was estimated that crime investigation teams had on average 25 investigation officers per team, resulting in an estimated population of 4200 crime investigation officers.

³ HVC and HIC crimes can be defined as small crimes with a high impact on society such as burglary, robbery, mugging and vandalism.

⁴ An estimation was made based on information provided by the regional managers of the crime investigation teams. Regional managers are suitable because they are responsible for the quality assurance of work proceedings in crime investigation teams in their own region and maintain close contact with the investigation officers and the teams.

The aim was to require a large a diverse sample group which was representative for the research population. Hence, a combination of the maximum variation- and convenience sampling method was used (Babbie, 2010). After an information meeting with the investigation managers⁵ of the different regions, eight of the ten managers gave consent for participation of the investigation teams of their region in the research. Hence, approximately 2575 investigation officers, located in 103 different teams were invited to participate in the research.

Of the approximately 2575 approached participants, 301 participants completed the online survey. The participants were employed in 49 different teams, derived from seven regions⁶ of the Dutch National Police. See Table 1 for an overview of the participants of the research. The study had a (estimated) response rate of 13%⁷. Out of these 301 participants, 56% were male and 44% were female, which is a representative ratio regarding to crime investigation teams (CAOP, 2013). Participants had an average age of $M= 39.47$, $SD= 11.65$, *range 22- 64*. Most participants were, as expected, vocational educated or schooled below that level (90%) (CAOP, 2013). The majority of the participants indicated to work more than 24 hours a week (94%). In addition, 48% of the participants had a temporary function in the team. The remaining participants were fixed members of the team (27%) or indicated they had a different position in the team (25%). Participants worked on average 16 years in the police organisation ($M= 16.49$, $SD= 11.59$) and had on average three year work experience in crime investigation teams ($M= 2.93$, $SD= 4.36$). Finally, participants indicated to have worked relatively shortly in their current team ($M= 1.96$, $SD= 3.43$) which shows, teams operate relatively shortly in their current composition.

⁵ Investigation managers are responsible for the optimization of investigation processes in the crime investigation teams and maintain close contact with the teams in their region.

⁶ Police officers of the region Oost-Brabant were approached for the research but did not participate.

⁷ During the research 118 investigators started but did not complete the study (37%). The incomplete cases were excluded from the analyses.

Table 1

Schematic representation of the approached and participated teams and officers in the research.

Region	Teams approached	Officers approached	Teams participated	Officers participated
Noord-Nederland	0	0	0	0
Oost-Nederland	16	400	4	13
Midden-Nederland	18	450	12	89
Noord-Holland	10	250	9	53
Amsterdam	0	0	0	0
Den Haag	24	600	9	49
Rotterdam	17	425	6	27
Oost-Brabant	3	75	0	62
Zeeland-West-Brabant	12	300	7	0
Limburg	3	75	2	8
Total	103	2575	49	301

Procedure

In order to involve participants in the research, regional investigation managers⁸ of the ten different regions were approached to obtain permission to request investigation officers of the teams for participation in the survey. After a detailed explanation of the study, eight of the ten managers gave consent to approach investigation officers for participation in the study. Investigation managers of the two regions⁹ that did not participate in the survey, indicated a high work pressure for both the teams and the manager as a reason to exclude their teams from the research. Communication with the participants about the survey was established and maintained via the investigation managers to ensure the confidentiality of the contact information of the participants.

One week before the start of the study, participants received an e-mail with an explanation of the goals and the procedure of the research. In addition, the added value of the research and its implications for crime investigation teams was highlighted to motivate the investigation officers to participate in the research. At the start of the survey, participants received on their work-account an e-mail with a participation request for the study and a web-link to the online survey.

Initially, the survey would be open for two weeks. However, due to a low-response rate after the first two weeks, it was decided to expand the data collection period with three

⁸ Investigation managers are responsible for the optimization of investigation processes in the crime investigation teams and maintain close contact with the teams in their region.

⁹ The regions Amsterdam and Noord Holland

extra weeks. During these weeks several reminder e-mails were sent to the teams. In addition the regional investigation managers tried, through the deployment of team leaders of the crime investigation, to convince participants of the added value of the research and motivate them to complete the survey.

In accordance with the Ethical guidelines of the University of Twente, participants were informed about the voluntary nature of the survey and the anonymous processing of the data. This was done by means of an informed consent at the start of the research, approved by the ethical committee of the University of Twente. In addition, participants were informed about the fact that individual results of the survey were confidential and would not be published. During the research participants were asked to note the name of their team leaders to be able to identify teams and their team leaders during the analyze phase of the research. In addition, at the end of the survey, participants had the opportunity to leave their contact information to pose questions or remarks about the research and the procedure. To ensure anonymity and confidentiality of these results, this information was stored separately from the overall dataset.

The survey consisted of 105 questions and it took, on average, 15 minutes to complete it. The sequence of the offered items in the survey were classified into an ascending level of abstraction to optimize the flow for participants to fill in the survey. Specifically, participants started with demographic data and items applicable on the team level, followed by questions applicable on the intra team level and ending with items on the organisational level. The sequence of the presented concepts were: Intra team learning, psychological team safety, team potency, team identification, team effectiveness, inter team learning, boundary spanning leadership, goals and task interdependency, organisational hierarchy, organisational identification and organisational learning climate. Participants were asked to fill in the survey individually on a self-chosen moment during their work, to avoid the influence of peers on their answers.

Instrumentation

The concepts measured in the survey were based on items of validated questionnaires from literature, with sufficient internal reliability (Field, 2009). If necessary, the items were reformulated from the individual to the team level and adjusted to the specific working situation of crime investigation teams in the Dutch National Police organisation. Due to the high work pressure in investigation teams, it was decided that the survey should take no longer than 15 minutes to complete. Hence, the items of the survey were formulated concisely and the amount of items were kept on a minimum, without losing the essence and meaning of concepts of the survey. The final selection of the items for the questionnaire was made in collaboration with a senior researcher specialized in organisational psychology. In

general the scales were measured by means of a five point likert scale (1= strongly disagree; 5= strongly agree).

Prior to the main survey, a pilot test among four investigation officers, operating in crime investigation teams in several regions, were conducted to gain information about the usability of the survey. And in addition to make sure that the survey was adjusted to the work proceedings and terminology of crime investigation teams. The participants were asked to fill in the survey while using the thinking out loud method based on Ericsson and Simon's (1998) think aloud protocols procedure. The items of the survey will be discussed in the next section.

Scales

The items of the research will be discussed based on the following classification: team learning processes, outcomes and antecedents. This classification deviates from the sequence of the items presented in the questionnaire in order to provide a structured overview of the items of the survey.

Intra and inter team learning

Intra team learning. The intra team learning scale consisted of 12 items composed of three team learning concepts, namely feedback (four items; Van Woerkom, 2008), learning from mistakes (four items; Tjosvold et. al., 2004) and knowledge sharing (four items; Faraj and Sproull, 2000). Example items were: *'Crime investigation team members ask each other for feedback'* (feedback), *'Mistakes are very useful for this crime investigation team, because it helps our team to improve our work processes.'* (learning from mistakes) and *'People in this crime investigation team share their knowledge and expertise with one another.'* (knowledge sharing).

In order to inspect the factor structure of the multi-dimensional concept of intra team learning, an exploratory factor analysis was performed (using principal components analysis (PCA) with oblimin rotation in SPSS). Given the sample size, the factor loadings should be higher than .30 and they should clearly discriminate between the factors in relation to other factors (difference > .10; Field, 2009). The exploratory factor analysis revealed that the 12 items loaded as expected on the factors: feedback, learning from mistakes and knowledge sharing. Based on the outcomes it was decided to include the four items of the first factor, feedback (49.13 % explained variance), the four items of the second factor, learning from mistakes (11.80% explained variance) and the four items of the third factor, knowledge sharing (8.63% explained variance). As was evident from the factor analyses, intra team learning consisted of the three factors: knowledge sharing, feedback and learning from mistakes. Inspection of the correlation of the three factors with the input and output variables

did not reveal significant differences. Therefore it was decided to include the three factors into the variable intra team learning. The overall consistency of the intra team learning scale was examined and can be indicated as high $\alpha = .93$, (Field, 2009).

