

Leader's Warmth, Transformational Leadership and Effectiveness

Jakub Prochazka^{1, 2} and Martin Vaculik¹

¹ Department of Psychology, Faculty of Social Studies, Masaryk University, Brno, Czech Republic
Email: jak.prochazka@mail.muni.cz, vaculik@fss.muni.cz

Petr Smutny²

² Department of Corporate Economy, Faculty of Economics and Administration, Masaryk University, Brno, Czech Republic
Email: psmutny@econ.muni.cz

Abstract—This research study explores the relationship between Leader Warmth, Transformational Leadership, and various criteria of Leader Effectiveness. The data were collected through a four-month long management simulation game, which provided a standardized environment for our research. 184 CEOs of fictitious companies completed self-assessment questionnaires regarding their real and ideal warmth. Their Transformational Leadership, perceived Leader Effectiveness, and Leadership Emergence were evaluated on average by 18.15 followers of each CEO. Overall, the evaluation involved 3,340 followers. Group Performance was measured through the profitability of each company under the leadership of the CEO during the entire course of the simulation game. The study found no support for a relationship between Leader Warmth and Transformational Leadership and between Leader Warmth and three criteria of Leader Effectiveness (i.e. Group Performance, Leader Effectiveness and Leadership Emergence). The difference between a leader's ideal and real warmth relates, through Transformational Leadership, to the effectiveness of a leader when exploring all the different indicators of Leader Effectiveness. We assume that a leader who desires to be less warm than she actually is possesses a more clear perspective about the possible maladaptive aspects of Leader Warmth.

Index Terms—transformational leadership, leader effectiveness, warmth, ideal self, business simulation

I. INTRODUCTION

In the 1950s, Leary, Freedman, LaForge and their colleagues (e.g. [1], [2]) introduced the circular model of interpersonal traits (interpersonal circumplex). This model includes 16 interpersonal traits arranged into a circle around two major axes—the vertical axis of dominance and the horizontal axis of love [3]. The model was originally created especially for clinical practice and psychotherapy, but Leary also suggested its use for industrial management. While scholars' interest in the model has reemerged in the past sixty years (e.g. [4]–[9]), using the model in the area of management remained in the background of scholarly interest. This is a rather

unfortunate situation as interpersonal traits are defined “...as an attribute or adjective descriptive of the potentialities of an individual for interpersonal action” [1] and thusly can be related to work behavior and work performance more than general personality traits. Interpersonal traits play a role in interpersonal behavior, which is important for issues such as work teams, work relations or leadership.

This study focuses on an understanding of leadership. One influential theory of leadership is a trait-based leadership theory, which assumes the existence of so-called leader traits, i.e. personality traits associated with Leadership Emergence and Leader Effectiveness (e.g. [10], [11]). Among the interpersonal traits included in the interpersonal circumplex, ‘dominance’ has been the most researched [12]–[14]. Most attention concerning potential leader traits has been dedicated to the Big Five personality characteristics [15]–[19]. Out of the Big Five traits, according to the various meta-analyses, the best predictors of Leader Effectiveness seem to be ‘conscientiousness’, ‘extroversion’ and ‘agreeableness’ [20] or conscientiousness, extroversion, ‘openness’ and agreeableness [21]. Extraversion is, according to another meta-analysis, also the best predictor of Transformational Leadership, which is currently the most researched leadership approach and is also related to Leader Effectiveness (e.g. [22]). The Big Five traits of extraversion and agreeableness are closely linked to the interpersonal characteristics of dominance and ‘warmth’.

The authors of the frequently used questionnaire Big Five NEO-FFI, McCrae and Costa [23], identified extraversion and agreeableness with the major axes of the personality circumplex. Trapnell and Wiggins [24] found a strong positive correlation between extraversion and dominance and a moderately strong positive correlation between extraversion and ‘love’. In their research, a strong positive correlation was also found between agreeableness and love, and a moderately negative correlation between agreeableness and dominance. In the research of de Vries [25] extraversion and agreeableness, unlike the other Big Five traits, are linked to interpersonal characteristics, mostly with the interpersonal trait “warm-

agreeable" (warmth), which relates to the axis of love in the interpersonal circumplex. Next to dominance, warmth is another interpersonal characteristic that should be given more attention in the research of leadership.

The scientific study of the relationship between the interpersonal characteristic warmth and Leader Effectiveness has been rather underexplored. If Leader Effectiveness is linked to extraversion and agreeableness, which are both reflected in warmth, it can be assumed that warmth is also a predictor of leader effectiveness. The question is: why should warm leaders be more effective leaders? The answer to this question could be some type of leader behavior, which is caused by the warmth of a leader, and also related to Leader Effectiveness. This leader behavior could be Transformational Leadership.

A. *Transformational Leadership and Warmth*

An individual high in warmth is friendly, agrees with compromises, cooperates [3], is generous, caring, trusting and tries to please others [26]. According to Bass [27], Transformational Leadership relies on a charismatic leader and on the intrinsic motivation of her colleagues. It uses four basic tools: 'idealized influence', 'inspirational motivation', 'intellectual stimulation' and 'individualized consideration' (e.g. [27]-[29]). Intellectual stimulation is represented by behavior through which the leader increases the involvement of her followers in problem solving and increases their autonomy and proactivity [30]. Such behavior, in our opinion, requires the ability to cooperate, trust in followers and willingness to accept a compromise if the leader's opinion differs from the opinion of her followers. A leader high in warmth may therefore be a better candidate for the intellectual stimulation of her followers. Individualized consideration is represented by behavior that induces in the followers' feelings of their own importance for the team [30]. In order to achieve this, each leader has to provide clear evidence that each follower is for him a unique personality. The leader also has to be interested in her followers [31] and play the role of teacher as well as their coach [27]. Such behavior, in our opinion, requires a friendly attitude, care for the followers and trust in others. A leader high in warmth may therefore be better suited for individualized consideration and thus also for transformational approach in general.

