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The Role of ESG Disclosure as a Moderator of the Influence of Transfer Pricing and Managerial Ownership on Tax Aggressiveness in Energy Sector Companies Listed on the IDX (2022–2024)

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Abstract: This study aims to examine the effect of transfer pricing and managerial ownership on tax aggressiveness, as well as to investigate the moderating role of Environmental, Social, and Governance disclosure. The study employs a quantitative approach using multiple linear regression analysis and Moderated Regression Analysis (MRA). The data were collected from the annual reports of energy sector companies listed on the Indonesia Stock Exchange (IDX) over a three-year period. Using a purposive sampling technique, the final sample consisted of 72 firm-year observations from 89 companies. The results indicate that transfer pricing has a positive and significant effect on tax aggressiveness, whereas managerial ownership has no significant effect. Furthermore, ESG disclosure is not found to moderate the relationship between either transfer pricing or managerial ownership and tax aggressiveness. These findings suggest that transfer pricing is one of the determinants of tax aggressiveness in energy sector companies, while ESG disclosure tends to be symbolic in nature and has not yet functioned effectively as a moderating mechanism.

Keywords: tax aggressiveness, transfer pricing, managerial ownership, ESG.

INTRODUCTION

Tax is a major source of government revenue that plays a crucial role in supporting economic development, financing public services, and promoting social welfare. For developing countries such as Indonesia, optimizing tax revenue is a fundamental prerequisite for maintaining fiscal sustainability and financing various national development programs (Hoetama & Carolina, 2024). Despite the government's continuous tax reforms, Indonesia's tax-to-GDP ratio remains relatively low. The Directorate General of Taxes reported that Indonesia's tax ratio reached its highest level of 10.39% in 2022; however, this figure was still among the lowest among G20 member countries and ranked seventh within the ASEAN region, despite Indonesia having the largest Gross Domestic Product (GDP) in Southeast Asia (Arizal, 2023; Nurrahim, 2023). Furthermore, the trend of Indonesia's tax ratio during the 2018–2024 period has fluctuated, indicating that the government's ability to optimize tax revenue has not yet been fully stable.

The low tax ratio reflects a persistent gap between the country's potential tax revenue and its actual tax collection. One factor believed to contribute to this condition is corporate tax aggressiveness (Permata et al., 2021). Tax aggressiveness refers to a company's efforts to minimize its tax burden through various tax planning strategies that exploit loopholes or operate within gray areas of tax regulations. Such practices reduce government tax revenue and, consequently, constrain the government's capacity to finance national development. Suryatna et al. (2023) argue that tax avoidance practices are among the key factors behind the government's failure to achieve its tax revenue targets, while Sulistyawati et al. (2025) emphasize that improving tax compliance largely depends on the effectiveness of tax authorities in building taxpayers' trust. Meanwhile, Anggraeni and Zai (2025) contend that Indonesia's low tax ratio is also attributable to the government's limited tax collection capacity and the relatively low level of taxpayer compliance under the self-assessment system.

Tax aggressiveness has become an increasingly important issue in the era of globalization, as multinational corporations have greater flexibility to shift profits to jurisdictions with lower tax rates (Werastuti et al., 2023). Internationally, tax avoidance is commonly carried out through profit-shifting schemes and income concealment strategies aimed at reducing corporate tax liabilities (Purnamawati et al., 2023). Although such strategies may increase after-tax profits, companies ultimately report lower taxable income, thereby reducing government tax revenues (Adiputra et al., 2019). This issue is particularly relevant in the energy sector, as it is characterized by substantial profits, complex cross-border operations, and a high susceptibility to transfer pricing practices.

Several cases in Indonesia demonstrate the vulnerability of the energy sector to tax aggressiveness. PT Adaro Energy Tbk was allegedly involved in shifting profits to its affiliated entity in Singapore through transfer pricing arrangements, allowing the company to benefit from lower tax rates than those imposed in Indonesia (Wahyuningtias et al., 2025). In addition, PT Bumi Borneo Inti was reported to have exploited a dual management structure and engaged in illegal mining practices to avoid paying taxes on coal sales (Ningsih & Purwasih, 2023). These cases suggest that transfer pricing practices and managerial decision-making can be used as instruments to facilitate corporate tax aggressiveness.

