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# 'Yes, I can!' The Development of Self-Efficacy for Negotiating during a Four-day Simulation

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## Introduction

Shortly after the United Nations (UN) organisation was established in 1945, the first Model United nations (MUN)-simulation already arose in March 1947. Since then, MUN-simulations have been implemented all over the world (Muldoon 1995). Above all, they are a well-appreciated type of simulation because of their clear real-world degree (Obendorf and Randerson 2013). Three important features characterize this verisimilitude. First, MUN-simulations always use cases, which put contemporary transnational issues on the agenda, e.g. nuclear proliferation and nuclear disarmament. Second, participants are allocated specific roles, such as representatives of a UN member state, a UN observer state/body or even non-state actors. When preparing for the simulation, this allocated role guides participant's research on the case-topic and other transnational and diplomatic issues of concern (Crossley-Frolick 2010; Obendorf and Randerson 2013). Third, during the simulation of an existing UN body, such as the Security Council or the General Assembly, participants apply the rules of debating procedure and practice diplomacy and public speaking (Obendorf and Randerson 2013).

This verisimilitude is necessarily limited because simulations need a certain fidelity to reality but they could confound the meaning participants get from them as they become increasingly complicated (Leigh and Spindler 2004; Dack et al. 2016). As a result, MUN-simulations vary in their duration: from several hours, days to semester- and year-long programmes (Obendorf and Randerson 2013), preferably depending on predefined learning objectives (Raymond and Usherwood 2013). Overall, two types of MUN-simulations can be distinguished. The first type is designed as an extra-curricular activity, often lead by students themselves (Obendorf and Randerson 2013). Usually, such a simulation program includes as well a formal (e.g. committee meetings) as an informal program (e.g. quiz). An example of a four-day extra-curricular simulation program can be found in Appendix 1. As a second type, MUN-simulations have also been implemented in international relations (IR) courses to teach about diplomacy and decision-making processes (Muldoon 1995). Overall, each type relies on participants acting out a role and performing their negotiating skills (McIntosh 2001; Obendorf and Randerson 2013). Both types of MUN-simulations are well spread and highly appreciated (Muldoon 1995; Obendorf and Randerson 2013). However, to what extent do they foster student learning? How do participants benefit from them?

Up till now, research results on effects of various simulations are rather promising and they seem to enhance student learning (Baranowski and Weir 2015, Crossley-Frolick 2010; Obendorf and Randerson 2013). However, an analysis of current research also shows that the field of political science teaching and learning is still struggling to capture simulation effects and to measure them in a methodologically sound way (Baranowski and Weir 2015; Duchatelet et al. 2017). As such, Baranowski and Weir (2015) argue for more pre- and post-test designed studies, preferably including a control group. Such designs would indeed illuminate the final outcomes of simulations more thoroughly. However, trying to grasp simulations' effects, we have to take into account that simulations are characterized by a certain real-world degree, human agency, and dynamism (Wright-Maley, 2015). Each time

the same simulation is conducted, different participants most certainly initiate different interactions and behaviour. Students' preparation, knowledge about the topic, personality combined with the assigned role, and reason to attend the simulation are only a few examples of individual student characteristics that easily influence the simulation process and its outcome (Brunazzo and Settembri 2014; Crossley-Frolick 2010; Duchatelet et al. 2017; Elias 2014). As a result, if we would continually keep on focusing on the relationship of student characteristics with specific learning outcomes, we would be oversimplifying the richness of simulations. Their complex and unpredictable nature implies that the process should be taken into account when trying to define stimulating and inhibiting factors for student learning. As such, this study aims at exploring this process for the first time.

For exploring this simulation process, we believe that focusing on negotiation skills might be a good starting point as such simulations draw upon students' negotiation skills. In general, negotiation can be defined as "a unique form of social interaction that incorporates argumentation, and information exchange into reaching agreements and working out future interdependence" (Roloff, Putnam and Anastasiou 2008:804). In political science teaching and learning literature the following skills are implicitly connected to negotiating: students' oral communication skills, their public speaking and also more complex negotiation skills, such as arguing and debating issues, acting out coalition formation and the art of diplomacy (Crossley-Frolick 2010; Elias 2014; Obendorf and Randerson 2013). Negotiating can lead to positive sum outcomes but also to situations of deadlock, when there's no outcome at all and negotiation movement might have ceased. In such cases, resiliency and the ability to bounce back from impasses are crucial (Spector 2006). Overall, these negotiation skills allow participants to engage in the simulation. Taking their importance into account, this study focuses on self-efficacy for negotiating as learning outcome. Self-efficacy is known to be a dynamic motivational construct that fluctuates over time (Cassidy and Eachus 2002; Tang et al. 2004), which makes it suitable for longitudinal research, and thus for exploring outcomes of the simulation process. In the next section the value of self-efficacy as a learning outcome, and its development and variation are discussed.