Our hypothesis about the relationship between warmth and Transformational Leadership supports the research of de Vries [25], who carried out one of a few studies that used the interpersonal circumplex for research in the area of management. His study, conducted on a sample of students, concerned the examination of the relationship between interpersonal traits and leadership. He observed several relationships between interpersonal traits and transformational (charismatic) leadership. Out of all interpersonal traits, warm-agreeable was observed to be the best predictor of Transformational Leadership ($r = .65$). Transformational Leadership weakly correlated with those interpersonal traits which lie along love axis and thus correlate also with warmth. One weakness in de Vries' research is that the assessments of the

interpersonal characteristics of the leader and the leader's Transformational Leadership style were done by the same follower at the same time. The observed correlations between the individual variables may therefore be due to errors caused by the assessor, such as the tendency to overstate/ understate and the follower's personal attitude toward the supervisor. Another question is: to what extent is the evaluation of interpersonal traits by the follower a reliable indicator of the relationship between interpersonal traits and a leader's approach? The follower is able to evaluate only the external manifestations of interpersonal traits and therefore cannot take into account the internal experience of a leader, which is related with each trait, and which accompanies the interaction between the follower and the leaders. The follower evaluates a leader based on her own personal experience with the leader and ignores other interactions of the leader which could more reliably show whether the leader's external manifestations reflect the leader's permanent interpersonal traits or are rather a result of particular interactions in the dyad of leader-follower. The assessment of warmth by the followers is therefore, in our opinion, rather an evaluation of Leader Behavior rather than an assessment of leader's traits. When evaluating warmth and Transformational Leadership, each subordinate actually evaluates the same phenomenon twice. A more appropriate way of assessing warmth could therefore be a leader's self-assessment. This would also eliminate the problem caused by the fact that both the predictor and the predicted variable are assessed by one evaluator at one point. Different assessment of Transformational Leadership and warmth could result in a significant decrease in strength of the relationship between the studied variables. Even so, we hypothesize existence of relationship between leader's warmth and Transformational Leadership.

H1: Leader's warmth positively correlates with Transformational Leadership.

B. *Transformational Leadership as a Mediator of the Relationship between a Leader's Warmth and Leader Effectiveness*

Charismatic behavior (idealized influence) makes a transformational leader to be both a charismatic personality and one that the followers trust. A charismatic leader inspires the desire for them to follow her and comply with her ideas. Thanks to formulating an attractive vision (inspirational motivation) followers have interesting ideas in response. The leader is their role model, and they believe that together with the leader they can fulfill the vision of the work. The leader also gives them space to come up with their own suggestions and ideas directly and encourages the followers to engage in problem-solving (intellectual stimulation). Thus, they are able to work on their ideas and identify with their work. At the same time, the leader expresses her interest in each of the followers and allows them to realize their personal needs (individualized consideration). Due to this approach, the followers gain a sense of their own importance as well as the importance of their work. Leadership through the transformation process makes the

followers become passionate about a common cause and increases their intrinsic motivation [27]-[29] and subsequently the followers wish not only to meet the leader's expectations, but they want to excel in their performance [32]. Due to this result, Transformational Leadership relates to objectively measured group performance [33]-[36], the perception of the effectiveness of a leader by her superiors [16], [29], [30], [37], by her followers [28], [38], by an external evaluator [16], [39] and the leader herself [36], [40].

If the leader's warmth influences the degree of the leader's transformational approach, then warmth also influences, through Transformational Leadership, a leader's effectiveness as assessed through various indicators: the perception of leader by her followers (leadership emergence), the perceived leader effectiveness, as well as objectively measured performance of a group (group performance) which the leader leads.

H2: Transformational Leadership is a mediator of the relationship between a leader's warmth and Leader Effectiveness.

C. The Problem of an Over-Warm Leader

A part of all interpersonal traits may be also maladaptive characteristics which may contribute to interpersonal problems [26]. Warmth can lead to dysfunctional behavior as well. Individuals high in warmth may show excessive concern for others. "They try too hard to please others and are too generous, trusting, caring, and permissive in dealing with others" [41]. A leader with the maladaptive characteristic of over-warmth could seem to be soft, indecisive and inconsistent. Such a leader could potentially not be perceived as somebody whose vision should be followed. Some aspects of warmth could thus reduce the perceived level of the transformational approach of the leader by her followers, leadership emergence, perceived leader effectiveness, and as a result also group performance.

The perspective of interpersonal traits as being inclusive of maladaptive interpersonal characteristics suggests that the relationship between warmth, Transformational Leadership and Leader Effectiveness may not be linear. This non-linear relationship would mean that both the low- and high-efficiency warmth of a leader could decline if maladaptive characteristics were associated with very high warmth. We believe that, on average, a warm leader can manifest some of the listed maladaptive characteristics. Just as a person can show some desirable characteristics of warmth, she can also manifests undesirable characteristic related to warmth. A leader's effectiveness would thus depend on the leader's ability to reflect upon when her warmth leads to maladaptive behavior and when it would be more desirable to be less warm in that specific situation. The most effective, then, could be a leader who is quite warm but would desire to be less warm than she currently perceives herself to be. Thus, a leader that has a reflection that some of her warmth characteristics are undesirable. Such a leader would rather exhibit desirable

characteristics of warmth, would be also more transformative and more effective.

H3: Transformational Leadership is a mediator of the differences in relationship between leader's ideal and real warmth and leader effectiveness.

II. METHOD

A. Sample

The data were collected in the four-month long management simulation game, during which we watched CEOs of fictitious companies in a standardized environment. The management simulation game was attended by a total of 210 CEOs, of which 184 (88%) completed self-assessment questionnaires regarding their real and ideal warmth. Data obtained by 26 CEOs who did not complete the questionnaire were not included in the research analysis. Each CEO was evaluated by their followers who assessed the degree of her Transformational Leadership, leadership emergence and perceived leader effectiveness. Each CEO was rated on average by 18.15 ($SD = 2.86$) followers. Overall, the evaluation involved 3,340 followers (response rate was 91.13%). All 3,340 employees (followers) and 184 CEOs (leaders) were undergraduates at two Czech business schools. Their participation in the management simulation game was part of their curriculum. Most of the managers were men (77 %).