Within the corporate context, transfer pricing is one of the mechanisms most frequently associated with tax aggressiveness. Transfer pricing refers to the pricing policy applied to transactions between related parties and is often utilized by multinational corporations to shift profits from high-tax jurisdictions to countries with lower tax rates (Pratiwi & Herawaty, 2024). Through this mechanism, firms are able to reduce their overall global tax burden. In addition to transfer pricing, managerial ownership is also considered an important determinant of corporate tax decisions. Managerial ownership reflects the proportion of company shares held by managers, making them not only corporate executives but also shareholders (Dewi et al., 2024). This ownership structure has the potential to align the interests of managers with those of shareholders. However, it may also encourage opportunistic behavior, whereby managers pursue tax-saving strategies to maximize shareholder wealth (Olanisebe et al., 2023; Widiastutik et al., 2025). From a corporate governance perspective, institutional pressures may influence how firms make strategic decisions, including those related to tax management, sustainability initiatives, and disclosure practices (Prayudi et al., 2020).

Nevertheless, empirical findings regarding the effects of transfer pricing and managerial ownership on tax aggressiveness remain inconclusive. Several studies report that transfer pricing has a positive effect on tax aggressiveness (Dharmawan et al., 2024; Kolondam & Permatasari, 2024; Mayangsari et al., 2024; V. R. Putri et al., 2024). In contrast, Hasyim et al.

(2022) found that transfer pricing has a negative effect on tax avoidance. Similar inconsistencies have also been observed with respect to managerial ownership. Ashari et al. (2020), Deef et al. (2021), and Meliani and Lesmana (2023) reported that managerial ownership increases tax aggressiveness, whereas Masripah et al. (2025), Najihah et al. (2024), and Sulistiyanto and Tjaraka (2024) documented a negative relationship. These inconsistent findings suggest the existence of contingent factors that have not been adequately considered in previous studies.

To address this research gap, the present study proposes Environmental, Social, and Governance disclosure as a moderating variable. Drawing upon legitimacy theory, firms seek to obtain and maintain social legitimacy by disclosing transparent and accountable information. Globalization has heightened awareness of corporate responsibilities toward society and strengthened expectations regarding corporate social responsibility (Yuniarta et al., 2020). Companies with higher levels of ESG disclosure are likely to face greater scrutiny from investors, regulators, and other stakeholders, thereby reducing their incentives to engage in aggressive tax practices (Mayangsari et al., 2024).

ESG represents a set of criteria used to evaluate the sustainability performance and ethical impact of corporate activities and has become a key consideration in both investment decisions and corporate operations worldwide (Stiawan et al., 2025). The long-term sustainability of a company is closely associated with its economic, social, and environmental performance (Musmini et al., 2021). ESG disclosure is commonly presented in sustainability reports or annual reports, reflecting a paradigm shift in corporate reporting that is expected to continue evolving in the future (Kurniawan et al., 2020). Moreover, sound corporate governance contributes to the production of high-quality financial reports while emphasizing effective financial management processes and stakeholder engagement across social, economic, and political dimensions (Sujana et al., 2020).

ESG disclosure also has the potential to reduce information asymmetry, enhance transparency, and strengthen monitoring mechanisms against managerial opportunistic behavior (Yoon et al., 2021). By improving transparency and accountability, firms can minimize opportunities for managerial abuse of authority. Conversely, weak accountability may undermine oversight mechanisms, increase the risk of fraudulent activities, and ultimately weaken corporate governance structures and organizational integrity (Atmadja et al., 2021). Therefore, effective ESG implementation not only supports corporate sustainability but also reinforces internal control systems in mitigating opportunistic behavior. A growing body of empirical evidence indicates that firms with higher-quality ESG disclosure tend to exhibit lower levels of tax aggressiveness (Agustini et al., 2023; Hanifia & Lastanti, 2025). This evidence is further supported by Carolina et al. (2023), Lee (2024), Okuyama et al. (2025), and Voon et al. (2024), who argue that the adoption of ESG principles promotes more ethical, transparent, and accountable business practices, thereby reducing firms' propensity to engage in tax avoidance.