## Self-efficacy: an Important Learning Outcome

### *The Value of Self-Efficacy*

Self-efficacy is known to be an important affective learning outcome, which are feelings that arise during learning and that may affect the learning process in a positive, neutral or negative way (Vermunt and Vermetten 2004). The concept of self-efficacy can be defined as the individuals' beliefs that they are capable of learning and performing actions on designated levels (Bandura 1997). In an educational context, research generally focuses on academic self-efficacy, which refers to students' beliefs in their academic capabilities (Zimmerman 2000). Also, self-efficacy can apply to specific skills, such as writing skills (e.g. Pajares 2003) or subjects, such as science or mathematics (e.g. Chen and Usher 2013; Usher and Pajares 2009). As self-efficacy refers to self-evaluating one's own abilities, it plays a key role in motivating students to improve their competence (Schunk and Pajares 2005).

In education, self-efficacy is associated with student success by positively influencing academic achievement, students' motivation, and regulative learning outcomes (Bandura 1997; Pajares 1996; Richardson et al. 2012; Robbins et al. 2004; Van Dinther 2011; Zimmerman 2000). High self-efficacy promotes future skills development as it helps students to engage in tasks, to work harder, and to persist longer, especially when encountering difficulties (Bandura 1997; Bouffard-Bouchard et al. 1991; Zepke et al. 2010). Also,

resilience, which is an important capability when recovering from actual or anticipated setbacks, stalemates and deadlocks in the context of negotiations (Spector 2006), has been associated with a higher amount of self-efficacy (Cassidy 2015; Lee et. al 2013). The fact that it has been associated with a higher amount of self-efficacy implicates that self-efficacy for negotiating should be an important learning outcome for negotiation-based simulations because no matter which learning goals are predefined, participants need negotiation skills to be able to engage in the simulation.

### *The Development of Self-Efficacy*

Students develop self-efficacy by interpreting information primarily from four sources: by evaluating previous performances (mastery experience); by evaluating observational experiences provided by others, e.g. fellow students (vicarious experience); by appraising verbal judgements made by others e.g. feedback (social persuasion); and by interpreting their own emotional and physical state as a confidence signal when contemplating action (physical and emotional state; Bandura, 1997). Simulations might include these sources, and therefore foster self-efficacy. As such, participants might create several chances to perform and thus to master their negotiating skills. The social context might provide vicarious experiences, as participants continuously are engaging with and observing others. Engaging with others probably creates situations of social persuasion, in which participants are being coached by and receiving feedback from other delegates. How participants interpret their physical and emotional state when speaking in public and defending their position, might also influence their self-efficacy for negotiating. Although, this study does not focus on the presence of these sources, comparing them to the simulation context emphasizes why self-efficacy (for negotiating) is an important learning outcome and requires considerably more attention.

Within civic education research, results reveal that simulations enhance students' sense of political and internal efficacy, of which the latter is a type of political efficacy that can be defined as the confidence students have in their ability to make a difference in politics (Lay and Smarick 2006; Mariani and Glenn 2014). However, considering the importance of self-efficacy, the topic has, to date, not been given sufficient attention within the political science teaching and learning research field. Research in the field of medical and nursing education is particularly more elaborated. Such results have already shown that role play-simulations foster several sources of self-efficacy and enhance students' self-efficacy (Egenberg et al. 2016; Stroben et al. 2016; Watters et al. 2015).

### *Variation in Self-Efficacy*

*Experience* Focusing on self-efficacy variation, previous research shows that self-efficacy usually increases over time, depending on the amount of experiences (Cassidy and Eachus 2002; Tang et al. 2004). Within the domain of political science teaching and learning, a cross-sectional study of Duchatelet et al. (2017) reveals that students who have attended the same EU-simulation more than once show significant higher self-efficacy for negotiating than students who are attending the simulation for the first time. This suggests more experience in a similar simulation might result in higher self-efficacy. Also, findings of Mariani and Glenn (2014) suggest that simulations may generate some of the same benefits, including political efficacy, similar to participating in an internship. As such, they also connect an increase in self-efficacy to the amount of experiences, whether in a simulation, political internship or job experience.