B. Management Simulation Game

The management simulation game is a long term simulation of the auto market, which is a part of courses at two business schools in the Czech Republic. Teams of students represent the management of automobile companies that sell their products in a computer simulated market. Every company is led by a CEO who is elected from among company members shortly after the start of the game. The CEO and his or her followers are rewarded with fictitious money during the course of the game, which is later translated into the course grade at the end of the semester. The CEO has great powers that may be delegated to the followers. The CEO has the final word though, for example, when deciding on corporate strategy, organizational structure, the distribution of work, salary and financial bonuses, and during layoffs and recruitment. In the course of the game, players have a number of options through which they can affect the performance of their businesses. The game lasts seven rounds. In each round players decide on the number of cars produced in each round, optimize production costs, invest in research, determine the basic equipment of the automobile, create marketing documentation, create financial statements, make analyses of financial markets, and act on loans with banks.

Given the variety of tasks, it is necessary to involve as many students as possible in the operation of the business, motivate them, and coordinate their work. The management simulation game therefore mimics the environment of the real economy. The management simulation game is suitable for research as it a) allows for comparing similar teams and thus having comparable

data on their performance, b) allows for a reduction in the impact of external variables affecting research in real businesses (the teams are equally large, have the same history, the same default conditions, the same information available, and the team members have similar experience), c) allows access to data on the performance of individual companies and generates high returns when collecting data using questionnaires [42].

We collected data for the research over eleven semesters between the years 2008–2013. The students were informed in advance that the data will be used for research purposes. The followers were rewarded for completing questionnaires with fictitious money which counted slightly toward their final course grade. Data on the group performance of all 184 teams were obtained from the database of the Management Simulation Game.

C. Methods of Data Analysis

1) Warmth

To measure the leader's warmth, we used the ICL questionnaire designed by Leary, LaForge and Suczek (adjusted to Czech language by [43]). The questionnaire is a validated and frequently used translation of the questionnaire of interpersonal characteristics into Czech. Other questionnaires of interpersonal characteristics do not have a valid Czech translation.

The ICL has 8 scales (each consisting of two subscales) corresponding to eight interpersonal personality characteristics, each of which is measured via sixteen items. Items are in the form of adjectives in which each participant assesses to what extent each item describes him. It is therefore a forced choice between two options. One of the eight scales is the scale of warm-agreeable, by which each CEO (the leader) evaluates both her real warmth and the ideal warmth. During the standardization of the Czech population the scale of warm-agreeable reached borderline internal consistency $r_{tt} = .64 - .65$. The stability of the scale illustrating the test-retest reliability at an interval of ten days, reaches a good $\rho = 0.79$ [43].

As a part of a meeting at the end of the semester all the leaders were asked to assess their interpersonal skills using the ICL questionnaire. First, they assessed how they perceive themselves (real warmth) and, subsequently, how they would like to be (ideal warmth). Completion of the questionnaire was voluntary and they received a diagnostic report covering their profile of interpersonal characteristics as a reward for their participation.

The analyses were computed using gross scores of the scale warm-agreeable. The scale has 16 binomial items rated 0 or 1. The participant could obtain up to 16 points. In order to meet the criteria for mediation analysis, a standard deviation of the variables 'Warmth: Real' and 'Warmth: Ideal' had to be comparable to the standard deviations of other variables. We divided the value of number of points earned by the number of questions. The variables Warmth: Real and Warmth: Ideal may therefore achieve values of 0-1. By subtracting the value of the variable Warm: Real from variable Warmth: Ideal we obtained variable Warmth: Ideal - Real, which indicates

the difference between ideal and real warmth of the leader.

We also considered using the circular structure of the interpersonal model and calculate the leader's warmth from multiple scales, as these scales relate to the love axis of the circumplex. The authors [43] recommended a formula for these purposes: love = 'warm-agreeable' - 'cold-hearted' + 0.7 x ('gregarious - extraverted' + 'unassuming - ingenuous' - 'arrogant - calculating' - 'aloof - introverted'). However, Alden, Wiggins and Pincus [41] point out that the ICL scales have poor circumplex properties indicated by significant measurement gaps in two of the four quadrants of the circumplex. These gaps preclude using the ICL for circumplex measurement and diagnosis. Therefore, we used only a single scale of warm-agreeable that best expresses a leader's warmth.

2) Transformational leadership

The questionnaire MLQ [30], most commonly used to assess the level of Transformational Leadership [44], [45], does not have a validated Czech translation. We therefore used the original Czech questionnaire, whose items we tailored for the management simulation game based on the theory of Transformational Leadership. The questionnaire was constructed as a unidimensional one, as the individual MLQ scales highly correlate with each other [30], and the foreign translations of the MLQ and other questionnaires assessing Transformational Leadership do not often support the same five-factor structure of Transformational Leadership as shown in the MLQ [46]-[48].

Our questionnaire of Transformational Leadership consists of 12 items (with a three-point response scale (0; 1; 2)) concerning manifestations related to idealized influence, motivational inspiration, intellectual stimulation and individualized consideration. Based on the multilevel confirmatory factor analysis (CFI = 0.93; RMSEA = 0.04), the single-factor model meets the criteria recommended by Marsch and Hau [49], approaches the criteria set by Hu and Bentler [50], and has similar characteristics as Singh and Krishnan's [47] Indian scale of Transformational Leadership. The questionnaire is internally consistent (Cronbach's $\alpha = .93$).

At the end management simulation game, the followers electronically completed the questionnaire of Transformational Leadership along with questions related to Leader Effectiveness. The variable of Transformational Leadership is determined by the average sum of the responses of all followers of each leader on 12 items of the questionnaire divided by the number of questions in the questionnaire. It can therefore take values 0-2.