Inter team learning. The inter team learning scale consisted of the same items as the intra team learning scale, although the items were reformulated to reflect the learning processes between crime investigation teams and teams of the PPS. Example items were: *'Crime investigation team members ask teams of the PPS for feedback.'* (feedback), *'Mistakes are very useful for this crime investigation team and teams of the PPS because it helps our team and teams of the PPS to improve our work processes.'* (learning from mistakes) and *'Crime investigation team members and PPS team members share their knowledge and expertise with one another.'* (knowledge sharing).

Similar to intra team learning, an exploratory factor analysis was performed to inspect the factor structure of the concept inter team learning, using principal components analysis (PCA) with oblimin rotation in SPSS. The exploratory factor analysis revealed that the 12 items did not reach the eigen value of 1.00 Therefore an eigen value of .90 was used to reveal the expected three factors structure: feedback, learning from mistakes and knowledge sharing. Based on the outcomes of the factor analysis it was decided to include the four items of the first factor, feedback (53.31 % explained variance), the four items of the second factor, learning from mistakes (11.53 % explained variance) and the four items of the third factor, knowledge sharing (8.04 % explained variance). As was evident from the factor analyses, inter team learning consisted of the three factors: knowledge sharing, feedback and learning from mistakes. Inspection of the correlation of the three factors with the input and output variables did not reveal significant differences. Therefore it was decided to include the three factors into the variable inter team learning. The overall consistency of the inter team learning scale was examined and can be indicated as high, $\alpha = .90$.

Team effectiveness

Team effectiveness was measured with seven items. In order to be able to reflect the concept of team effectiveness of crime investigation teams, a combination of various performance items of various scales was used. Including team effectiveness, team satisfaction, 'customer' satisfaction (in this case teams of the PPS) (Woerkom & Croon, 2009; Zellmer-Bruhn & Gibson, 2006; Edmondson, 1999). Research has shown that such effectiveness measures have a high predictive validity for actual team effectiveness, independently of other team factors (Subramanian & Nilakanta, 1996). Example items were: *'This crime investigation team achieves its goals.'* and *'The PPS is satisfied about the quality of the work of our crime investigation team.'* An exploratory factor analysis did not reveal

any differences between the items. The 7 items loaded on the single factor team effectiveness (54.09 % explained variance). In addition, the internal consistency of the scale was high, $\alpha = .84$.

In addition to the team effectiveness items, a behavioral performance measure was used to triangulate the performance measure. During the survey, participants were asked to estimate the percentage of returned criminal records by the PPS (percentage of rework) in their own investigation team. By means of the question: *'Estimate the percentage of criminal files that are sent back by the PPS to your own investigation team due to errors or inaccuracies.'*

Intra team learning factors

Psychological safety

Psychological safety was measured, based on five items from Van der Bossche et al. (2006). Example items were: *'It is safe to take a risk in this crime investigation team'* and *'Making mistakes in crime investigation team, it is often held against you.'* (reversed item). The internal consistency of the scale was sufficient, $\alpha = .75$.

Team potency

The team potency scale consisted of four items based on Sargent and Sue Chan (2001). Example items were: *'This crime investigation team has confidence in itself.'* and *'This crime investigation team expects to be known as a high performing group.'* The internal consistency of the scale can be indicated as high, $\alpha = .87$.

Team identification

Team identification was measured with six items based on (Van der Vegt, 2005). Example items were: *'This crime investigation team suits me well.'* and *'I would rather work in a different crime investigation team.'* (reversed). Reliability of the scale was high $\alpha = .88$.

Inter team learning factors

Boundary spanning leadership

Leadership boundary leadership was measured with six items adapted from Ancona and Caldwell (1992). Each component of boundary spanning leadership, ambassador activities, task coordinator activities and scout activities, contained two items. For each component the two items with highest factor loading revealed in the research of Ancona and Caldwell (1992) were selected, all above .66. Example items were: *'Our team leader(s) absorb(s) outside pressure from teams of the PPS on this crime investigation team, so it can work free of interference.'* (Ambassadors activities), *'Our team leader(s) coordinate(s) work activities with teams of the PPS.'* (Task coordinator activities), *'Our team leader(s) contact(s) on a regular*

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bases teams of the PPS to be informed on new developments in criminal law.' (Scout activities).

In order to inspect the factor structure of the multi-dimensional concept of boundary spanning, an exploratory factor analysis was performed (using principal components analysis (PCA) with oblimin rotation in SPSS). The factor loadings should be higher than .30 and they should clearly discriminate between the factors in relation to other factors (difference > .10) (Field, 2009). The exploratory factor analysis revealed that the 6 items loaded on one single factor (67.30 % explained variance). Therefore, it was decided to make no distinction between the three components of boundary spanning behaviour and include the items into one concept. The internal consistency of the boundary spanning scale in this research can be indicated as high, $\alpha = .90$.

Goal and task interdependency

For measuring goal and task interdependency, Truijen's (2012) interdependency scale was used. The scale consisted of four items on goal interdependency and three items on task interdependency. Example items were: *'If members of this crime investigation team reach their goals, it becomes easier for PPS teams to also reach their goals.'* (Goal interdependency), *'The quality of work of this crime investigation team influences the execution of tasks of members of the PPS team.'* (Task interdependency). Reliability of both scales were sufficient, goal interdependency $\alpha = .72$ and task interdependency, $\alpha = .82$.

Organisational factors

Organisational hierarchy

Organisational hierarchy was measured by a four items scale based on items by Schminke, Ambrose and Cropanzano (2000). Example items were: *'In this organization, I have to ask my coordinator before I do almost anything;'* and *'A person who wants to make his own decisions in the police organisation would be quickly discouraged'*. The internal consistency of the scale was high, $\alpha = .90$.

Organisational Learning climate

The organisational learning climate scale contained four items and was based on research of Yang (2003). Example items were: *'In the police organization, both work proceedings that are going as well, as well as work proceedings that need improvement will be evaluated.'* and *'In the police organization, time is taken to create plans for improvement.'* The internal consistency of the scale can be indicated as high, $\alpha = .81$.

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Organisational identification

The scale is based on four items by Ellemers, de Gilder and Van den Heuvel (1998). Example items were: *'The police organisation has a great deal of personal meaning for me'* and *'I think that I could as easily become attached to another organization as I am to the police organization.'* (reversed item). The reliability of the scale was sufficient, $\alpha = .74$ (Field, 2009).

Methods of analysis

The present study will use descriptive statistics and multilevel modeling to identify the relationship between the variables of the model. Descriptive statistics will be used to explore the overall structure of the data and to determine multi-collinearity of the data. The absence of multi-collinearity is a prerequisite for multilevel modeling and therefore must be ruled out (Field, 2009).

Subsequently, several multilevel models will be built to investigate the relationship between the various variables in the model. A multilevel analysis is useful because it can be used to model the two-level structure of Police officers within crime investigation teams (Hox, 2010). This specific statistical method allows for analyzing on the individual level, while taking into account the stratification (team level and regional level) present in the data of the survey (Hox, 2010; Field, 2009). In addition, analyzing on the individual level ensures the statistical power of the data in this research. Analyzing on the team level would affect the statistical power of the study and will have significant impact on the reliability of the statistical analyses of the research, with a drop in sample size from $N = 301$ to $N = 49$.