Although research on ESG and tax aggressiveness has continued to expand, most existing studies have treated ESG as an independent variable, while its role as a moderating variable remains relatively underexplored. A literature review conducted by Saproni et al. (2025) indicates that the majority of prior studies have examined only the direct relationship between ESG and tax avoidance, with very few investigating ESG as a moderating variable. Furthermore, Andrianto et al. (2025) found that research on tax aggressiveness in the energy sector remains limited. Among the 66 articles included in their review, only one specifically focused on energy sector companies. These findings highlight a significant research gap regarding the extent to which ESG disclosure moderates the relationship between transfer pricing, managerial ownership, and tax aggressiveness, particularly within Indonesian energy sector companies.

Based on these considerations, this study aims to examine the effects of transfer pricing and managerial ownership on tax aggressiveness and to investigate the moderating role of ESG disclosure in Indonesian energy sector companies. This study is expected to contribute to the tax and corporate governance literature by integrating agency theory and legitimacy theory to explain corporate tax aggressiveness. Furthermore, the findings are expected to provide valuable insights for tax authorities, regulators, investors, and corporate management in promoting more transparent, accountable, and sustainable tax practices.

METHOD

This study employs a quantitative approach with an explanatory research design. The study utilizes secondary data obtained from companies' annual reports, sustainability reports, and financial statements published on the Indonesia Stock Exchange (IDX) website and the official websites of the respective companies. The research focuses on energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The energy sector was selected because of its distinctive characteristics, including extensive cross-border operations, high environmental risks, and greater public scrutiny compared with other industries. Moreover, firms in this sector are considered to have a higher propensity to engage in transfer pricing practices and tax aggressiveness. The 2022–2024 observation period was chosen because it coincides with the growing implementation of sustainability reporting in Indonesia and the post-pandemic dynamics of national tax revenue, as reflected in fluctuations in the country's tax-to-GDP ratio. The study population consists of all 89 energy sector companies listed on the Indonesia Stock Exchange as of 2024. The sample was selected using a purposive sampling technique based on two criteria: (1) companies that were continuously listed on the IDX throughout the 2022–2024 period, and (2) companies with complete data for all research variables, including accounting income, taxable income, total assets, related-party receivables, total trade receivables, managerial share ownership, total outstanding shares, and sustainability reports. Based on these criteria, the final sample comprised 72 companies, resulting in a total of 216 firm-year observations.

The dependent variable is tax aggressiveness, measured using the Book-Tax Difference (BTD), as this proxy captures the discrepancy between accounting income and taxable income, thereby reflecting tax management and tax avoidance practices (Imani & Irawan, 2025; Jati & Murwaningsari, 2020). The independent variables are transfer pricing and managerial ownership. Transfer pricing is measured by the ratio of related-party trade receivables to total trade receivables (Imani & Irawan, 2025), while managerial ownership is measured by the proportion of shares owned by management relative to the total outstanding shares (Widiyah et al., 2025). The moderating variable is ESG disclosure, measured using an index based on the Global Reporting Initiative (GRI Standards), which encompasses environmental, social, and governance dimensions (Utomo, 2024). In addition, firm size is included as a control variable and is proxied by the natural logarithm of total assets. Data were collected using the documentation method by reviewing annual reports, sustainability reports, and financial statements. The collected data were subsequently tabulated according to the measurement indicators of each variable before being subjected to statistical analysis. The data were analyzed using panel data regression with the assistance of Stata software. The appropriate estimation model was determined through the Chow test, Hausman test, and Lagrange Multiplier test to identify the most suitable specification among the common effects, fixed effects, and random effects models. Furthermore, the moderating effects were examined using Moderated Regression Analysis (MRA) by constructing interaction terms between transfer pricing and ESG disclosure, as well as between managerial ownership and ESG disclosure.

RESULTS AND DISCUSSION

Before conducting hypothesis testing, a descriptive statistical analysis is performed to provide an overview of the research data. The results of the descriptive statistical analysis are presented below.