3) Leader effectiveness

Leader Effectiveness was assessed using the following three indicators—group performance, perceived leader effectiveness and leadership emergence. Group performance is an objective "performance criterion" [51] demonstrating the success of a particular team. Perceived leader effectiveness and leadership emergence represent "leadership perception criteria" [51]. The indicators of perceived leader effectiveness and leadership emergence were obtained by aggregating the evaluations of the

followers. To assess *leadership emergence*, we used the five questions with a three-point scale (0; 1; 2), which the followers responded in order to evaluate the leadership of their manager. These items were however not used to evaluate the success of their team. Leadership emergence was observed from five different perspectives: 1. how the manager acted in the role of the game that was inherently a leadership role; 2. whether the manager was perceived to be a leader in the course of the game; 3. whether the manager was perceived as someone who could be a leader elsewhere and under other circumstances; 4. whether the manager evoked respect; 5. whether working with the manager imparted a sense of pride. To assess perceived leader effectiveness, the followers answered two questions concerning the assessment of the impact of the manager on company effectiveness based on: 1. the efficiency of the outcome; and 2. process efficiency. Both sets of questions show internal consistency (*leadership emergence*: Cronbach's $\alpha = .96$, *perceived leader effectiveness*: Cronbach's $\alpha = .96$).

The variables of leadership emergence and perceived leader effectiveness were determined by the average sum of the responses of all followers of each leader on 12 items of the questionnaire divided by the number of questions in the questionnaire. It can therefore take values 0-2.

Group performance was measured through the profitability of each company under the leadership of the CEO during the entire course of the simulation game. All fictitious companies begin the simulation game in comparable conditions. Their performance can thus be assessed through profits during the seven game rounds.

Since the research was conducted in 11 different semesters, the game settings differed slightly in individual sessions. For instance, a different number of students participated in the game and thus the number of participating companies varied in each semester. Additionally, changes in some game parameters should have prevented the adopting and copying of successful models developed by other companies in the past semesters. Therefore, in order to calculate group performance, we compared the outcome of each company in management simulation game always with the results of other companies which participated in the game in the same semester. The variable *group performance* is determined by the accumulated profits of the company throughout the game, divided by the average cumulative gain of the other companies in the same semester; it thus reflects the achieved percentage of the average profits in the game.

III. RESULTS

Table I presents descriptive statistics and correlations between variables. Based on the table it is clear that Warmth: Real does not correlate with Transformational Leadership. We therefore reject the hypothesis H1 that concerned this relationship. Warmth: Real does not correlate with any of the indicators of Leader Effectiveness. In order to perform the mediation analysis, a traditionally used procedure proposed by Baron and

Kenny [52] was employed, consisting of three regression analyses and a subsequent test of the indirect effect. Baron and Kenny considered the following important criteria for the mediation effect to be significant: relationships between the independent variable and the mediator, between the mediator and the dependent variable, and between the independent variable and the dependent variable. Although Baron and Kenny and many other researchers have until now (based on their instruction) considered the relationship between the independent and dependent variable as a condition for the existence of an indirect effect through the mediator, later studies have shown that mediation can still be established even without this relationship [53]. This ability to establish mediation is especially relevant in the situation in which the relationship between the independent and dependent variable (also called 'overall effect') is insignificant due to the lower statistical power of the test of the overall effect than of the indirect effect test. This may be due to, for example, a higher reliability of the measurement of a mediator than measurement of dependent and independent variables, a stronger relationship between the independent variable and the mediator than between the independent variable and the dependent variable, the small sample size or small effect size (see [54]). If there are significant relationships between the independent variable and the mediator and between the mediator and the dependent variable, there may be, even in the absence of significant overall effect (i.e. the relationship between the independent and dependent variable), mediation. In the case of warmth, there is no significant relationship between the independent variable (Warmth: Real) and the mediator (Transformational Leadership), so we can reject the hypothesis H2 referring to the relationship between warmth and Leader Effectiveness mediated by Transformational Leadership.

As illustrated in Table I, neither a relationship between Warmth: Ideal - Real and Leadership Emergence, nor a relationship between Warmth: Ideal - Real and Leader Effectiveness was observed. Out of the factors related to leader effectiveness, the difference between the real and ideal self significantly correlates only with Group performance. Warmth: Ideal - Real correlates also with Transformational Leadership (see Table I and Table II), which is related to all three measured variables of Leader Effectiveness. Mediated effect of the difference between the leader's ideal and real warmth on Leader Effectiveness may therefore be reflected in Leadership Emergence, Perceived Leader Effectiveness and also Group Performance. Tables III, IV and V show a regression analyses in which the predictor (Warmth: Ideal - Real) entered the analyses in the first step and the mediator (Transformational Leadership) in the second step. The outcome variable was always an indicator of Leader Effectiveness. In all three cases, the addition of Transformational Leadership in the second step reduced the importance of Warmth: Ideal - Real as a predictor (initially negative value of β coefficient rises).

TABLE I. DESCRIPTIVE STATISTICS

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Warmth: real	0.55	0.19						
2. Warmth: ideal	0.53	0.15	.56**					
3. Warmth: ideal - real	-0.02	0.16	-.64**	.23**				
4. Transformational Leadership	1.39	0.22	.11	-.02	-.15*			
5. Perceived leader effectiveness	1.38	0.34	.05	-.05	-.11	.74**		
6. Leadership emergence	1.46	0.39	.02	-.04	-.07	.89**	.77**	
7. Group performance	1.7	0.52	.03	-.11	-.15*	.39**	.71**	.43**

Note: **p* < .05; ***p* < .01

TABLE II. REGRESSION: WARMTH → TRANSFORMATIONAL LEADERSHIP

	<i>B</i>	<i>SE</i>	<i>B</i>
(Constant)	1.39	0.02	
Warmth: Ideal - Real	-0.21*	0.10	-.15

Note: *R*² = .02*; **p* < .05

TABLE III. REGRESSION: WARMTH + TRANSFORMATIONAL LEADERSHIP → LEADERSHIP EMERGENCE

	<i>B</i>	<i>SE</i>	<i>B</i>
1. Step			
(Constant)	1.38	0.03	
Warmth: Ideal - Real	-0.15	0.16	-.07
2. Step			
(Constant)	-0.57	0.08	
Warmth: Ideal - Real	0.14	0.07	.07
Transformational Leadership	1.41**	0.05	.90