The multilevel structure in this research includes 301 individuals (at level-1) nested within 49 crime investigation teams (at level-2). The variation on the individual level (fixed factors) as well as the variation between teams (random intercepts) will be included in the statistical models. First, the relation between intra and inter team learning processes on team effectiveness rated by participants (hypotheses 1) will be investigated by means of a regression analysis. Using the mixed model analysis technique in SPSS to take into account the nested structure (individuals in teams) of the data. In addition, the influence of intra team level factors, inter team level factors and organisational level factors on intra and inter team learning processes (hypotheses 2, 3, 4) will be investigated by means of two additional mixed model regression analyses. The covariates; age, gender, level of education, police organisation tenure, investigation proceedings tenure and team tenure will be inspected to determine whether covariates should be included in the model, by means of a Pearsman' correlation coefficient (Field, 2009).

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4. Results

The aim of the study was to investigate the relationship between intra- and inter team learning processes and team effectiveness (hypotheses 1). In addition the influence of intra team level factors (e.g., psychological safety), inter team level factors (e.g., goal interdependence) and organisational level factors (e.g., organisational hierarchy) on intra and inter team learning processes were tested (hypotheses 2, 3, 4). Prior to the analyses, descriptive statistics (M, SD) and Pearson's correlations (r) between variables were calculated in order to investigate the applicability of multi-level analyses and determine potential effects of multi-collinearity on the model.

Descriptive statistics

Prior to the analyses means and standard deviations of the variables were inspected (see Table 2). On average all the variables scored on average above the midpoint of the scale ($M > 2.50$). This result shows that the variables of the research are in any case to some extent present in the teams or the organization. Notable is the fact that respondents scored higher on intra team learning processes compared to inter team learning processes. Which indicates that investigation officers are more involved in intra team learning processes compared to inter team learning processes. A paired sample t-test showed that these differences were significant and are attributable to change, see Table 3. In addition, the variable team identification scored on average relatively high, $M = 4.07$. Thus, despite the fact that investigation teams frequently change in terms of team composition and size, a high degree of commitment is, in general, observed in the teams. The behavioral effectiveness measure 'rework' was filled in by 268 of the 301 participants and showed a large distribution of the data varying from 0% to 75% ($M = 13.75$, $SD = 13.32$). Participants who did not fill in the performance measure indicated that they had no notion of the rework percentage in their team. Therefore it was decided to exclude this variable from the analyses. This result showed that crime investigators assess the amount of rework in the teams differently. In addition, many crime investigation officers in teams are not aware of the extent of the rework problem in their own teams.

In order to investigate the relationship between the variables of the model, the bivariate correlations were investigated by means of a Pearson's correlation coefficient. There was a significant correlation between team effectiveness and intra team learning processes ($r = .58$) and team effectiveness and inter team learning processes ($r = .36$). Which shows intra- and inter team learning processes are associated with increased team performances of teams. In addition, the correlations between intra team learning processes and intra team level factors, inter team level factors and organisational factors were

inspected. All intra team level factors, inter team level factors and organisational factors were significantly positively related to intra team learning processes ($p > .01$). With regards to the correlations between inter team learning processes and intra team level factors, inter team level factors and organisational factors, the same results were revealed. This demonstrates that these factors are indeed associated with an increase in team learning processes. In addition, potential multi-collinearity effects in the model were investigated by means of the Pearson's correlation coefficient. All correlations between the variables were below .80, which means multi-collinearity poses no threat in the model, based on the analysis criteria used by Boon et al. (2013). Finally, the covariates; age, gender, level of education, police organisation tenure, investigation proceedings tenure and team tenure were inspected to determine whether covariates should be included in the model, by means of a Pearson's correlation coefficient. The covariates did not reveal significant correlations with team performance and intra- or inter team learning processes, all covariates $p > 0.05$. Hence, it was decided to exclude the covariates from further analyses.

Table 2*Means, Standard Deviations, Cronbach's Alphas, and Correlations*

	N	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Age	301	39.59	11.72	(-)																
2 Police organisation tenure	300	16.48	11.72	.88**	(-)															
3 Investigation proceedings tenure	299	3.32	4.25	.41**	.44**	(-)														
4 Team tenure	292	2.35	3.43	.40**	.49**	.72**	(-)													
5 Team performance	301	3.68	0.54	.08	.04	-.04	-.02	1												
6 Intra team learning	301	3.82	0.56	.05	.01	.01	-.07	.58**	1											
7 Inter team learning	301	3.13	0.67	.07	.02	.02	-.06	.36**	.44**	1										
8 Team safety	301	3.87	0.62	-.04	-.04	-.08	-.14*	.54**	.70**	.38**	1									
9 Team potency	301	3.72	0.69	.06	.03	-.04	-.06	.69**	.66**	.43**	.65**	1								
10 Team identity	301	4.07	0.68	.12*	.19*	.04	-.01	.54**	.60**	.30**	.58**	.62**	1							
11 Goal interdependency	301	3.49	0.63	.17**	.09	.06	-.01	.36**	.37**	.60**	.35**	.35**	.30**	1						
12 Task interdependency	301	3.92	0.63	.04	-.02	.01	-.01	.14*	.21**	.27**	.20**	.13*	.18**	.47**	1					
13 Boundary spanning leadership	301	3.40	0.72	.05	.01	-.06	-.10	.39**	.46**	.40**	.40**	.44**	.33**	.41**	.25**	1				
14 Intergroup attitude	301	2.50	0.78	-.10	-.04	-.03	.04	.03	.08	-.075	.00	.02	.06	-.15**	-.01	.02	1			
15 Organisational hierarchy	301	2.71	0.82	-.06	-.08	-.03	.02	-.27**	-.28**	-.25**	-.28**	-.30**	-.19**	-.23**	-.09	-.19**	.03	1		
16 Organisational learning climate	301	3.15	0.68	.04	-.01	.08	.01	.31**	.36**	.39**	.25**	.29**	.15**	.31**	.06	.20**	-.06	-.30**	1	
17 Organisational identity	301	3.60	0.66	.03	.01	-.03	-.01	.19**	.29**	.19**	.14*	.22**	.19**	.23**	.20**	.22**	.03	-.21**	.26**	1

Note.

* $p \leq 0.05$, ** $p \leq 0.01$ **Table 3***Paired sample t test for intra and inter team learning processes*

	M	SD	t-value	df	P (two-tailed)
Intra team learning processes	3.83	.56	18.81	320	< 0,001*
Inter team learning processes	3.13	.68			

Note.

* $p \leq 0.05$

Multilevel modeling

In order to test the effects of intra- and inter team learning processes on team effectiveness (hypotheses 1) a multilevel model was built, using the mixed-modeling option in SPSS. The independent variables; intra team level factors, inter team level factors and organisational factors, were group mean centered into level 1 variables.

First, in order to reveal whether the nested structure of the data should be taken into account (individuals nested within teams) and thus to determine whether multilevel modeling analyses was needed, an empty model, including a fixed intercept was calculated (model 1). In addition the model was compared with an empty model including a random intercept (model 2). Based on the χ^2 likelihood ratio test, model 2 showed a better fit, indicating that a multilevel approach was necessary, see Table 4.

Subsequently we fitted a model with random intercepts. The factors intra and inter team learning were added as fixed factors to the model to investigate the impact of team learning on performance, taking into account intercept variance at the team level (model 3). Model 3 showed a better fit than model 2, indicating that intra team learning processes as well as inter team learning processes are significant predictors of self-rated team effectiveness in crime investigation teams. An interaction effect on intra and inter team learning in their relation to self-rated team effectiveness did not show a significant relationship. In addition, comparison of the beta values in the model revealed that intra team learning is the strongest predictor of team effectiveness compared to inter team learning, see Table 4.

In addition, an interaction effect on intra and inter team learning was tested. We fitted a model with random intercepts. The factors intra, inter team learning and their interaction were added to the model, taking into account intercept variance at the team level (model 4). Model 4 did not show a better fit than model 3, indicating that intra and inter team learning processes are distinctive processes, with each their own relationship to team effectiveness.