*Gender* Gender is a characteristic worth taking into account when focusing on negotiating skills because, within an international negotiation simulation, female students have shown to

generate significantly different processes and outcomes than male participants (Boyer et al. 2009). With regard to self-efficacy in general, female students usually report lower self-efficacy, especially at higher academic levels. However, they perform as capable or even better than male students in various academic domains (Schunk and Pajares 2008; Van Soom and Donche 2014). Previous research, including self-efficacy and individual differences within a EU-simulation, shows male students report statistically significant higher self-efficacy for negotiating than female students (Duchatelet et al. 2017).

**This study**

The aim of this study is twofold. First, this study wants to uncover insights into the simulation process and its learning outcomes by longitudinally mapping self-efficacy for negotiating during a four-day simulation. Second, this study investigates related individual differences by taking gender and experience into account. As a result, three research questions (RQ) are central in this study: RQ1: How does self-efficacy for negotiating develop during the simulation process? RQ2: How do male and female students vary in their development of self-efficacy for negotiating? RQ3: How do students with a different amount of MUN-experience vary in their development of self-efficacy for negotiating?

Based on previous research findings, we expect that self-efficacy (*hypothesis 1*) will increase during the simulation process because students enhance their amount of negotiation experiences as the simulation proceeds (cf. Cassidy and Eachus 2002; Tang et al. 2004) and because the simulation as a social learning environment might include several sources of self-efficacy (cf. Egenberg et al. 2016; Stroben et al. 2016; Watters et al. 2015). As revealed in previous studies, we also expect that male students report higher self-efficacy (*hypothesis 2*) than female students (cf. Duchatelet et al. 2017; Schunk and Pajares 2008). Finally, we also expect students with more MUN-simulation experience to report higher self-efficacy (*hypothesis 3*) than students who attend the simulation for the first time because more experience relates to higher self-efficacy (cf. Cassidy and Eachus 2002; Duchatelet et al. 2017; Tang et al. 2004).

**Research Method**

***Sample***

This study was conducted during the 2016 edition of AntwerpMUN[1], a four-day Model United Nations-simulation organized by students, with support of the University of Antwerp (Belgium). This is an extra-curricular MUN-simulation: all participants attended the MUN-simulation voluntarily and had no previously defined teaching goals to attain. Data from twenty-seven undergraduate and graduate students was collected, which is 31% of all attendees. The sample was checked for outliers on the variables *Age* and *MUN-experience*. One outlier was detected on both variables and deleted. This resulted in a total sample of twenty-six students (*M*age = 20.19, *SD* = 1.79). The total sample comprised thirteen male and thirteen female students. Nineteen students attended such a MUN-simulation for the first time. Data was collected across four points in time: after the last negotiation session of each day. The last measurement was scheduled after the second-to-last measurement. Focusing on the simulation process, we wanted to measure how students evaluated their skills during the process, not biased by final negotiation outcomes. Exact timing of the measurements is shown in Appendix 1.

[1] For more information: http://www.antwerpmun.be/

### *Measures*

Self-efficacy was measured using the self-efficacy-scale of the short version of the Inventory of Learning Styles (ILS-SV; Donche et al. 2012). All items were to be answered in relation to negotiating on a 5-point Likert-scale (e.g. 4 items, 'I think I'm a good negotiator'). For all four measurements, internal consistency for self-efficacy was good with Cronbach's $\alpha$ ranging from .91 to .94.

### *Analysis*

As a first step in the analysis, mean values were calculated for self-efficacy for all four measurement-occasions. Prior to substantive analysis, descriptive statistics and correlations were analysed. Secondly, after checking the assumption of sphericity with Mauchly's test, potential mean level differences between the measures of self-efficacy were determined by applying repeated measures one-way ANOVA with Bonferroni post hoc comparisons of the means. It was then explored whether there is a trend or pattern in the data that allowed for testing our first hypothesis: self-efficacy was expected to increase. To explore the second hypothesis, the relationship between gender and self-efficacy was investigated using independent t-tests. Shapiro-Wilk tests and Levene's tests were used for checking the underlying assumptions of normal distribution and homogeneity. Similarly, for the third hypothesis, the relationship between MUN-experience and self-efficacy was explored using independent t-tests, after checking assumptions. Significant differences were further explored by means of repeated measures one-way ANOVA for relevant sub-samples; e.g., male and female students.