Note: *R*² = .01; ΔR^2 = .79**; ***p* < .01

TABLE IV. REGRESSION: WARMTH + TRANSFORMATIONAL LEADERSHIP → PERCEIVED LEADER EFFECTIVENESS

	<i>B</i>	<i>SE</i>	<i>B</i>
1. Step			
(Constant)	1.46	0.03	
Warmth: Ideal - Real	-0.27	0.19	-.12
2. Step			
(Constant)	-0.40	0.13	
Warmth: Ideal - Real	0.02	0.13	.01
Transformational Leadership	1.34**	0.09	.74

Note: *R*² = .01; ΔR^2 = .54**; ***p* < .01

This suggests that Transformational Leadership could truly be a mediator of the relationship between Warmth: Ideal - Real and the indicators of Leader Effectiveness.

The significance of the change in value β coefficient, and thus the significance of the so-called indirect effect,

was measured by a bootstrapping method using 5000 bootstrap samples. This is a relatively new method that replaces the original and still widely-used Sobel test recommended by Baron and Kenny [52]. However, the Sobel test does not possess sufficient power for small samples with less than 400 respondents [53], [55]. Due to our sample size, we therefore did not use the sample—not even for a comparison. To illustrate the effect size of the indirect effect, we used statistics κ_2 recently designed by Preacher and Kelly [56]. The advantage of this statistical method is its standardization and independence of sample size. The statistics κ_2 takes a value between 0 and 1. Values above 0.01 indicate a small effect size, values above 0.09 a medium effect size and values above 0.25 indicate a large effect size - the strong effect of mediation [56]. Based on the results of the mediation analysis, Transformational Leadership mediates the relationship between Warmth: Ideal - Real and Leadership Emergence, Perceived Leader Effectiveness and Group Performance. In the case of Group Performance, the mediation is rather weak; in terms of Perceived Leader Effectiveness, Transformational Leadership represents a moderate mediator; and in terms of Leadership Emergence it is a strong mediator (see Table VI). This result supports hypothesis H3 concerning the mediating relationship between the difference of leaders' ideal and real warmth and Leader Effectiveness

TABLE V. REGRESSION: WARMTH + TRANSFORMATIONAL LEADERSHIP → GROUP PERFORMANCE

	<i>B</i>	<i>SE</i>	β
1. Step			
(Constant)	1.6	0.04	
Warmth: Ideal - Real	-0.50*	0.24	-.15
2. Step			
(Constant)	-0.18	0.23	
Warmth: Ideal - Real	-0.31	0.23	-.09
Transformational Leadership	0.90**	0.16	.38

Note: *R*² = .02*; ΔR^2 = .14**; **p* < .05; ***p* < .01

TABLE VI. TEST OF INDIRECT EFFECT

	κ^2	BootSE	BootLLCI	BootULCI
Warmth: i-r \rightarrow TL \rightarrow Leadership Emergence	.26	.10	.04	.42
Warmth: i-r \rightarrow TL \rightarrow Perceived Leader Effectiveness	.16	.06	.02	.27
Warmth: i-r \rightarrow TL \rightarrow Group Performance	.06	.03	.01	.13

IV. DISCUSSION

We found no support for the hypothesis that the Leader Warmth is related to Leader Effectiveness. Based on the results, though a warm leader does behave more transformationally, she is not perceived by her followers to be a better leader, she is not a more effective leader, nor does the group she leads reach better results than a group lead by less warm leader. This is in contrast with the results of de Vries [25], who found a strong relationship between the leader's warmth and the strength of her transformational approach on a similar sample of undergraduates. The difference in results may be primarily due to a different method of data collection. In the research of de Vries, only one student assessed the leader's warmth and Transformational Leadership. In our study, the leader provided a self-report of her warmth, while her Transformational Leadership was rated an average of 18 subordinates. A greater number of evaluators ensure a higher reliability of a leader's Transformational Leadership. Conway and Huffcutt [57] in their meta-analysis indicate that the evaluation provided only by one evaluator has low reliability. To achieve sufficient reliability for the evaluation of a particular leader's trait, they recommend an evaluation executed by six, preferably ten evaluators (followers). Self-assessment of interpersonal traits in comparison to an evaluation by one evaluator allows a better depiction of the range of situations and interpersonal situations in which a trait can reflect a leader's emotional experience. The greatest difference between the two studies is probably due to the fact that deVries' research of the assessment of Transformational Leadership and warmth might have been affected by a third variable, specifically the subordinate's relationship to his leader. The followers could have evaluated the more popular leader as warmer and as more transformational than a leader who does not have a great popularity among the followers. The observed correlation could therefore be illusory. The results of our study show that warmth is not a particularly important leadership trait; that one needs to take into account other variables that might affect leadership and the leader. Those factors may be situational moderators, other leader traits or leader behaviors that serve as moderators or mediators of the relationship between the leader's warmth and effectiveness.

We found evidence for the hypothesis that the difference between a leader's ideal and real warmth relates, through Transformational Leadership, to the effectiveness of a leader when exploring different indicators of Leader Effectiveness. We assume that a leader who desires to be less warm than she is possesses a

more clear perspective about the possible maladaptive characteristics of leader warmth. This kind of leader is engaged in the relationships with followers, but also to see the drawbacks of the relational approach. Thanks to this perspective, the leader probably uses desirable characteristics associated with warmth, which helps her to build leader-follower relationship, which is important for Transformational Leadership and leader effectiveness. The relationship between the difference in the leader's ideal and real warmth and transformation leadership is rather weak. Therefore, also the overall effect of the difference in the leader's ideal and real warmth on Leader Effectiveness is weak and insignificant. The observed relationship is therefore another piece of knowledge important for understanding Leader Effectiveness, but we have not identified characteristics that should play a major role in the selection or development of leaders.

