# Modelling the Workplace Incivility with Prosocial and Antisocial Cues to Predict Psychological and Organizational Exit

Jordan Richard Schoenherr & Kim Nguyen

Jordan.Schoenherr@Carleton.ca
KimNguyen3@cmail.carleton.ca
Department of Psychology, Carleton University

**Abstract.** Incivility has become a growing concern whether in online communication of interpersonal interaction in the workplace. Workplace incivility is defined as a mild form of deviant behaviour that is observed within a group within the workplace. In contrast to seeing incivility as a number of idiosyncratic behaviours or along a continuum of certainty in intentionality, the present study defines incivility in terms of decisional uncertainty. Our multi-agent accumulator-based model (MADI) assumes incivility reflects response uncertainty when a social agent has accumulated an equivalent quantity of prosocial and antisocial cues in separate accumulators. This also implicates two forms of uncertainty (indifference and ambivalence) reflecting distinct kinds of incivility. Using disrespectful cues, we additionally demonstrate that MADI can be used to model workplace phenomenon such as psychological exit and organizational exit.

**Keywords:** Incivility, Decisional Certainty, Disrespectful Behaviour, Accumulator Model

## 1 Introduction

### 1.1 Incivility: Prosocial and Antisocial Cues and Ambivalence

Workplace incivility has typically defined by the degree of uncertainty that a group members experience when they attempt to determine the intentions of another group member (Andersson & Pearson, 1999). As a consequence of the reciprocity norm, small violations can lead to a "spiral of incivility" wherein progressively more antisocial behaviour is observed over time. In the present study, we consider a measure of incivility as a result of accumulated disrespectful social cues. We assume that the relationship between incivility and reductions in organizational commitment associated with incivility suggest that the proportion of disrespectful cues predict the probability that a social agent will experience psychological exit or organizational exit. Using a multi-agent accumulator-based decision-making of incivility (MADI), we demonstrate that disrespectful reciprocal behaviour and perceptions of disrespect can be dissociated. Moreover, the ability to predict psychological and organizational exit

can be used as an administrative tool to estimate reductions in productivity and turnover within an organization.

## 2 Social Judgment Uncertainty and Ambivalence

Incivility has not been a focus of extensive modelling (cf. Schoenherr & Nguyen, 2018; Schoenherr & Nguyen, in preparation). In contrast to conceptual models of incivility (Andersson & Pearson, 1999), we consider an account of incivility that considers it in terms of discrete information processing events. Following models of decision-making, we assume that prosocial and antisocial cues are retained in separate accumulators. Previously, we assumed incivility can be understood in terms of decisional uncertainty (for a review, see Baranski & Petrusic, 1998). In any given social interaction, a social agent's perception of incivility is determined by examining the number of prosocial and antisocial cues, the smaller the difference between these cues, the more ambiguous the intentions of another social agent. We found that an uncertainty-based model of incivility (referred to hereafter referred to as MADI) was was capable of producing patterns of performance described in the incivility literature.

The use of an accumulator-based model also has important theoretical implications for how incivility can be understood. In terms of Andersson and Pearson (1999) initial formulation, incivility appears to be a unidimensional construct. According to them, incivility reflects an intermediate form of behaviour that does not reach the threshold of disrespect but falls short of respectful behaviour. In terms of an accumulator-based model, incivility can be understood as the presence of a small number of antisocial cues or the absence of a sufficient quantity of prosocial cues.

If Andersson and Pearson's (1999) account of incivility can be understood in these terms, it fails to acknowledge other possible conjoint states of a model that has both prosocial and antisocial social cues available to it. For instance, in contrast to the assumption that positive and negative stimulus events are located on the same continuum (i.e., more positive = less negative), an object or event can be associated with positive and negative affect as well as avoidance and approach behaviours (BIS/BAS; Carver & White, 1994). If both of these systems are activated simultaneously, a social agent would experience ambivalence.

Following from MADI's assumption that separate accumulators are used for prosocial and antisocial cues, four possible kinds of behaviours can be observed. When the prosocial accumulator has reached a response threshold whereas the antisocial accumulator has acquired few social cues, we assume a social agent is experience unambivalently respectful behaviour (1). Similarly, when the antisocial accumulator has reached a response threshold whereas the prosocial accumulator has acquired few social cues, we assume a social agent is experience unambivalently disrespectful behaviour (2). In contrast, ambivalent behaviours (3) would be evidenced when *both* prosocial and antisocial accumulators contain a large quantity of social cues. Similarly, (4) indifference would be evidence when *both* prosocial and antisocial accumulators contain only a small quantity of social cues.