## Results

First, descriptive statistics and correlations for the different self-efficacy measurements were checked (Table 1). The results revealed that the mean for self-efficacy was the lowest for the first measurement and the highest for the last measurement. Relatively speaking, students showed the most variation in their self-efficacy for negotiating on the third day. All measurements correlated moderately to highly with each other, and all of them correlated the highest with the last measurement.

**Table 1** Descriptive statistics and Pearson's correlations for Self-Efficacy

| | *M* | *SD* | SE1 | SE2 | SE3 | SE4 |
|---|---|---|---|---|---|---|
| SE1 | 2.96 | .84 | 1 | | | |
| SE2 | 3.35 | .83 | .70*** | 1 | | |
| SE3 | 3.32 | .87 | .45* | .68*** | 1 | |
| SE4 | 3.40 | .83 | .74*** | .77*** | .70*** | 1 |

* = $p < .05$, ** = $p < .01$, *** = $p < .001$

By means of repeated measures one-way ANOVA the development of self-efficacy (RQ1) was explored. Mauchly's test indicated that the assumption of sphericity had not been violated ($\chi^2(5) = 9.25$, $p = .100$). The results show that there was a significant effect for time on self-efficacy for negotiating ($F(3,75) = 4.53$, $p = .006$, $\eta^2_{partial} = .15$). Post hoc tests using

the Bonferroni correction revealed a significant increase of self-efficacy between day one ($M$ = 2.96) and day two ($M$ = 3.35, $p$ = .033). Also, there was a statistically significant difference between the reported amount of self-efficacy for negotiating on day one ($M$ = 2.96) and day four ($M$ = 3.40, $p$ = .005). Figure 1 presents the development of self-efficacy.

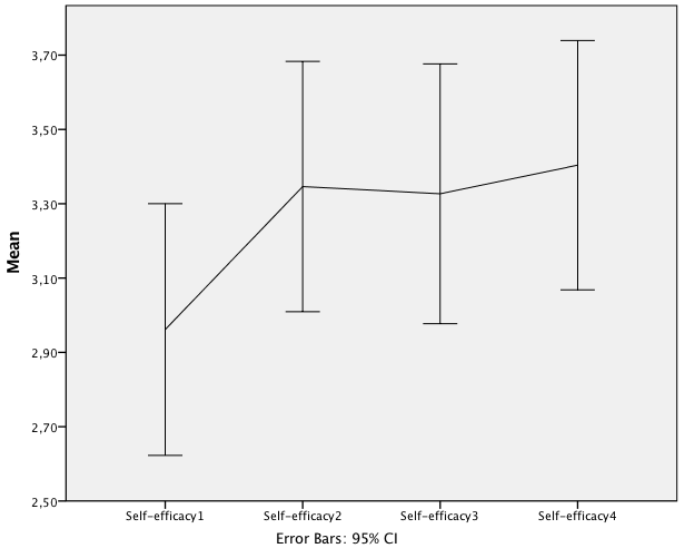


**Fig. 1** The Development of Self-Efficacy for Negotiating during a Four-day Simulation

To explore the relationship between gender (RQ2) and experience (RQ 3) with regard to self-efficacy, we conducted independent t-tests[2] (Table 2). Male students scored consequently higher than female students for self-efficacy for negotiating. Moreover, results show a statistically significant very large difference on the first (Cohen's $d$ = .95) and last day (Cohen's $d$ = 1.10) of the simulation. Also, students who attended a MUN-simulation for the first time, scored consequently lower than students who had already attended more than once. However, none of these results revealed a statistically significant difference.

**Table 2** Results of Independent t-tests for Self-Efficacy and Gender, and MUN-experience.

| | | | | | Day 1 | | |
|---|---|---|---|---|---|---|---|
| | *Mean* | *SD* | *N* | *df* | *t* | *p* | *Cohen's d* |
| Gender | | | 26 | 24 | -2.43 | **.023** | .95 |
| Male | 3.33 | .69 | | | | | |
| Female | 2.60 | .84 | | | | | |
| MUN-experience | | | 26 | 24 | -.93 | .362 | .40 |
| 1 year | 2.87 | .84 | | | | | |
| > 1 year | 3.21 | .85 | | | | | |
| | | | | | Day 2 | | |
| | *Mean* | *SD* | *N* | *df* | *t* | *p* | *Cohen's d* |
| Gender | | | 26 | 24 | -1.84 | .077 | .72 |
| Male | 3.63 | .88 | | | | | |
| Female | 3.06 | .70 | | | | | |
| MUN-experience | | | 26 | 24 | -.97 | .343 | .44 |