When interpreting the relationship between the difference in the leader's ideal and real warmth and Leader Effectiveness, one has to take into account that we did not find support for the hypothesis about the relationship between warmth, Transformational Leadership and Leader Effectiveness. One cannot say that the most effective leaders are those who are warmer and also wish to be less warm, as we originally hypothesized. The observed relationship should therefore deserve further investigation, which would help explain what unites leaders who want to be less warm. Is it their insight into the maladaptive effects that warmth could potentially lead to? In such a case it would be appropriate to use a method that would capture the degree of this insight or perspective. Or is there some other leader trait that are the culprit to leaders' desires to be less warm and this trait also relates to their transformational approach and effectiveness? A possibly explanatory trait is the interpersonal trait of dominance. The interpersonal trait of dominance does not correlate with warmth when taking into account the definition of interpersonal circumplex, but is related to the effectiveness of a leader [12]-[14]. It can be assumed that the dominant leaders perceive that some maladaptive warm characteristics lead to too permissive relationship with the followers and prevent them from maintaining direction and structure of the solution to a problem. In this case dominance could be a moderator of the relationship between warmth and leader effectiveness.

All the results should be interpreted with respect of the specifics of our sample, namely that the sample comprised of university students participating in a simulation game. This procedure allowed us to control the influence of external variables. External variables

(e.g., experience, education, age) are however present in the real work environment and can interact with the relationship between leader's warmth and Transformational Leadership and influence the effectiveness of a leader. From this perspective, our research possesses high internal validity, though external validity is affected by the specifics of the sample and methods. The sample and the simulation game environment are both unique in that the leaders and their followers had similar skills, similar experience, and that the leaders did not have strong extrinsic motivation (e.g., real money, a possibility of an actual termination of the employment contract). Tools increasing extrinsic motivation are more related to the transactional than to Transformational Leadership. In those fictitious companies, there was therefore more space to work with internal motives and those important for Transformational Leadership when compared to some real-world organizations. The results of this study can therefore be generalized to similar environments, especially those characterized by a small 'power distance', a leader with a low level of formal authority and limited in the use of instruments for external motivation. For a broader generalization of the research, the study should be replicated on a sample of real organizations.

The results of our study further refine the results of the research by de Vries [25]. We have shown that the previously identified relationship between warmth and Transformational Leadership may be the result of a poorly chosen design. Our study is innovative in that unlike previous research, it focuses not only on the relationship between warmth and leadership, but also the relationship between warmth and Leader Effectiveness. It shows that warmth is not a leader trait by itself, and that further investigation should take into account possible interactions with other variables. This is the first study that investigated the relationship between the difference in the leader's ideal and real warmth and Transformational Leadership and leader effectiveness. The study results suggest that this difference is indeed weak, but in the case of our population the difference was observed. Since no confirmation of hypothesis about the relationship between real warmth, Transformational Leadership and Leader Effectiveness was found, it is necessary to further investigate why the difference in the leader's ideal and real warmth influence how the leader is perceived and what causes the difference in the leader's ideal and real warmth. Our study is unique not only because of some of the results, but also due to the incorporation of a management simulation game that allows a high control of intervening variables, evaluation of leaders by a number of followers and a comparison of large number of leaders with similar teams.

ACKNOWLEDGMENT

This article is part of the research "Effective leadership: An integrative approach". The research has been funded by Czech Science Foundation (P403/12/0249).

REFERENCES

- [1] M. B. Freedman, T. F. Leary, A. G. Ossorio, and H. S. Coffey, "The interpersonal dimension of personality," *Journal of Personality*, vol. 20, no. 2, pp. 143-161, Dec. 1951.
- [2] R. LaForge, T. F. Leary, H. Nabossek, H. S. Coffey, and M. B. Freedman, "The interpersonal dimension of personality: II. An objective study of repression," *Journal of Personality*, vol. 23, no. 2, pp. 129-152, Dec. 1954.
- [3] T. Leary, *Interpersonal Diagnosis of Personality; A Functional Theory and Methodology for Personality Evaluation*, New York: Ronald Press Co., 1957.
- [4] J. S. Wiggins, "A psychological taxonomy of trait-descriptive terms: The interpersonal domain," *Journal of Personality and Social Psychology*, vol. 37, no. 3, pp. 395-412, Mar. 1979.
- [5] G. J. Meyer and J. R. Shack, "Structural convergence of mood and personality - evidence for old and new directions," *Journal of Personality and Social Psychology*, vol. 57, no. 4, pp. 691-706, Oct. 1989.
- [6] C. D. Hofstess and T. J. G. Tracey, "The interpersonal circumplex as a model of interpersonal capabilities," *Journal of Personality Assessment*, vol. 84, no. 2, pp. 137-147, Apr. 2005.
- [7] E. B. Ansell, J. E. Kurtz, R. M. DeMoor, and P. M. Markey, "Validity of the PAI interpersonal scales for measuring the dimensions of the interpersonal circumplex," *Journal of Personality Assessment*, vol. 93, no. 1, pp. 33-39, 2011.
- [8] M. Lorr and D. M. McNair, "An interpersonal behavior circle," *Journal of Abnormal Psychology*, vol. 67, no.1, pp. 68-75, July 1963.
- [9] B. De Raad, "The psycholexical approach to the structure of interpersonal traits," *European Journal of Personality*, vol. 9, no. 2, pp. 89-102, June 1995.
- [10] S. J. Zaccaro, "Trait-based perspectives of leadership," *American Psychologist*, vol. 62, no. 1, pp. 6-16, Jan. 2007.
- [11] S. J. Zaccaro, C. Kemp, and P. Bader, "Leader traits and attributes," in *The Nature of Leadership*, J. Antonakis, A. T. Cianciolo, and R. J. Sternberg, Eds. Thousand Oaks, CA: Sage, 2004, pp. 101-124.
- [12] R. G. Lord, C. L. De Vader, and G. M. Alliger, "A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures," *Journal of Applied Psychology*, vol. 71, no. 3, pp. 402-410, Aug. 1986.
- [13] R. J. Foti and N. M. A. Hauenstein, "Pattern and variable approaches in leadership emergence and effectiveness," *Journal of Applied Psychology*, vol. 92, no. 2, pp. 347-355, Mar. 2007.
- [14] J. A. Smith and R. J. Foti, "A pattern approach to the study of leader emergence," *The Leadership Quarterly*, vol. 9, no. 2, pp. 147-160, 1998.
- [15] K. Y. Ng, S. Ang, and K. Y. Chan, "Personality and leader effectiveness: A moderated mediation model of leadership self-efficacy, job demands, and job autonomy," *Journal of Applied Psychology*, vol. 93, no. 4, pp. 733-743, July 2008.
- [16] B. C. Lim and R. E. Ployhart, "Transformational leadership: Relations to the five-factor model and team performance in typical and maximum contexts," *Journal of Applied Psychology*, vol. 89, no. 4, pp. 610-621, Aug. 2004.
- [17] T. A. Judge and J. E. Bono, "Five-factor model of personality and transformational leadership," *Journal of Applied Psychology*, vol. 85, no. 5, pp. 751-765, Oct. 2000.
- [18] M. R. Barrick and M. K. Mount, "The big five personality dimensions and job-performance: A meta-analysis," *Personnel Psychology*, vol. 44, no. 1, pp. 1-26, Mar. 1991.
- [19] M. J. Neubert and S. Taggar, "Pathways to informal leadership: The moderating role of gender on the relationship of individual differences and team member network centrality to informal leadership emergence," *The Leadership Quarterly*, vol. 15, no. 2, pp. 175-194, Apr. 2004.
- [20] D. S. DeRue, J. D. Nahrgang, N. Wellman, and S. E. Humphrey, "Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity," *Personnel Psychology*, vol. 64, no. 1, pp. 7-52, 2011.
- [21] T. A. Judge, J. E. Bono, R. Ilies, and M. W. Gerhardt, "Personality and leadership: A qualitative and quantitative review," *Journal of Applied Psychology*, vol. 87, no. 4, pp. 765-780, Aug. 2002.
- [22] B. J. Avolio, "Promoting more integrative strategies for leadership theory-building," *American Psychologist*, vol. 62, no. 1, pp. 25-33, Jan. 2007.