Finally, it was investigated whether the slopes of the independent variables (intra- and inter team learning processes) varied across teams. In order to do so, random slope variances were added to the model (model 5). Hence, in this model we examined whether the relationship between intra- and inter team learning processes and team effectiveness varied significantly across teams. The inclusion of a random slope did not result in a better fit of the model compared to model 4 and therefore model 5 was rejected. This result showed that the effects of intra- and inter team learning processes on team effectiveness did vary across teams, however the slope of these processes on self-rated team performance remained equal among the teams.

Overall, the multilevel models showed that intra team learning processes as well as inter team learning processes were significant predictors of team performances of crime

investigation teams, which means that hypotheses 1 can be confirmed. The absence of an interaction effect between intra and inter team learning, indicated that intra and inter team learning processes had both unique and independent effects on self-rated team effectiveness. Therefore both relationships should be analyzed separately. Finally, the beta values of model 3 showed that intra team learning was the stronger predictor of team effectiveness than inter team learning.

Table 4
Multilevel modelling for intra and inter team learning processes on team effectiveness

	χ^2	Model deviance	Beta	S.E.	t	df	<i>p</i>
Null model							
Fixed intercept (model 1)	486.64	-	3.68	.31	117.70	-	
Random intercept (model 2)	473.93	12.71*	3.70	.04	82.17	1	
Level 1 variables							
Fixed predictors (model 3)	343.29	130.64*				1	
Intercept			3.69	0.04	102.27	300.15	.00**
Intra team learning			.50	.05	9.81	300.68	.00**
Inter team learning			.10	.04	2.50	298.90	.01**
Fixed predictors (model 4)	434.05	.24				1	
Intercept			1.74	.63	2.75	297.74	.01**
Intra team learning			.42	.17	2.48	297.35	.01**
Inter team learning			.00	.21	.01	299.34	.99
Intra team learning * inter team learning			.03	.05	.49	298.29	.62
Random slope (model 5)	337.93	5,37				1	

Note.

* Significant model deviance

** $p < .05$

Intra team level factors, inter team level factors and organisational factors on intra team learning

A second multilevel model was built in order to test the effects of intra team level factors, inter team level factors and organisational factors on intra team learning processes (hypothesis 2, 3, 4). Prior to the analysis the independent variables were group mean centered into level 1 variables.

First in order to reveal the nested structure of the data and to determine whether multilevel modeling analyses was useful, a model without predictors including a fixed intercept was calculated (model 1) and compared with a model without predictors including a random intercept (model 2). Based on the χ^2 likelihood ratio test, model 2 showed a better fit, indicating that a multilevel approach was necessary, see Table 5.

Subsequently we fitted a model with random intercepts. The intra team level factors; psychological team safety, team potency, team identification, as the inter team level; task interdependency, goals interdependency and boundary spanning leadership, and the organisational factors; organisational hierarchy, organisational learning climate and organisational identification, were added as fixed factors to the model to investigate their impact on intra team learning, taking into account intercept variance at the team level (model 3). Model 3 showed a better fit than model 2, indicating that intra team level factors, inter team level factors and organisational factors can be significant predictors of intra team learning processes in crime investigation teams. The intra team level factors: psychological team safety, team potency and team identification showed a significant relationship to intra team learning. With regards to the inter team level factors boundary spanning leadership can be identified as a significant predictor to intra team learning. Finally, the organisational factors learning climate and organisational identification were significant predictors for intra team learning, see Figure 2 for an overview. The results indicate these factors are significant predictors of intra team learning. The Beta values show psychological team safety is the strongest predictor of intra team learning, followed by team potency and team identification, see Table 5. The factors task interdependency, goal interdependency and organisational hierarchy did not show a significant relationship.

Finally, it was investigated whether the slopes of the independent variables (intra team level factors, inter team level factors and organizational level factors) varied across teams. In order to do so, random slope variances were added to the model (model 4). Hence, in this model we examine whether the relationship between intra level team factors, inter level team factors and organisational level factors and intra team learning processes varies significantly across teams. The inclusion of a random slope did not result in a better fit of the model compared to model 3 and therefore model 4 will be rejected. This result shows that the effects of intra team factors, inter team factors and organisational factors on intra

team learning processes do vary across teams, however the slope of these factors on intra team learning processes is equal among the teams.

Overall, the results showed the intra team level factors; psychological team safety, team potency and team identification were significant predictors of intra team learning processes, and therefore hypotheses 2 can be confirmed. In addition, the inter team level factors; boundary spanning leadership were identified as significant predictors of intra team learning processes, which means hypotheses 3 can be confirmed. Finally, analyses revealed the organisational level factors: organisational learning climate and organisational identification were significant predictors of intra team learning processes, and therefore hypotheses 4 can be confirmed. The Beta values of the model show that psychological team safety, team potency and team identification are the strongest predictors of intra team learning processes compared with inter team level factors and organisational level factors.

Table 5

Multilevel modelling for intra team level factors, inter team level factors and organisational factors on intra team learning

	χ^2	Model deviance	Beta	S.E.	t	df	<i>p</i>
<hr/>							
Null model							
Fixed intercept (model 1)	504.60	-	3.68	.31	117.70	-	
Random intercept (model 2)	494.67	9.93*	3.70	.04	82.17	1	
<hr/>							
Level 1 variables							
Fixed predictors (model 3)	202.76	291.91*				1	
Intercept			3.83	.02	157.85	299..99	.00**
Psychological team safety			.35	.04	7.78	295.80	.00**
Group potency			.17	.04	4.00	299.24	.00**
Team identity			.13	.04	3.20	300.79	.00**
Goal interdependency			.03	.04	.79	300.95	.43
Task interdependency			.01	.04	.26	300.76	.79
Boundary spanning leadership			.08	.03	2.41	300.66	.01**
Organisational hierarchy			-.01	.03	-.28	300.47	.78
Organisational learning climate			.10	.03	2.97	300.62	.00**
Organisational identity			.08	.03	2.497	295.44	.01**
Random slope (model 4)	197.84	4.93				46	

Note.

* Significant model deviance

** *p* < .05

Inter team level factors, inter team level factors and organisational factors on intra team learning

A third multilevel model was built in order to test the effects of intra team level factors, inter team level factors and organizational level factors on inter team learning processes (*hypothesis 2,3,4*). Prior to the analysis the independent variables of the model were group mean centered into level 1 variables.

First, in order to reveal the nested structure of the data and to determine whether multilevel modeling analyses was useful, a model without predictors including a fixed intercept was calculated (model 1) and compared with a model without predictors including a random intercept (model 2). Model 2 did not show a better fit, indicating the nested structure of the data did not affect the relationship of intra team level factors, inter team level factors and organizational level factors on inter team learning processes. Indicating a multilevel approach was not necessary (Hox, 2010). In order to investigate the relationship between the various factors on inter team learning processes, a multiple linear regression analyses was conducted. Which was useful to explore the relationship between various dependent variables on a single independent variable (Field, 2009).

Overall, 46.1% of the variance of inter team learning processes was explained, see Table 6 for an overview. According to the intra team level factors *team potency* significantly and positively predicted inter team learning processes. Secondly, the inter team level factors *boundary spanning leadership* and *goal interdependency* both significantly predicted inter team learning. Such that more boundary spanning and/ or goal interdependency was associated with higher inter team learning levels. Finally, the organisational level factor *organisational learning climate* showed a significant relationship with inter team learning processes. De analyses showed that the factor organisational learning climate was associated with higher inter team learning levels. The Beta values of the model showed that goal interdependency was the strongest predictor of inter team learning processes compared with the other factors. Finally, the factors, psychological team safety, group identification, task interdependency, organisational hierarchy and organisational identity did not show significant relationships, see Table 5 for an overview.