Table 1. Descriptive statistical test results

	Obs	Mean	Std. Dev	Min	Max
Tax aggressiveness (Y)	216	-1.106	1.072	-5.631	0.000
Transfer pricing (X_1)	216	0.163	0.224	0.000	0.969
Managerial ownership (X_2)	216	0.127	0.153	0.000	0.761
ESG disclosure (Z)	216	0.585	0.120	0.349	0.873
Firm size (C)	216	1.335	0.075	1.114	1.464

Source: Data is processed (2026)

As presented in Table 1, the tax aggressiveness variable exhibits relatively low variation, indicating that the level of tax aggressiveness is fairly homogeneous across the sampled firms. Both transfer pricing and managerial ownership have relatively low mean values, suggesting that the intensity of related-party transactions and the proportion of shares owned by management remain limited in most companies. Meanwhile, ESG disclosure is observed at a moderate level, indicating that the implementation of sustainability reporting has not yet been fully optimized. Firm size, on the other hand, records a relatively high average value, implying that the majority of the sampled firms are large-scale companies. Subsequently, model suitability was assessed using the Chow test, Hausman's test, and Lagrange Multiplier test. The results of the model selection tests are presented in Table 2.

Table 2. Model suitability test results

Test	Standard	Results	The selected model
Chow's test	Prob Cross Section > 0.05 (CEM) Prob Cross Section < 0.05 (FEM)	Prob Cross Section 0.000 < 0.05	Fixed Effect Model
Hausman's test	Prob chi2 > 0.05 (REM) Prob chi2 < 0.05 (FEM)	Prob chi2 0.122 > 0.05	Random Effect Model
Lagrange Multiplier test	Prob chibar2 < 0.05 (REM) Prob chibar2 > 0.05 (CEM)	Prob chibar2 0.000 < 0.05	Random Effect Model

Source: Data is processed (2026)

Based on the model suitability test results, the Random Effect Model (REM) was selected. Furthermore, the results of the Random Effect Model regression analysis are summarized in Table 3.

Table 3. Direct effect regression model

Y	Coef.	Std. Err	z	P>|z|	[95% Conf.	Interval]
Transfer pricing (X_1)	0.851	0.371	2.30	0.022	0.124	1.577
Managerial ownership (X_2)	-0.029	0.577	-0.05	0.960	-1.159	1.102
ESG disclosure (Z)	0.007	0.720	0.01	0.992	-1.405	1.419
Firm size (C)	2.448	1.266	1.93	0.053	-0.033	4.929
cons	-4.513	1.795	-2.51	0.012	-8.032	-0.995

Source: Data is processed (2026)

$$Y = -4.513 + 0.851X_1 - 0.029X_2 + 0.007Z + 2.448C + e \ \ldots\ldots \ (1)$$

The regression coefficient for the transfer pricing variable is 0.851, indicating that a one-unit increase in transfer pricing is associated with an 85.1% increase in tax aggressiveness, assuming all other variables remain constant. The first hypothesis (H_1) yields a probability value of 0.022, which is below the 0.05 significance level. These results indicate that transfer pricing has a positive and statistically significant effect on tax aggressiveness. Therefore, **H_1 is accepted**.

The regression coefficient for managerial ownership is −0.029, indicating that a one-unit increase in managerial ownership is associated with a 2.9% decrease in tax aggressiveness, holding all other variables constant. However, the second hypothesis (H_2) produces a probability value of 0.960, which exceeds the 0.05 significance level. This finding indicates that managerial ownership has no statistically significant effect on tax aggressiveness. Therefore, **H2 is rejected**.

The interaction (moderation) analysis was conducted to examine whether the moderating variable strengthens or weakens the relationship between the independent variables and the dependent variable. The results of the regression model after incorporating the interaction terms are presented below.

Table 4. Moderation regression model

Y	Coef.	Std. Err	z	P>|z|	[95% Conf. Interval]	
Transfer pricing (X_1)	-0.455	1.671	-0.27	0.785	-3.729	2.819
Managerial ownership (X_2)	-1.582	2.738	-0.58	0.563	-6.948	3.784
ESG disclosure (Z)	-0.625	0.997	-0.63	0.531	-2.580	1.329
Transfer pricing x ESG disclosure (X_1.Z)	2.549	3.146	0.81	0.418	-3.616	8.716
Managerial ownership x ESG disclosure (X_2.Z)	2.893	4.995	0.58	0.563	-6.898	12.684
Firm size (C)	2.603	1.289	2.02	0.043	0.076	5.129
cons	-4.371	1.822	-2.40	0.016	-7.942	-0.800