[2] Shapiro-Wilk tests and Levene's tests were used for checking the underlying assumptions of normal distribution and homogeneity, which were not violated.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 year | 3.25 | .84 | | | | | |
| > 1 year | 3.61 | .81 | | | | | |
| | | | | | Day 3 | | |
| | *Mean* | *SD* | *N* | *df* | *t* | *p* | *Cohen's d* |
| Gender | | | 26 | 24 | -1.64 | .114 | .64 |
| Male | 3.60 | .76 | | | | | |
| Female | 3.06 | .91 | | | | | |
| MUN-experience | | | 26 | 24 | -.74 | .467 | .35 |
| 1 year | 3.25 | .92 | | | | | |
| > 1 year | 3.54 | .70 | | | | | |
| | | | | | Day 4 | | |
| | *Mean* | *SD* | *N* | *df* | *t* | *p* | *Cohen's d* |
| Gender | | | 26 | 24 | -2.80 | **.010** | 1.10 |
| Male | 3.81 | .68 | | | | | |
| Female | 3 | .79 | | | | | |
| MUN-experience | | | 26 | 24 | -1.17 | .256 | .92 |
| 1 year | 3.29 | .82 | | | | | |
| > 1 year | 3.71 | .85 | | | | | |

Gender variation was further explored by conducting repeated measures one-way ANOVA on separate samples for male and female students, respectively. Checking the sample of male students for the assumption of sphericity, Mauchly's test indicated that this had not been violated ($\chi^2(5) = 9.66$, $p = .087$). The results show that there was a significant effect for time on self-efficacy for negotiating ($F(3,36) = 5.14$, $p = .005$, $\eta^2_{partial} = .30$). Post hoc tests using the Bonferroni correction revealed a significant increase of self-efficacy between day one ($M = 3.33$) and day four ($M = 3.81$, $p = .003$). This means that, on average, male students show significantly stronger beliefs in their negotiation skills on the last negotiation day, compared to the first day of the simulation. Also checking the sample of female students for the assumption of sphericity, Mauchly's test indicated that this had not been violated ($\chi^2(5) = 7.99$, $p = .158$). Here, the results show that there was no significant effect for time on self-efficacy for negotiating ($F(3,36) = 1.72$, $p = .181$, $\eta^2_{partial} = .13$). This means that female students, on average, do not significantly enhance their self-efficacy beliefs for negotiating during the simulation process. Results for male and female students are presented in Figure 2.

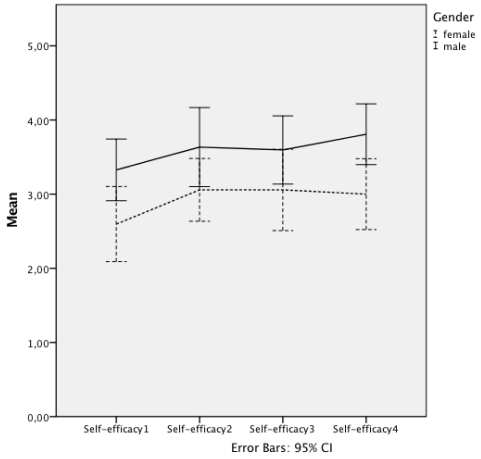


**Fig. 2** Self-Efficacy Development for Male and Female Students

**Conclusion**

Research on the effects of simulations is still struggling to capture related learning outcomes (Baranowski and Weir 2015; Duchatelet et al. 2017). Overall, this study offers an innovative contribution to the field of political science teaching and learning by focusing on the simulation process. First, this study uncovers the simulation process with regard to the development of self-efficacy for negotiating. Second, this study maps individual differences in the development of self-efficacy by taking gender and experience into account.