Overall the results showed that the intra team level factor; group potency was a positive significant predictor of inter team learning processes. According to intra team learning processes, all the intra team level factors were related to intra team learning processes. Therefore intra team level factors more stronger positive related to intra team learning processes compared to inter team learning processes, and hypothesis 2 can be confirmed. In addition, the inter team level factors; goal interdependency and boundary spanning leadership are identified as positive significant predictors of inter team learning processes. While with regard to intra team learning processes only boundary spanning leadership was

identified as a significant positive predictor of intra team learning processes, therefore hypothesis 3 can be confirmed. Finally, the analyses revealed the organisational factor: organisational learning climate is a significant predictor of inter team learning processes. With regard to intra team learning processes the organisational learning climate and organisational identity was identified as significant predictors of intra team learning processes, therefore hypothesis 4 can be confirmed.

Table 6
Multiple regression analysis for intra team level factors, inter team level factors and organisational factors on inter team learning

	B	SE (B)	Beta	t	p
Constant	0.03	0.33		0.08	0.94
Psychological team safety	0.05	0.07	0.04	0.67	0.50
Team potency	0.14	0.06	0.15	2.28	0.02*
Team identity	-0.02	0.06	-0.03	-0.43	0.67
Goal interdependency	0.48	0.06	0.45	8.45	0.00*
Task interdependency	-0.02	0.05	-0.02	-0.33	0.74
Boundary spanning leadership	0.11	0.05	0.11	2.29	0.02*
Organisational hierarchy	-0.01	0.04	-0.01	-0.26	0.80
Organisational learning climate	0.18	0.05	0.17	3.69	0.00*
Organisational identity	0.00	0.05	0.00	-0.05	0.96

Note.
 * $p < .05$

5. Discussion

The conviction of a criminal act and the settlement of criminal case requires an accurate and precise processing of work proceedings throughout the entire criminal justice system. Collaboration, interaction and the optimization of work proceedings within and between teams are vital for the effectiveness of those teams. Specifically, such processes are important to prevent the duplication of work because the work does not meet the standards. This is indicated as rework. The reduction of rework is necessary to keep the quality of the criminal justice system up to standard. Therefore, this research has investigated whether intra and inter team learning processes within and between teams contribute to the self-rated team effectiveness of crime investigation teams of the Dutch National Police. In addition, the research identifies the influence of team learning antecedents on intra and inter team learning processes. The conclusions, based on the outcomes of this study, will be discussed in the following paragraphs.

Team learning processes and team effectiveness

In line with the bulk of research on team learning we found a positive relationship of intra and inter team learning processes on team effectiveness in crime investigation teams (Boon et. al, 2013; Bresman 2010; Chan et. al., 2003). The results showed that intra as well as inter team learning processes are useful to improve work proceedings in teams, and that those processes can be employed to improve the overall quality of the criminal justice system. However, based on theoretical as well as empirical research it is known that team learning processes do not automatically lead to team effectiveness. For example, the team composition and interaction between team members can counteract the aimed effects of team learning processes (Edmondson et. al, 2007). In addition, research of Bresman (2010) has shown that the relation between inter team learning processes on team effectiveness is dependent on the specific type of external learning processes in the teams. Summarizing the current study shows that, in line with the current literature, intra and inter team learning processes are expected to be predictive to team effectiveness. However, team learning processes and their related outcomes should not be taken for granted.

With regard to the effects of the team learning processes on team effectiveness, the research identified intra team learning processes as a significantly stronger predictor of team effectiveness compared to inter team learning. The results confirm the findings of Bresman (2010) suggesting that intra team learning processes are the strongest predictor of team effectiveness.

Although intra and inter team learning processes both showed a significant positive effect on team effectiveness, an interaction effect was not identified. This indicates that intra and inter team learning processes contain shared aspects. However, both need to be understood as two distinctive processes, with both independent effects on team effectiveness. Overall, the results stress the importance of both learning processes for the quality improvement of work proceedings in the criminal justice system. In addition, the results demonstrate that intra and inter team learning processes should be approached as unique processes and that team learning interventions should distinguish between both forms of team learning in order to receive optimal effects.

Antecedents of team learning processes

Intra team level factors. As expected, the intra team level factors were predictive to an improvement of intra team learning processes. Specifically, the factors: team psychological safety, team potency and team identification were identified in the research as the strongest predictors of intra team learning processes. These findings are in line with research of Boon et al. (2013) who identified team safety and group potency among police- and firemen as key factors for learning processes to occur. Specifically, our results demonstrate that a team atmosphere in which Police officers feel free to speak up, are confident about the potential of the team and identify with their team, are crucial for team learning processes within teams to occur. With regards to inter team learning processes, team potency was the only positive predictor of inter team learning processes. This result demonstrates that the level of confidence in the abilities of the own team is highly important for teams to be able to learn across the boundaries of the own team. These findings are in line with the review article of Marrone (2010) which stresses the importance of potency on boundary spanning behavior.

The intra team level factors were more strongly related to intra team learning processes compared to inter team learning processes. Psychological team safety and team identification both focus on processes in the own team. E.g. 'Do I feel safe in my team?' and 'Do I feel connected to my team?'. Whereas team potency focuses on the confidence of the team in their own abilities. The work proceedings in crime investigation teams are both applicable in the own teams and between teams. Therefore it is possible that this feeling of confidence can be applied to work processes within the team as well as between teams. This might be the reason why psychological team safety and team identification is only related to intra team learning processes while team potency is related to intra- as well as inter team learning processes.

Inter team level factors. In line with the current literature, the research has identified the intra team level factor boundary spanning leadership as positive predictor of intra team learning

processes (Dochey et. al., 2010; Marrone, 2010). In contrast, goal- and task interdependency did not show a significant relationship with intra team learning. With regard to inter team learning processes, boundary spanning leadership and goal interdependency were identified as a significant predictor, which is in line with the current literature (Dochey et. al., 2010; Marrone, 2010). While task interdependency showed a significant relationship on inter team learning processes.

Boundary spanning leadership showed a stronger relationship on inter team learning compared to intra team learning. These results identify the leader as a key figure for inter team learning processes. In the current study, boundary spanning leadership was composed of ambassador activities, task coordinator activities and scout activities (Ancoda & Caldwell, 1992). Therefore the results indicate that team leaders of the crime investigation teams should protect their team from pressure of the PPS. In addition team leaders should coordinate activities and work proceedings with the PPS. Also, they should be observant for useful information from the PPS for their teams. These activities will stimulate the retrieval of knowledge from other teams and in result enhance team learning processes within as well as between the teams.

In addition, goal interdependency was identified as the strongest predictor of inter team learning processes. This result showed that the feeling of goal interdependency between teams is the most important factor for inter team learning processes in crime investigation teams. Notable is the fact that goal interdependency is a significant predictor of inter team learning processes, while task interdependency is not. Indicating that not the specific feeling of interdependency of tasks (e.g. sharing the draft of a criminal file) but the feeling of a higher purpose (e.g. the conviction of a criminal) is of relevance to stimulate inter team learning processes in teams. A possible explanation could be the fact that the overall responsibility for the criminal cases and the assessment of the quality of the reports is attributed to teams of the PPS. Hence, crime investigation teams are task dependent on each other. However the PPS determines the content of the files. This might erase the feeling that the PPS is mainly responsible and could be a possible explanation for the absence of the relationship between task interdependency on inter team learning processes. With regard to the overarching goal of the teams, arresting criminals and giving them a proper conviction, crime investigation teams and PPS teams both have their field of expertise and proceeding which cannot be executed by the other party. This explains the relation of goal interdependency on inter team learning processes. Finally, it is notable that the feeling of goal interdependency is stronger related to inter team learning processes compared to boundary spanning behaviors of leaders. Indicating, not particular physical contact and interaction but mainly a feeling of unity and sharing overarching vision is important in crime investigation teams.