At a conceptual level, uncertainty and ambivalence reflect similar phenomenon. Whereas uncertainty in models of confidence reflects the accumulation of a comparable number of social cues for either response alternative, ambivalence reflects the accumulation of a large number of prosocial and antisocial cues. However, a crucial distinction between these two is that uncertainty can result from the accumulation of a *small* but equal number of prosocial and antisocial cues. In this case, social agents are likely to experience indifference. Thus, using uncertainty as a measure of an incivility does not differentiate between indifferent and ambivalent responses. In the present study, we used MADI to examine how one form of uncertainty (i.e., ambivalence) can be used to model incivility.

Another feature of MADI has more practical applications. In addition to this taxonomy of interpersonal behaviour, the accumulator states of MADI can also be used to examine other features of organizational behaviour: psychological and organizational exit. A combination of these accumulated social cues is then used to determine whether a social agent stays within a working group but mentally disengages (psychological exit) or whether they wish to leave a working group and the organization (organizational exit). Thus, psychological exit can act as a proxy for incivility.

### 2.1 Multi-Agent Accumulator-Based Model.

Our model of incivility uses social agents defined by two parameters: social cue identification accuracy (c) and behavioural response threshold. On any given trial, we assume that a social agent accumulates social cues, that the sort them into one of two accumulators, and the respond when a criterion amount of evidence has been accumulated. Social cue identification accuracy reflects the extent to which a social agent can accurately identify a given social cue. We assume that accuracy varies from guessing ($c$ = 0.5) and correct ($c$ = 1.0). Behavioural response threshold are used to initiate a response once a social agent has accumulated a certain number of social cues.

Social interaction is modelled by using the output of one social agent as the input to the next social agent. In our previous model (Schoenherr & Nguyen, 2018), perceived incivility used a measure of scale response confidence. Adopting Vickers (1979) confidence model, we computed certainty in terms of the proportion of evidence for the dominant response relative to the total accumulated evidence for dominant and nondominant responses, i.e., Certainty = $A_D$ / ($A_D$ + $A_N$). We also assumed that incivility reflects *either* respectful (R) or disrespectful (D) decisions associated with *low response certainty*. Thus, incivility is given by the equation: Incivility = ($A_R$ and $A_D$ | Certainty ≤ .66). In our multi-agent accumulator model, we additionally assumed that social agents maintain a prototypical representation of respectful behaviour, i.e., a group norm.

In the current model, we instead assume that social agents maintain a prototypical representation of *both* respectful and disrespectful behaviours by averaging the social cues from one trial to the next. Then, on any given trial, social agents sample this average to determine their perceived disrespect. In the current study, we considered whether MADI could provide insight into psychological exit and organizational exit. We assumed that MADI could predict psychological exit by assuming that it would

occur when uncivil behaviour was experienced and that organizational exit could be predicted by assume that it would occur when disrespectful behaviour was experienced. In this case, we assumed that psychological exit was observed when *(p(disrespect. social cues*) = 0.5 and 0.75 and organizational exit was observed when *p(disrespect. social cues)* = 0.75 and 1.00.

## 3 Results and Discussion

### 3.1 Single-Agent Accumulator-Based Model of Incivility using Re-Scaled Ambivalence.

Replicating our previous methods (Schoenherr & Nguyen, 2018), we conducted a single multi-agent simulation to observed how MADI functions in isolation relative to when it is used for social simulations. Unlike our previous simulations, we held social cue identification accuracy constant ($p$ = .65) in order to observe the effects of behavioural response threshold.

Table 1 provides the output of a single simulated social agent. Simulation 1 demonstrated that MADI was affected by changes in a model's behavioural response threshold. An ANOVA of respectful behaviour produced by MADI revealed a significant difference of respectful cues, $F(2, 27) = 13.30$, $MSE = .007$, $p < .001$. Importantly, Bonferonni *post-hoc* comparisons revealed that the only significant differences were obtained between the disrespectful bias condition and respectful ($p$ = <.001) and neutral conditions ($p$ = .001).

**Table 1. Effects of Behavioural Response Threshold Bias on proportion of civil behaviour and disrespectful cues and the number of predicted social agents experiencing psychological and organizational exit.**

| | Civil Behav. | Disrspect. Cues | Psych. Exit | Org. Exit |
|---|---|---|---|---|
| Respect. | .97 | .38 | .43 | .35 |
| Neutral | .94 | .48 | .27 | .22 |
| Disrespect. | .78 | .70 | .13 | .33 |

Perception of disrespect were also significantly affected by behavioural response threshold, $F(2, 27) = 17.64$, $MSE = .015$, $p < .001$. Bonferroni *post-hoc* comparisons again revealed that the only significant differences were obtained between the disrespectful bias condition and respectful ($p$ = <.001) and neutral conditions ($p$ = .007).