Source: Data is processed (2026)

$$Y = -4.371 - 0.455X_1 - 1.582X_2 - 0.625Z + 2.549X_1.Z + 2.893X_2.Z + 2.603C + e \text{ ……. (2)}$$

After incorporating ESG disclosure as a moderating variable, the regression coefficient for transfer pricing increases to 2.549, indicating that a one-unit increase in transfer pricing is associated with a 254.9% increase in tax aggressiveness, holding all other variables constant. However, the interaction effect is not statistically significant, as the probability value for the third hypothesis (H_3) is 0.418, which exceeds the 0.05 significance level. This finding indicates that ESG disclosure does not moderate the relationship between transfer pricing and tax aggressiveness. Therefore, **H_3 is rejected.**

Similarly, after including ESG disclosure as a moderating variable, the regression coefficient for managerial ownership is 2.893, indicating that a one-unit increase in managerial ownership is associated with a 289.3% increase in tax aggressiveness, assuming all other variables remain constant. Nevertheless, the interaction effect is statistically insignificant, with the probability value for the fourth hypothesis (H_4) equal to 0.563, which is greater than the 0.05 significance level. Accordingly, ESG disclosure does not moderate the relationship between managerial ownership and tax aggressiveness. Therefore, **H_4 is rejected.**

Discussion

The Effect of Transfer Pricing on Tax Aggressiveness

The findings indicate that transfer pricing has a positive and statistically significant effect on tax aggressiveness among energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. This result is consistent with agency theory, which suggests that managers have incentives to minimize corporate tax liabilities by implementing transfer pricing strategies that shift profits among affiliated entities within a corporate group to jurisdictions with lower tax rates (Adiguna & Ritonga, 2024; Alkausar et al., 2023). Although such practices may enhance tax efficiency, they also expose firms to potential tax penalties and reputational risks if they fail to comply with the arm's length principle (Bakhram et al., 2021; Jakfar & Nuraini, 2025; Sagala et al., 2026).

These findings are consistent with those of Nugraha and Firmansyah (2025) and Paulus et al. (2025), who argue that transfer pricing is frequently employed as a profit-shifting mechanism to facilitate tax avoidance. The results are further supported by evidence from several Indonesian corporate cases, including PT Adaro Indonesia and PT Lanna Harita Indonesia, which demonstrate that related-party transactions may be used to reduce corporate tax burdens (Anonim, 2025). Accordingly, the findings suggest that higher levels of transfer pricing are associated with greater tax aggressiveness, corroborating the results reported by Mayangsari et al. (2024), Kolondam and Permatasari (2024), and Dharmawan et al. (2024).

The Effect of Managerial Ownership on Tax Aggressiveness

The findings indicate that managerial ownership has no significant effect on tax aggressiveness among energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. From the perspective of agency theory, managerial ownership is expected to align the interests of managers with those of shareholders, thereby reducing opportunistic behavior in corporate tax decision-making (Martiana & Husnaini, 2024). However, the results suggest that the proportion of shares owned by management is not sufficiently large to influence corporate tax policies (Rahma & Masripah, 2024; Ramadhanti et al., 2025).

This finding may be attributed to the relatively low level of managerial ownership observed across the sample, as well as the complex ownership structures and corporate governance characteristics of firms in the energy sector. Consequently, tax-related decisions are more likely to be determined by controlling shareholders or institutional investors rather than by managers themselves (Ridhawati & Mulyani, 2022). Furthermore, the highly regulated nature of the energy sector encourages firms to adopt more prudent tax strategies, thereby limiting the influence of managerial ownership on tax aggressiveness (Agyemang & Modisane, 2025; Sudirman & Marsudi, 2025). This interpretation is supported by the descriptive statistics, which indicate that the average level of managerial ownership is relatively low. The findings are also consistent with those reported by Fauziah and Cahyani (2025), Hidayat and Damayanti (2021), Saraswati and Sutadji (2023), and Yuliyanti and Oktavianna (2025), all of whom conclude that managerial ownership does not have a significant effect on tax aggressiveness.