Crossing boundaries

Organisational level factors. With respect to the factors that stimulate team learning processes at the organisational level, the results of the current study showed that the organisational learning culture and organisational identification were positive predictors of intra team learning. In contrast, the organisational learning culture was the only positive predictor of inter team learning processes. Finally, organisational hierarchy did not show a significant relationship with both intra and inter team learning processes.

The findings on the organisational learning climate are in line with research of Edmondson (1999) who indicated the organisational environment as one of the key aspects of learning within teams. In addition, organisational identification revealed a significant relation to intra team learning processes but not on inter team learning processes. This might be explained by the fact that organisational identification relates to the Police organisation instead of the criminal justice system, including the Police and the PPS. The absence of significant effects for organisational hierarchy might be explained by the fact that investigation officers, indicated that hierarchy was not experienced in the teams. As a result the variable is not an influential antecedent of team learning processes in the teams. However, this result is notable due to the fact that the police organisation is known for its structure and rank differences (Shanahan, 2000). Although hierarchy is common in the Police organisation, crime investigation teams do not seem to experience this level of hierarchy.

During the analyses phase of the research, the nested structure of the data has been taken into account. Remarkable is the fact that the nested structure was present in the relationship between team learning antecedents and intra team learning processes. However the nested structure was not found in the relationship between team learning antecedents and inter team learning processes. This result raises the question whether inter team learning processes should be seen as a team process. Based on the results, it might be possible that inter team learning processes are individual processes instead of team activities.

In sum, the present study identified the differences in the antecedents of intra and inter team learning processes in crime investigation teams. Intra team level factors were more strongly related to intra team learning processes. In addition, inter team learning antecedents were more strongly related to inter team learning processes. Finally, organisational factors were more strongly related to intra team learning processes. The results show that intra as well as inter team learning processes enhance team effectiveness. In addition, the result show that intra and inter team learning processes can be influenced by factors on the intra team, inter team and organisational level.

Limitations and future research. The present study is based on the I-P-O model of Dochev et al. (2010). The I-P-O model is useful to frame and structure the complexity of the theoretical concept of team learning. In addition, the quantification of the behaviors is reflected in a high internal consistency of the scales and clear effects between the variables. Therefore the model is useful to study the concept of team learning in a practical setting such as the National Dutch Police organization. However, despite the fact that the approach was suitable to identify and investigate team learning processes in a practical setting such as crime investigation teams, the IPO framework can be identified as a merely static model which does not integrate the conceptual stratification of team learning provided by latest insights of the literature (Mathieu, Maynard, Rapp, & Gilson, 2008; Borrego, Karlin, McNair & Beddoes, 2013). For example, the interaction between the individuals and the team (emergent state) is identified as an important factor of team learning processes. In addition, the current literature acknowledges the adaptive nature of team learning processes over time. Which means that team learning processes should not be seen as a snapshot but should be investigated over time to fully understand the concept. However, the integration of these properties of team learning in applied research influences the practical feasibility. The challenge of applied research on intra and inter team learning is to find a balance between the integration of conceptual stratification of team learning in the model and, in addition, to be able to investigate both learning processes in a practical setting. Integrating individual learning processes and a longitudinal investigation period can contribute to find this balance.

With regard to the method of analysis of the study, the nested structure of the data was taken into account. In order to do so, the data of the current study was analyzed by means of a multilevel analyses (Hox, 2010). Here, the data on the individual level are analyzed while controlling for the nested nature of the data. The method was chosen because it was the best fit for the specific context of the research and nature of the data compared to other methods. When dealing with nested data, there are several options to analyze the data depending on the type of research questions (i.e., a focus on team processes, or in individuals in teams), the measurement level of the variables, and the ratio of participants relative to teams (i.e., power issues) on different levels. A common method of analysis to capture team processes is aggregation of the data to the team level. While functional when research questions are focused on the team level, and some variables are only available on the team level aggregation of data does imply a loss in richness of the data due to fact of the relatively small sample size compared to the amount of teams (in my case 301 participant in 49 teams). Therefore, aggregation of the data in this research was adverse compared to multi-level modeling. Taking into account these arguments, in this research I opted for analyzing data at the individual level, while taking into account the nested structure of the data (multi-level modeling). Consequently, the results of the study must be interpreted

as the individual perception of crime investigation officers on team learning processes, outputs and inputs. However, future research can add both levels in their analyses, provided that the power of research is ensured.

Despite the fact that a large sample group was invited to participate in the research, the study had a response rate of merely 13%. Although organisational research surveys are known for a relatively low response rate, this was less than the expected 36% on survey research based on research of Baruch & Holtom (2008). A low response rate will increase the likelihood of a response bias and therefore the results must be interpreted with caution. Further research should replicate the results among a representative sample in order to be able to generalize the results.

Finally, due to the absence of the performance measure 'rework', the study used single source data to investigate the research question. Despite the fact that many studies use single source data to reveal the relationship between team factors and team effectiveness, a method bias is at risk (MacKenzie, Podsakoff & Podsakoff, 2011). Triangulation of the data should be used to prevent the occurrence of the method bias. In addition, triangulation contributes to an increased understanding of the objective relationship between team learning processes and team effectiveness.

Practical implications. The present study illustrated the added value of intra and inter team learning processes for effectiveness of teams in the criminal justice system. It is through the applied nature of the research that the results are directly applicable into practice. In order to aim an improvement of work processes in crime investigation teams and to reduce the amount of rework, the enhancement of team learning processes within and between teams is highly recommendable. The results of the study provide the basis for practical advice for the enhancement of the learning processes. The study shows a clear distinction between intra and inter team learning processes and their related antecedents. Therefore, it is important the Dutch National Police as well as the PPS acknowledge both processes as distinctive and design different change interventions for the stimulation of intra and inter team learning processes.

In addition, the research revealed a positive relationship between intra, inter team learning processes and team effectiveness. This confirms the assumption that team learning processes contribute to a quality improvement of work processes in the Dutch criminal justice system. However, with regard to team effectiveness it is noteworthy that the behavioral effectiveness measure 'rework' did not reveal uniform answers. Many participants indicated they estimated the percentage of rework in their team. This result showed that team members of crime investigation teams do not have insight in the percentage rework caused by their own team. In order to address the problem of rework and improve work

processes in crime investigation teams, it is advisable that Police officers receive insight in their own performance. In addition they should receive constructive feedback about their work. Insight into their own performance will help Police officers to reflect on their own work and adjust and improve their work proceedings. Therefore, performance measures are necessary to identify under what circumstances rework in teams occurs and how it can be reduced. Finally, the results of this study should be used to design change interventions in the teams to enhance intra as inter team learning processes in crime investigation teams. It is expected that such interventions will contribute to the effectiveness of those teams and reduce the amount of rework within teams. This will improve the overall quality of the criminal justice system and will do justice to the victims of criminal acts in the Netherlands.

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Appendix 1, Survey

Welkom bij het onderzoek "Leren en samenwerken binnen VVC-teams".

Dit onderzoek gaat over leren op de werkvloer, bijvoorbeeld tijdens de briefing of tijdens een gesprek in de koffiepauze. Leren op de werkvloer blijkt vaak krachtiger te zijn dan leren in een klaslokaal zoals bijvoorbeeld tijdens een cursus.

Om inzicht te krijgen in dit onderwerp wil ik u, als medewerker van een VVC-team (Veel Voorkomende Criminaliteit), vragen om deze vragenlijst in te vullen. Er zullen vragen gesteld worden over leren binnen uw team, zoals het geven van feedback en het delen van kennis.

Het invullen van de vragenlijst duurt maximaal 15 minuten, u zult merken dat de vragen vrij vlot in te vullen zijn. Denkt u niet te lang na; er zijn geen goede of foute antwoorden. Soms lijken vragen op elkaar, toch wil ik u vragen alle vragen te beantwoorden, om betrouwbare uitspraken te kunnen doen over de gegevens.