- [23] R. R. McCrae and P. T. Costa, "The structure of interpersonal traits-Wiggins circumplex and the five-factor model," *Journal of Personality and Social Psychology*, vol. 56, no. 4, pp. 586-595, Apr. 1989.
- [24] P. D. Trapnell and J. S. Wiggins, "Extension of the interpersonal adjective scales to include the big five dimensions of personality," *Journal of Personality and Social Psychology*, vol. 59, no. 4, pp. 781-790, Oct. 1990.
- [25] R. E. de Vries, "What are we measuring? Convergence of leadership with interpersonal and non-interpersonal personality," *Leadership*, vol. 4, no. 4, pp. 403-417, Nov. 2008.
- [26] M. B. Gurtman and J. D. Balakrishnan, "Circular measurement redux: The analysis and interpretation of interpersonal circle profiles," *Clinical Psychology-Science and Practice*, vol. 5, no. 3, pp. 344-360, Sept. 1998.
- [27] B. M. Bass, "Does the transactional-transformational leadership paradigm transcend organizational and national boundaries?" *American Psychologist*, vol. 52, no. 2, pp. 130-139, Feb. 1997.
- [28] T. A. Judge and R. F. Piccolo, "Transformational and transactional leadership: A meta-analytic test of their relative validity," *Journal of Applied Psychology*, vol. 89, no. 5, pp. 755-768, Oct. 2004.
- [29] J. M. Howell and B. J. Avolio, "Transformational leadership, transactional leadership, locus of control, and support for innovation: Key predictors of consolidated-business-unit performance," *Journal of Applied Psychology*, vol. 78, no. 6, pp. 891-902, Dec. 1993.
- [30] B. J. Avolio and B. M. Bass, *Multifactor Leadership Questionnaire*, Redwood City, CA: Mind Garden, 2004.
- [31] M. Sashkin, "Transformational leadership approaches: A review and synthesis," in *The Nature of Leadership*, J. Antonakis, A. T. Cianciolo, and R. J. Sternberg, Eds. Thousand Oaks, CA: Sage, 2004, pp. 171-196.
- [32] D. A. Hofmann and L. M. Jones, "Leadership, collective personality, and performance," *Journal of Applied Psychology*, vol. 90, no. 3, pp. 509-522, May 2005.
- [33] R. T. Keller, "Transformational leadership, initiating structure, and substitutes for leadership: A longitudinal study of research and development project team performance," *Journal of Applied Psychology*, vol. 91, no. 1, pp. 202-210, Jan. 2006.
- [34] A. L. J. Geyer and J. M. Steyrer, "Transformational leadership and objective performance in banks," *Applied Psychology: An International Review*, vol. 47, no. 3, pp. 397-420, July 1998.
- [35] C. J. Resick, D. S. Whitman, S. A. Weingarden, and N. J. Hiller, "The bright-side and the dark-side of CEO personality: Examining core self-evaluations, narcissism, transformational leadership, and strategic influence," *Journal of Applied Psychology*, vol. 94, no. 6, pp. 1365-1381, Nov. 2009.
- [36] Y. Ling, M. H. Lubatkin, Z. Simsek, and J. F. Veiga, "The impact of transformational CEOs on the performance of small-to medium-sized firms: Does organizational context matter?" *Journal of Applied Psychology*, vol. 93, no. 4, pp. 923-934, July 2008.
- [37] J. Schaubroeck, S. S. K. Lam, and S. E. Cha, "Embracing transformational leadership: Team values and the impact of leader behavior on team performance," *Journal of Applied Psychology*, vol. 92, no. 4, pp. 1020-1030, July 2007.
- [38] P. Bycio, R. D. Hackett, and J. S. Allen, "Further assessments of Bass's (1985) conceptualization of transactional and transformational leadership," *Journal of Applied Psychology*, vol. 80, no. 4, pp. 468-478, Aug. 1995.
- [39] B. M. Bass, B. J. Avolio, D. I. Jung, and Y. Berson, "Predicting unit performance by assessing transformational and transactional leadership," *Journal of Applied Psychology*, vol. 88, no. 2, pp. 207-218, Apr. 2003.
- [40] J. M. Howell and K. E. Hall-Merenda, "The ties that bind: The impact of leader-member exchange, transformational and transactional leadership, and distance on predicting follower performance," *Journal of Applied Psychology*, vol. 84, no. 5, pp. 680-694, Oct. 1999.
- [41] L. E. Alden, J. S. Wiggins, and A. L. Pincus, "Construction of circumplex scales for inventory of interpersonal problems," *Journal of Personality Assessment*, vol. 55, no. 3-4, pp. 521-536, 1990.
- [42] P. Smutny, J. Prochazka, and M. Vaculik, "Learning effectiveness of management simulation game Manahra," in *Proc. 7th European Conference on Games Based Learning*, C.V. de Carvalho and P. Escudeiro, Eds. Porto: Academic Conference and Publishing International Limited, 2013, pp. 512-520.
- [43] J. Kožený and P. Ganický, *Dotazník Interpersonální Diagnostiky-ICL*, Bratislava: Psychodiagnostická a didaktická testy, 1976.
- [44] J. Antonakis, B. J. Avolio, and N. Sivasubramaniam, "Context and leadership: An examination of the nine-factor full-range leadership theory using the Multifactor Leadership Questionnaire," *Leadership Quarterly*, vol. 14, no. 3, pp. 261-295, June 2003.
- [45] J. Rowold and K. Heinritz, "Transformational and charismatic leadership: Assessing the convergent, divergent and criterion validity of the MLQ and the CKS," *Leadership Quarterly*, vol. 18, no. 2, pp. 121-133, Apr. 2007.
- [46] D. N. Den Hartog, J. J. Van Muijen, and P. L. Koopman, "Transactional versus transformational leadership: An analysis of the MLQ," *Journal of Occupational and Organizational Psychology*, vol. 70, no. 1, pp. 19-34, Mar. 1997.
- [47] N. Singh and V. R. Krishnan, "Transformational leadership in India: Developing and validating a new scale using grounded theory approach," *International Journal of Cross Cultural Management*, vol. 7, no. 2, pp. 219-236, Aug. 2007.
- [48] S. A. Carless, A. J. Wearing, and L. Mann, "A short measure of transformational leadership," *Journal of Business and Psychology*, vol. 14, no. 3, pp. 389-405, 2000.
- [49] H. W. Marsh and K. T. Hau, "Assessing goodness of fit: Is parsimony always desirable?" *Journal of Experimental Education*, vol. 64, no. 4, pp. 364-390, 1996.
- [50] L. T. Hu and P. M. Bentler, "Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives," *Structural Equation Modeling: Multidisciplinary Journal*, vol. 6, no. 1, pp. 1-55, 1999.
- [51] J. E. Dinh and R. G. Lord, "Implications of dispositional and process views of traits for individual difference research in leadership," *Leadership Quarterly*, vol. 23, no. 4, pp. 651-669, Aug. 2012.
- [52] R. M. Baron and D. A. Kenny, "The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations," *Journal of Personality and Social Psychology*, vol. 51, no. 6, pp. 1173-1182, Dec. 1986.
- [53] P. E. Shrout and N. Bolger, "Mediation in experimental and nonexperimental studies: New procedures and recommendations," *Psychological Methods*, vol. 7, no. 4, pp. 422-445, Dec. 2002.
- [54] D. D. Rucker, K. J. Preacher, Z. L. Tormala, and R. E. Petty, "Mediation analysis in social psychology: Current practices and new recommendations," *Social and Personality Psychology Compass*, vol. 5, no. 6, pp. 359-371, June 2011.
- [55] D. A. Kashy, M. B. Donnellan, R. A. Ackerman, and D. W. Russell, "Reporting and interpreting research in PSPB: Practices, principles, and pragmatics," *Personality and Social Psychology Bulletin*, vol. 35, no. 9, pp. 1131-1142, Sept. 2009.
- [56] K. J. Preacher and K. Kelley, "Effect size measures for mediation models: Quantitative strategies for communicating indirect effects," *Psychological Methods*, vol. 16, no. 2, pp. 93-115, June 2011.
- [57] J. M. Conway and A. I. Huffcutt, "Psychometric properties of multisource performance ratings: A meta-analysis of subordinate, supervisor, peer and self-rating," *Human Performance*, vol. 10, no. 4, pp. 331-360, 1997.