Table 1 also illustrates changes in the predicted proportion of psychological and organizational exit observed within each behavioural response threshold condition. It is interesting to note that there were no significant differences in the proportion of organizational exit experienced in MADI, $F(2, 27) = 1.21$, $p$ =.315. In contrast, significant differences were observed in psychological exit, $F(2, 27) = 5.72$, $MSE = .040$, $p$ = .008. Bonferroni *post-hoc* comparisons revealed that the only significant differences were obtained between the disrespectful bias condition and respectful bias condition ($p$ = .007). Thus, social agents leaving a group as a result of extremely negative expe-

riences is a relatively stable phenomenon whereas intermediate forms of social norm violations (i.e., incivility) is affected by the behavioural response threshold. Future studies should investigate whether this changes with a greater number of simulated interactions and whether social cue identification accuracy would affect this result.

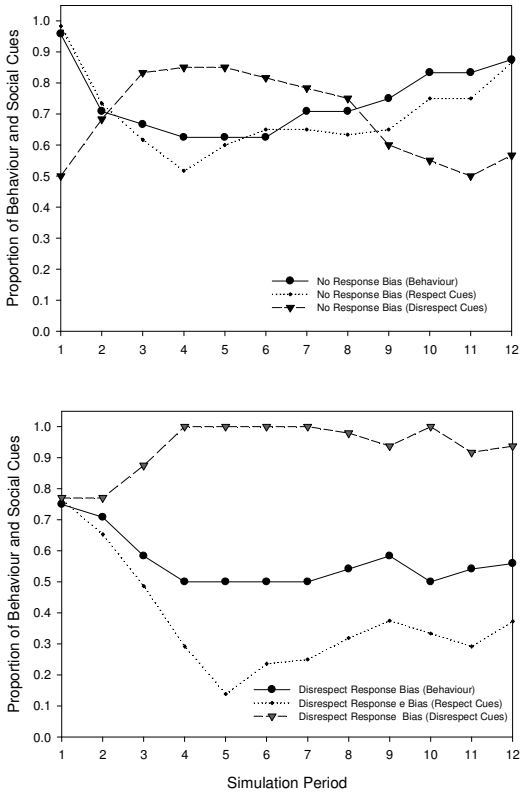


**Figure 1. Effects of no behavioural response bias (top) and disrespectful bias (bottom) on respectful behaviour, respectful and disrespectful social cues.**

### 3.2 Multi-Agent Accumulator-Based Model of Incivility.

In Simulation 2, we examined how the proportion of disrespectful behaviour, perceived disrespect, and psychological and organizational exit changed when social agents interacted using a repeated measures ANOVA. Unlike previous simulations, we limited ourselves to only examining no bias and disrespectful bias condition.

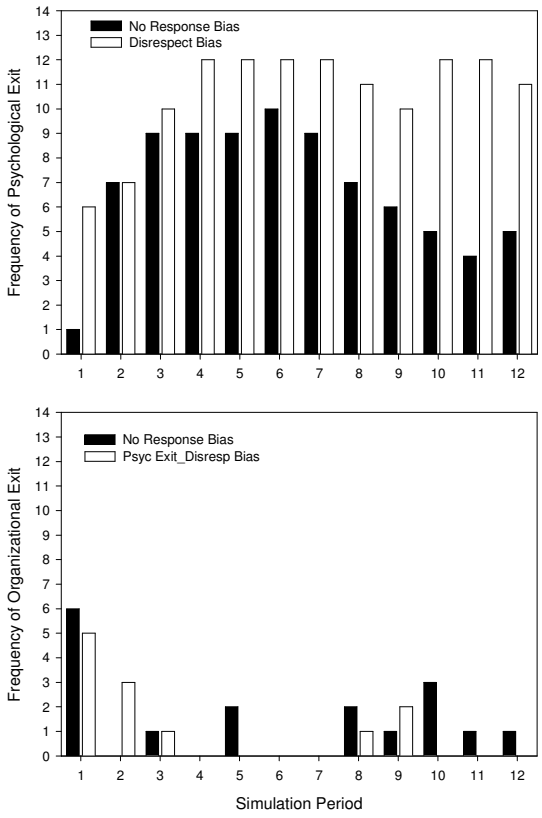


**Figure 2. Frequency of Psychological Exit (top) and Organizational Exit (bottom) produced by the model over 12 simulation periods.**

We obtained a significant interaction of time and behavioural response threshold, $F(11, 242) = 2.44$, $MSE = .063$, $p = .041$, which qualified the significant main effects of time ($F(11, 242) = 5.98$, $MSE = .063$, $p < .001$) and response threshold condition $F(1, 22) = 15.27$, $MSE = .16$, $p = .001$. As Figure 1 demonstrates, while the marginal level of social cue identification accuracy led to a reduction in respectful behaviour in early simulation periods, MADI eventually recovered in the no response bias condition. In contrast, such a recovery was not evidenced in the respectful bias condition.