Ik zal in deze vragenlijst om uw eenheid, district en naam uw VVC-team vragen. Dit doe ik om later de gegevens van u en uw teamleden bij elkaar te kunnen voegen. Uw antwoorden worden anoniem verwerkt en alle gegevens zullen vanzelfsprekend strikt vertrouwelijk behandeld worden. Niemand anders dan de onderzoeker zal inzage hebben in de gegevens. Het uiteindelijke rapport bevat alleen informatie over groepsgemiddelden. Individuele antwoorden zijn niet te achterhalen.

Let op: Deze vragenlijst is voor medewerkers van het VVC-team!

Toestemming

Ik verklaar dat ik duidelijk ben ingelicht over de aard, methode en doel van het onderzoek. Ik weet dat de gegevens en de resultaten van het onderzoek alleen anoniem en vertrouwelijk aan derden bekend gemaakt zullen worden. Mijn vragen over het onderzoek zijn naar tevredenheid beantwoord.

Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Tijdens het onderzoek kan ik op ieder moment, zonder hiervoor een reden te geven, stoppen met het onderzoek.

Vink "akkoord" aan om toestemming te verlenen voor deelname aan dit onderzoek.

Akkoord

Als eerste wil ik u vragen een aantal algemene achtergrondvragen te beantwoorden.

1. In welke eenheid, district en basisteam bent u werkzaam?

Eenheid.....

District.....

Basisteam.....

2. Wat is uw geslacht?

Man

Vrouw

3. Wat is uw leeftijd?

4. Wat is uw hoogst voltooide opleiding?

Lager onderwijs

Middelbaar onderwijs

VBO

MAVO

HAVO

VWO

MBO

HBO

WO

5. Hoeveel jaren bent u werkzaam bij de politie?

(Geef een schatting wanneer u het exacte aantal maanden niet weet)

..... Jaar

.....Maanden

6. Hoeveel jaren voert u VVC werkzaamheden uit?

(Geef een schatting wanneer u het exacte aantal maanden niet weet)

..... Jaar

.....Maanden

7. Hoeveel jaren bent u werkzaam binnen uw huidige VVC-team?

(Geef u een schatting wanneer u het exacte aantal maanden niet weet)

..... Jaar

.....Maanden

8. Wat is uw huidige functie?

.....

9. Wat is uw huidige aanstelling binnen het team?

- Roulatie rechercheur
- Vaste rechercheur
- Anders namelijk:

.....

10. Hoe lang verwacht u nog in dit VVC-team te blijven werken?

- Ik verwacht nog maanden en jaren in dit VVC-team te werken. /
- Ik weet het niet.

11. Hoeveel uren werkt u gemiddeld per week?

- 0 tot 12 uur
- 12 tot 24 uur
- 24 tot 36 uur
- 36 uur of meer

12. Wie zijn de coördinatoren van uw VVC-team?

Geef de voor- en achternaam van uw coördinatoren.

.....

.....

.....

13. Wat is de status van uw functie met betrekking tot de reorganisatie?

Wat betreft mijn functie ben ik:

- een herplaatsingskandidaat
- een functievoller

U krijgt nu een aantal vragen over het werk binnen uw eigen VVC-team. Het gaat om de taken die u binnen uw team dagelijks uitvoert zoals het horen van getuigen, het uitkijken van camera beelden of het maken van een proces-verbaal of een dossier.

Geef aan in hoeverre u het eens bent met onderstaande stellingen. (1 = helemaal mee oneens; 5 = helemaal mee eens). Er zijn geen goede of foute antwoorden. Kruis het antwoord aan dat het eerste in u opkomt.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
<p>Wij bespreken met collega's in dit VVC-team hoe wij het werk doen.</p> <p>VVC-teamleden vragen elkaar om feedback.</p> <p>Wij overleggen in dit VVC-team met elkaar wat wij belangrijk vinden in het werk.</p> <p>Wij overleggen met elkaar aan welke eisen goed researchewerk moet voldoen volgens dit VVC-team.</p> <p>Fouten maken wordt gezien als nuttig, omdat het dit VVC-team helpt het werk te verbeteren.</p> <p>Een fout geeft dit VVC-team belangrijke informatie om een probleem te kunnen oplossen.</p> <p>De fouten die wij maken geven ons inzicht in hoe wij het werk kunnen verbeteren.</p> <p>Wij leren van de fouten die wij maken.</p> <p>Mensen in dit VVC-team delen hun kennis en expertise met elkaar.</p> <p>Wanneer VVC-teamleden unieke of nieuwe kennis bezitten om het werk te verbeteren, delen zij dit met andere VVC-teamleden in dit team.</p> <p>In dit VVC-team wordt er vrijwel geen informatie, kennis of vaardigheden uitgewisseld met elkaar.</p> <p>VVC-teamleden met veel kennis en ervaring, delen hun vakkennis met andere</p>					

VVC-teamleden in dit team.					
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De volgende vragen gaan over de sfeer binnen uw eigen VVC-team.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
<p>Wanneer je fouten maakt binnen dit VVC-team, wordt dat vaak tegen je gebruikt.</p> <p>Teamleden van dit VVC-team kunnen goed moeilijke zaken en problemen bespreken.</p> <p>Het is veilig om een risico te nemen in dit VVC-team.</p> <p>Het is moeilijk om andere VVC-teamleden in dit VVC-team om hulp te vragen.</p> <p>De vaardigheden en talenten van ieder in dit VVC-team worden gewaardeerd en benut.</p> <p>Dit VVC-team heeft vertrouwen in zichzelf.</p> <p>Dit VVC-team staat bekend als een goed presterend team.</p> <p>Dit VVC-team gelooft in haar eigen kracht.</p> <p>Dit VVC-team heeft het gevoel dat het alle uitdaging aankan.</p>					

De volgende vragen gaan over uw verbondenheid met uw VVC-team,

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
Ik identificeer mij met dit VVC-team. Dit VVC-team past goed bij mij. Ik vind het leuk om te werken voor dit VVC-team. Ik denk met tegenzin aan dit VVC-team. Soms zou ik liever werken in een ander VVC-team. Ik ben actief betrokken in dit VVC-team.					

De belangrijkste taak van een VVC-team is om de dossiervorming van delicten zo goed mogelijk vast te leggen zodat ZSM (zo spoedig mogelijk snelrecht) een zaak kan afhandelen. Het komt echter soms voor dat er fouten in een proces-verbaal of een dossier zitten of dat er dingen vergeten zijn. Dit zorgt ervoor dat een zaak onnodig vertraagd wordt. Daarnaast moet er extra tijd in een dossier of proces-verbaal gestoken worden, terwijl deze tijd ook aan andere (plank)zaken had besteed kunnen worden.

De volgende vragen gaan over de kwaliteit van de proces-verbalen en dossiers van uw VVC-team.

Geef aan in hoeverre u het eens bent met onderstaande stellingen door het antwoord aan te kruisen dat volgens u het beste van toepassing is, op dit VVC team.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
Dit VVC-team kan tevreden zijn met de kwaliteit van haar werk. De laatste tijd gaat de kwaliteit van het werk van dit VVC-team achteruit. ZSM klaagt over de kwaliteit van het werk van dit VVC-team. ZSM is tevreden met het werk dat dit VVC-team aflevert. Dit VVC-team behaalt haar doelen. Dit VVC-team werkt efficiënt. De kwaliteit van het researchewerk van dit VVC-team is goed.					

Ik ben erg benieuwd naar uw mening over de kwaliteit van proces-verbalen en dossiers van uw VVC-team.

Als u een inschatting zou moeten maken, hoeveel procent van de verzonden dossiers denkt u dat ZSM terugstuurt naar uw VVC-team wegens fouten of onvolledigheden (ook wel rework genoemd)?