Jakub Prochazka was born in Czech Republic. He received the master degrees in Psychology (MA equivalent, 2008), in Finance (MSc equivalent, 2009) and the Ph.D. in Social Psychology (2013) at Masaryk University, Brno, Czech Republic. He works as an Assistant Professor at the Department of Psychology and at the Department of Corporate Economy at Masaryk University, Brno, Czech Republic. His research focuses on prosocial behavior and on leadership. Dr. Prochazka is a member of European Association of Work and Organizational Psychology and an international affiliate of American Psychological Association.



Martin Vaculik was born in Czech Republic. He received the master degree in Psychology (MA equivalent, 1998) and the Ph.D. in Social Psychology (2000) at Masaryk University, Brno, Czech Republic. He habilitated in Social and Work Psychology at Comenius University in Bratislava, Slovakia (2010). He works as an Associate Professor at the Department of Psychology, Masaryk University, Brno, Czech Republic. His research focuses on leadership, assessment centre and employee selection.



Petr Smutny was born in Czech Republic. He received the master degree in National Economy (MSc equivalent, 2001) and the Ph.D. in Management (2007) at Masaryk University, Brno, Czech Republic. He works as an Assistant Professor at the Department of Corporate Economy and as a vice-dean of Faculty of Economics and Administration, Masaryk University, Brno, Czech Republic. His research focuses on competency models, managerial skills and managerial simulation games.