With regard to the first research question, the hypothesis can be confirmed. Results show a statistically significant increase for self-efficacy for negotiating, as reported in previous research (Cassidy and Eachus 2002; Tang et al. 2004). However, taking a closer look at the trend, self-efficacy does not increase gradually. The graph shows a slope discontinuity when self-efficacy slightly decreases on the third day. Also, the second hypothesis can be confirmed, but not for every day of the simulation. Male students report significantly higher self-efficacy on the first and last day of the simulation. Similar results have been confirmed in previous research (Duchatelet et al. 2017; Schunk and Pajares 2008). The third hypothesis could not be confirmed. The expected variance in self-efficacy depending on students' MUN-experience is lacking. Consequently, some findings call for further clarification and give directions for future research. The discontinuity on the third day could be explained in several ways. Among other reasons, it could be related to the outcome of the last negotiation session, which might be an experience of failure instead of mastery experience. Also, it could be connected to the informal program, as a busy evening program might lead to less hours of sleep and therefore to fewer beliefs in one's negotiation capacities. Further, the general increase for self-efficacy for negotiating might suggest that, as hypothesized, sources of self-efficacy (Bandura 1997) are present in the simulation. However, students may feel more competent because they got their point across during the previous committee meeting (mastery experience), or because they received a compliment from another delegate (social persuasion), or because they observed other delegates performing worse than themselves (vicarious experience). Also, male and female students do not differ significantly on the second and third day of the simulation. Which (situational) aspects could explain these results? Besides, if experience is not of significance, does this mean students do not necessarily transfer their feelings of capability from one simulation to another? Or are situational features more important than experience? Finally, this MUN-simulation was an extra-curricular activity, without any predefined learning objectives, and self-efficacy was measured with regard to negotiating. However, within the context of decision-making simulations, it is not yet known to what extent self-efficacy for negotiating influences predefined learning outcomes of a simulation.

This study is limited by its small sample, which could be the reason for not finding any statistically significant effects for MUN-experience variation. As such, similar research with larger samples is needed to generalize found effects and to further explore found trends, such as the missing significant increase for self-efficacy for negotiating for female students. However, despite this, some important statistically significant effects are found: an increase for self-efficacy for negotiating, and male students who score higher on the first and last day of the simulation. As outlined earlier, some findings call for further clarification. Quantitative research will not be able to provide all these answers. Hence, more in-depth research, using for example a case study-design, might offer more insights in not only how participants develop but also what might be prohibiting and stimulating factors. If we want to know which simulation features are of importance for student learning, more in-depth research is needed.

First insights into the simulation process also raise some practical issues. Teachers have been discussing how to assess simulations for some time now (e.g. Raymond and Usherwood 2013). Considering student learning relates to the simulation process, should this process also be taken into account when assessing? Looking at the process, we can distinguish different types of guidance: a lot of simulations are student-guided (e.g. extracurricular MUN- or EU-simulations), others are more or less teacher-guided, for example when teachers take up the role of secretary. How does this influence the learning process and final learning outcome? Also, current results point into the direction of individual differences, which teachers should take into account if they want all students to take away as much as possible from the simulation exercise.

In conclusion, results confirm that the simulation process and individual differences should be taken into account to better understand simulation effects. More research in this area could enable to connect simulation features to certain learning outcomes, which would serve future simulation design. The latter is particularly of importance for course-embedded simulations, relying on predefined learning goals.

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**Appendix 1. Schedule of the AntwerpMUN-simulation, edition 2016.**

| | **Day 1** | **Day 2** | **Day 3** | **Day 4** |
|---|---|---|---|---|
| 8:30 - 9:00 | Registration | | | |
| 9:00 - 9:30 | " | Committee Session | Committee Session | |
| 9:30 - 10:00 | " | " | " | |
| 10:00 - 10:30 | Opening ceremony | " | " | |
| 10:30 - 11:00 | " | " | " | Committee Session |
| 11:00 - 11:30 | " | Break | Break | " |
| 11:30 - 12:00 | " | Committee Session | Committee Session | Break |
| 12:00 - 12:30 | Reception/lunch | " | " | Committee Session |
| 12:30 - 13:00 | " | " | " | " |
| | | | | **M4** |
| 13:00 - 13:30 | Photo moment | Lunch | Lunch | Lunch |
| 13:30 - 14:00 | Mock debate | " | " | " |
| 14:00 - 14:30 | Committee session | Committee Session | Committee Session | " |
| 14:30 - 15:00 | (Opening speeches) | " | " | Committee Session |
| 15:00 - 15:30 | " | " | " | (Final draft resolutions) |
| 15:30 - 16:00 | Break | " | " | |
| 16:00 - 16:30 | Committee Session | Break | Break | Closing ceremony |
| 16:30 - 17:00 | " | Committee Session | Committee Session | Awards |
| 17:00 - 17:30 | " | " | " | |
| 17:30 - 18:00 | " | " | " | |
| | **M1** | **M2** | **M3** | |
| 21:00 - 21:30 | Pub crawl | Quiz | | |
| 21:30 - 22:00 | " | " | | |
| 22:00 - 22:30 | " | " | Gala | |
| 22:30 - … | " | " | " | |

Formal program
Informal program
Measurements