Our analysis of disrespectful cues revealed a slightly different pattern. We observed significant differences in disrespectful cues over time $F(11, 242) = 3.58$, $MSE = .126$, $p = .005$, and response bias, $F(1, 22) = 13.37$, $MSE = .329$, $p = .001$. However, they did not interact, $F(11, 242) = 2.44$, $p = .041$. Thus, we were able to replicate a dissociation between behaviour and attitudes observed in the literature and in our previous implementations of MADI (Schoenherr & Nguyen, 2018; preparation).

Our analysis of psychological exit revealed a similar pattern. We observed significant effects of time, $F(11, 242) = 6.51$, $MSE = .260$, $p = .041$, and response bias, $F(1, 22) = 12.04$, $MSE = .610$, $p = .002$. Moreover, their interact was only marginally significant, $F(11, 242) = 2.13$, $MSE = .260$, $p = .073$. Given the small number of simulated groups (12), it seems reasonable to interpret this interaction as suggesting that the pattern in Figure 2 is meaningful: psychological exit increases over time, however, within the no bias condition there is a tendency for the social group to recover.

In sharp contrast to psychological exit, organizational exit was only affected by time, $F(11, 242) = 4.84$, $MSE = .183$, $p = .001$. As Figure 2 demonstrates, following some early sessions, organizational exit increased. However, the small number of social agents which felt compelled to leave reduced after an initial increase and remained relatively constant thereafter.

## 3.3 Ambivalence Social Behaviours

In order to examine the possibility that an ambivalence-based model of incivility might provide insight into interpersonal behaviour, the output of the two accumulators was recoded. If the output of an accumulator exceeded the mid-point, it was classified as high (1). If the output of an accumulator did not exceed the mid-point, it was classified as low (0). The combination of two accumulators with high- or low-quantities of social cues presents four possible outcomes: respectful perception (0,1), disrespectful perception (1,0), ambivalent perception (1,1), and indifferent perception (0,0). As we examined the social agents under accuracy stress in this implementation of MADI, we did not examine the indifferent cases, i.e., those cases wherein neither accumulator was capable of exceeding the behavioural response threshold.

**Table 2. Recoded output for both the prosocial and antisocial cue accumulators for percentage of behaviours perceived by social agents in the behavioural response bias conditions.**

| | **Respectful Behaviour (1,0)** | **Ambivalent Behaviour (1,1)** | **Disrespectful Behaviour (0,0)** |
|---|---|---|---|
| **Neutral** | 31.3 | 36.7 | 31.9 |
| **Disrespect** | 7.6 | 18.1 | 74.3 |

As Table 2 demonstrates, in the neutral condition, more ambivalent behaviour (i.e., incivility) was observed with smaller, equal number of respectful and disrespectful behaviours being produced. In contrast, in the disrespectful condition, disrespectful behaviours dominated response selection with MADI producing fewer ambivalent behaviours or respectful behaviours. The reclassification of results, replicates our previously implementation of MADI that considered uncertainty (Schoenherr & Nguyen, 2018). This is not surprising given that uncertainty require comparable levels of accumulated prosocial and antisocial cues and that ambivalence reflects a special case, i.e., a large quantity of both prosocial and antisocial cues. However, given that uncertainty responses defined by a small quantity of accumulated prosocial or antisocial cues reflects indifference, it is possible that social agents would response to these

social interactions in a qualitatively different manner (e.g., fail to encode them into memory, discount them). This suggest that empirical studies will be required to determine whether response uncertainty or affective ambivalence provide a better account of incivility.

## 4.0 Conclusions

The results of two simulation add further support for the utility of using a multi-agent accumulator-based model (MADI) to understand the dynamics of incivility within groups. In contrast to our previous model (Schoenherr & Nguyen, 2018), we considered the spiral of incivility observed in groups in terms of the number of disrespectful cues accumulated during a social interaction. We found that the output from MADI produced responses that dissociated attitudes and behaviour as well as predicting discrepancies between psychological and organizational exit experienced by group members over time.

By using an accumulator-based model that uses separate accumulators for prosocial cues and antisocial cues, we also suggest that MADI introduces an important conceptual distinction between four kinds of behaviour depending on the states of the two accumulators. While large quantity of accumulated cues for either prosocial or antisocial behaviour produce unambiguous responses (i.e., respectful or disrespectful), equal quantities of prosocial and antisocial cues will result in ambivalent responses. Conceptually, ambivalence reflects only one kind of uncertainty that can be contrasted with indifference. Indifference would reflect a small number of prosocial and antisocial cues, likely resulting from limited social interaction. These kinds of experience might be differentially weighted in memory or might not be adequately encoded to affect a social agent's perceptions of the group. Consequently, MADI suggest that empirical studies might benefit from attempting to differentiate between forms of incivility based on ambivalence and indifference as these categories of perceived incivility might result in different behaviours used to redress them.

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