Schatting van het percentage rework van dit VVC-team:

.....%

Wat zou er volgens u moeten gebeuren om dit percentage te verminderen en de kwaliteit van proces-verbalen en dossiers te verbeteren?

(Wanneer u denkt dat er geen verbeteringen nodig zijn, geef aan waarom u tevreden bent over de kwaliteit.)

De volgende vragen gaan over uw VVC-team en de samenwerking met ZSM. Het gaat over de manier waarop uw VVC-team samenwerkt met ZSM, maar ook bijvoorbeeld de verhoudingen tussen uw VVC-team en ZSM.

Geef aan in hoeverre u het eens bent met onderstaande stellingen
(1 = helemaal mee oneens; 5 = helemaal mee eens).

Er zijn geen goede of foute antwoorden. Kruist het antwoord aan dat eerste in u opkomt.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee oneens/ niet mee eens (3)	Mee eens (4)	Helemaal mee eens (5)
Wij bespreken met collega's van ZSM hoe wij het werk doen. VVC-teamleden vragen ZSM om feedback. Wij overleggen met ZSM wat wij belangrijk vinden in het werk. Wij overleggen met ZSM aan welke eisen goed researchewerk moet voldoen. Fouten maken wordt gezien als nuttig omdat het dit VVC-team en ZSM helpt het werk te verbeteren. Een fout geeft dit VVC-team en ZSM					

<p>belangrijke informatie om een probleem te kunnen oplossen.</p> <p>De fouten die we maken geven dit VVC-team en ZSM inzicht in hoe wij het werk kunnen verbeteren.</p> <p>Dit VVC-team en ZSM leren van de fouten die wij maken.</p> <p>Dit VVC-team en ZSM delen hun kennis en expertise met elkaar.</p> <p>Wanneer dit VVC-team of ZSM unieke of nieuwe kennis bezit om het werk te verbeteren, delen wij dit met elkaar.</p> <p>Tussen dit VVC-team en ZSM wordt er vrijwel geen informatie, kennis of vaardigheden uitgewisseld met elkaar.</p> <p>VVC-teamleden en ZSM-teamleden met veel kennis en ervaring delen hun vakkennis met andere leden van de VVC en ZSM.</p>					
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De volgende vragen gaan over de coördinatoren van uw VVC-team. Het gaat om de personen die uw VVC-team dagelijks aansturen en begeleiden tijdens het werk.

Geef aan in hoeverre u het eens bent met onderstaande stellingen.
(1 = helemaal mee oneens; 5 = helemaal mee eens).

Er zijn geen goede of foute antwoorden. Kruis het antwoord aan dat eerste in u opkomt.

De coördinatoren van ons team:

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
<p>Nemen voor dit VVC-team de druk vanuit ZSM weg, zodat het team rustig kan werken.</p> <p>Beschermen dit VVC-team tegen bemoeienissen van ZSM.</p> <p>Lossen problemen op in de samenwerking met ZSM.</p> <p>Stemmen onze werkactiviteiten af met</p>					

<p>ZSM. Zoeken regelmatig contact met ZSM over nieuwe ontwikkelingen in de strafrechtketen. Hebben goede contacten bij ZSM om informatie en kennis mee uit te wisselen over de strafrechtketen.</p>					
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In een normale werkweek spreek ik gemiddeld ... keer met ZSM:

- Minder dan 1 keer per week
- 1 keer per week
- 2 tot 3 keer per week
- Elke dag
- Meerdere malen op een dag

Onze coördinatoren spreken in een normale werkweek gemiddeld ... keer met ZSM:

- Minder dan 1 keer per week
- 1 keer per week
- 2 tot 3 keer per week
- Elke dag
- Meerdere malen op een dag

De volgende vragen gaan over de relatie tussen uw VVC-team en ZSM.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/ niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
De gemeenschappelijke doelen van dit VVC-team en het ZSM zijn duidelijk voor mij. (1)					
Ik weet precies wat de gemeenschappelijke doelen van dit VVC-team en het ZSM zijn. (2)					
Wanneer dit VVC-team haar doelen bereikt, wordt het voor ZSM gemakkelijker om ook hun doelen te bereiken. (3)					
Dit VVC-team en ZSM willen uiteindelijk hetzelfde doel bereiken. (4)					
Ons VVC-team en ZSM zijn het eens over wat kwaliteit betekent in ons werk. (5)					
Voor het uitvoeren van het werk hebben dit VVC-team en ZSM informatie van elkaar nodig. (6)					
Om het werk goed te kunnen uitvoeren, moeten wij, dit VVC-team, en ZSM samenwerken. (7)					
De kwaliteit van het werk van dit VVC-team beïnvloedt het werk van collega's bij ZSM. (8)					
Om dit werk goed te kunnen uitvoeren, moeten dit VVC-team en ZSM het werk afstemmen met elkaar. (9)					

De volgende vragen gaan over de verhoudingen tussen uw eigen VVC-team en ZSM.
 Reageer op de onderstaande stellingen door aan te geven of u de volgende eigenschap vindt passen bij:

- 1= Voornamelijk bij VVC-collega's
- 2= Meer bij VVC-collega's dan bij ZSM-collga's
- 3= Evenveel bij VVC-collega's als bij ZSM-collega's
- 4= Meer bij ZSM-collega's dan voor VVC-collega's
- 5= Voornamelijk bij ZSM-collega's.

Deze eigenschap past:

	Voornamelijk bij VVC-collega's. (1)	Meer bij VVC-collega's dan bij ZSM-collega's. (6)	Evenveel bij VVC-collega's als bij ZSM-collega's (2)	Meer bij ZSM-collega's dan bij VVC-collega's (3)	Voornamelijk bij ZSM-collega's (4)
Competent					
Bekwaam					
Vriendelijk					
Coöperatief					
Betrouwbaar					
Eerlijk					

De laatste vragen gaan over de organisatie waar u voor werkt, de politie.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
<p>Binnen de politie kan, zonder toestemming van een leidinggevende, weinig actie worden ondernomen.</p> <p>Iemand die binnen de politie zijn eigen beslissingen wil maken wordt snel ontmoedigd.</p> <p>Zelfs kleine zaken moeten gecheckt worden door iemand van hogerop.</p> <p>Ik moet vooraf toestemming vragen aan een leidinggevende, bij bijna alles wat ik doe.</p> <p>De politie is voor mij van persoonlijke betekenis.</p> <p>Ik voel me zeer betrokken bij de politie.</p> <p>Ik zou erg tevreden zijn als ik de rest van mijn carrière bij de politie zou blijven werken.</p> <p>Ik denk dat ik me net zo makkelijk thuis zou kunnen voelen bij een andere organisatie, als bij de politie.</p>					

De onderstaande stellingen gaan over leren op het werk, bij de politie.

	Helemaal mee oneens (1)	Mee oneens (2)	Niet mee eens/niet mee oneens (3)	Mee eens (4)	Helemaal mee eens (5)
Bij de politie wordt het als normaal gezien dat je van je fouten kan leren.					
Bij de politie wordt er tijd vrij gemaakt om te reflecteren op onze gezamenlijke doelen.					
Bij de politie wordt er tijd vrij gemaakt om plannen voor verbetering te maken.					
Bij de politie wordt er bekeken wat er goed gaat en wat er beter kan.					

Hartelijk dank voor uw deelname aan het onderzoek.

Mocht u vragen of opmerkingen hebben dan kunt u deze kwijt in het onderstaande tekstvak, vermeld in dit geval uw contactgegevens zodat ik contact met u hierover kan opnemen.

De resultaten zullen eind januari teruggekoppeld worden binnen uw eenheid.

Met vriendelijke groet,

Marie Louise ter Horst j.m.l.terhorst@student.utwente.nl

