

Developing an Operational Measure of Bi-Directional Loyalty for Insider Risk

Research Problem and Challenge

Theory and case studies have proposed that lower *organizational commitment*, or the degree to which an employee is committed to the organization that they work for, is linked to a greater likelihood for insider threat. No research has tested this idea. If Insider Risk Programs are to use organizational commitment to help detect insider risk/threat then a stronger evidence base is required to justify its value, how it should be used, and how it should be measured.

Research Objective

MITRE's insider risk and behavioral psychologist practitioner-researchers completed an applied environment scan and behavioral research study to develop a better understanding of employee organizational commitment, and observable measures effective for insider risk deterrence, detection, and mitigation.

Outcome: Created New Concept of 'Bi-Directional Loyalty'

MITRE's research team reviewed approximately 50 scientific papers examining organizational commitment. The review identified organizational commitment literature is not cohesive or usable because there is no agreed upon definition of organizational commitment, and the quality of measures varies significantly with most being weakly validated or not validated at all. The research on organizational commitment is also not applicable or easily transitioned to insider threat.

Organizational commitment is not the right term to capture the risk for insider threat.

In the review, MITRE's research team comprehensively outlined all behavioral science concepts potentially important for measurement of an organizational commitment-like concept in insider threat – and combined these with findings from an analysis of insider threat cases. The synthesis resulted in MITRE creating the new concept of *Bi-Directional Loyalty (BDL)* which is more applicable to insider threat.

Behavioral Sciences Concepts underlying 'Organizational Commitment'

- Types of organizational commitment (affective, normative, continuance)
- Job satisfaction
- Loyalty
- Organizational relationships
- Self-monitoring
- Trust
- Turnover

Bi-directional Loyalty (BDL) is when an organization and employee demonstrate a positive mutual reliance and overlapping goals, values, and outcomes

BDL can be broken down into three components:



Employee loyalty to Organization



Employee perceptions of Organizational loyalty toward them

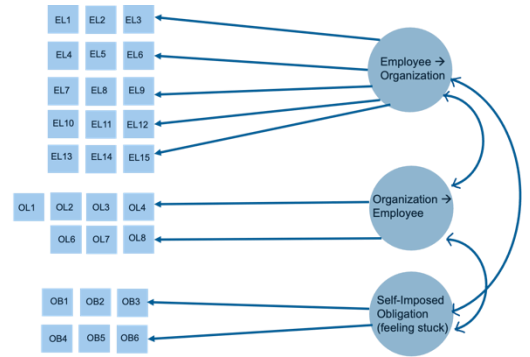


Employee self-imposed obligation (feeling stuck)

Outcome: Developed a Self-Report Bi-Directional Loyalty Measurement Scale

BDL more clearly maps to how insider risk practitioners have thought about organizational commitment anecdotally. The concept is a major new contribution, but will only be useful if research identifies how it can be measured using the types of human, cyber, physical, and organizational sensors available to Insider Risk Programs.

To help, the MITRE research team successfully **developed a 28-item BDL measurement scale to help facilitate more usable research for loyalty and insider threat**. The 28-item measurement scale was reduced from a much longer 78-item version. The 28-item scale was validated using an applied behavioral study with 209 real employees at a Washington D.C. based company in the defense industrial base. In the study, the research team validated the scale as internally reliable. The scale is available to applied behavioral sciences researchers for further applied research into the BDL concept.



Outcome: Developed Bi-Directional Loyalty Manager-Report Measurement Scale

For Insider Risk Programs, MITRE's research team developed a 28-item BDL measurement scale for managers to complete about employees. The scale was validated by comparing 65 manager's ratings about employees with the ratings of the employees themselves. In validation analysis, the manager-report BDL scale was not useful for identifying an *individual employee's* BDL level, but was useful for identifying the average BDL score *across* employees within their immediate management responsibility. The finding indicates that:

BDL may be a more useful concept in identifying potential at-risk groups of employees rather than a potentially higher risk individual employee.

Operationally, Insider Risk Program can use the 28-item manager-report as part of a regular organizational climate survey completed only by managers. Further research is required to develop other operational measure of BDL which can be more automatically measured using the types of human, cyber, physical, and organizational sensors available to Insider Risk Programs. The self-report and manager-reports of the BDL Measurement Scales will be essential to develop, and mostly importantly *validate*, any potential operational measures.

Recommendations and Conclusions

- Managers can provide a "temperature" of employee BDL – overall manager scores (average ratings of employees) can be used to detect overall employee scores (average scores across employees) across all BDL subscales
- Focus on increasing BDL as a risk deterrent – improving BDL is a relatively safe, simple, and inexpensive way to reduce insider risk
- BDL can be combined with other indicators to suggest risk or contribute to individual risk scores
- Further applied behavioral sciences research is required to advance automated BDL measurement and mitigation
- MITRE's initial work has established the scientific infrastructure required to explore the strength of relationship between BDL and insider risk/threat

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