The Moderating Role of ESG Disclosure on the Effect of Transfer Pricing on Tax Aggressiveness

The results indicate that ESG disclosure does not moderate the relationship between transfer pricing and tax aggressiveness among energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. This finding suggests that the extent of ESG disclosure does not influence the association between transfer pricing practices and tax aggressiveness. From the perspective of legitimacy theory, firms disclose ESG information to obtain and maintain legitimacy in the eyes of stakeholders. However, ESG disclosure does not necessarily reflect substantive corporate practices and may instead function primarily as a tool for enhancing corporate image and reputation (Aprullah et al., 2025; I. L. Putri et al., 2025; Zahra, 2025). Consequently, higher levels of ESG disclosure do not directly affect corporate tax policies, including transfer pricing practices.

Although ESG regulations in Indonesia have continued to evolve, the quality of implementation and the consistency of ESG reporting remain heterogeneous compared with those of several other ASEAN countries. As a result, ESG has not yet fully functioned as a corporate governance mechanism capable of influencing firms' strategic decisions (Ahmad et al., 2025). In the energy sector, companies are simultaneously under pressure to maintain legitimacy through ESG disclosure while preserving financial performance through tax efficiency strategies, including transfer pricing (Mitroulia et al., 2025). Therefore, the findings suggest that ESG disclosure in this context is largely symbolic rather than substantive, limiting its ability to moderate the relationship between transfer pricing and tax aggressiveness.

The Moderating Role of ESG Disclosure on the Effect of Managerial Ownership on Tax Aggressiveness

The findings indicate that ESG disclosure does not moderate the relationship between managerial ownership and tax aggressiveness among energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period. This result suggests that the extent of ESG disclosure does not influence the relationship between managerial ownership and tax aggressiveness. From the perspective of legitimacy theory, ESG disclosure represents a firm's effort to obtain and maintain legitimacy by communicating its environmental and social responsibilities to stakeholders (Siddique et al., 2026). ESG scores derived from corporate disclosures, offer measurable insights into the extent to which companies integrate sustainable practices into their operations and demonstrate commitment to responsible business conduct (Stiawan, 2026). However, ESG disclosure appears to function primarily as an external communication and monitoring mechanism rather than as an internal governance mechanism capable of influencing corporate tax policies (Firmansyah et al., 2025). In energy sector companies, which are characterized by complex ownership structures and stringent regulatory environments, tax-related decisions are more likely to be determined by controlling shareholders and the firm's overall strategic objectives, thereby limiting the influence of both managerial ownership and ESG disclosure.

Furthermore, ESG implementation in Indonesia remains relatively uneven compared with that of several other ASEAN countries. Consequently, ESG disclosure has not yet evolved into an effective corporate governance mechanism capable of shaping firms' strategic decisions, including tax policies. These findings are consistent with those of Vraza et al. (2024) and Widiastutik et al. (2024), who likewise found that ESG disclosure does not moderate the relationship between corporate governance mechanisms and tax avoidance.

CONCLUSION

Based on the findings, this study concludes that transfer pricing has a positive and statistically significant effect on tax aggressiveness, indicating that a higher level of transfer pricing is associated with a greater propensity for firms to engage in aggressive tax practices. In contrast, managerial ownership has no significant effect on tax aggressiveness, suggesting that the proportion of shares held by management is insufficient to influence corporate tax policies. Furthermore, ESG disclosure does not moderate the relationships between either transfer pricing or managerial ownership and tax aggressiveness. These findings imply that the current level of ESG disclosure has not yet functioned as an effective corporate governance mechanism for mitigating tax aggressiveness among energy sector companies listed on the Indonesia Stock Exchange during the 2022–2024 period.

Energy sector companies are encouraged to strengthen oversight of transfer pricing practices to ensure compliance with the arm's length principle and to enhance the substantive implementation of ESG by integrating tax transparency and tax responsibility into their corporate sustainability strategies. For regulators, stronger monitoring of related-party transactions and further improvements in the standards and quality of ESG disclosure are necessary to enhance its effectiveness as a corporate governance mechanism. Future research is encouraged to incorporate additional control variables, employ alternative measurement proxies, expand the research scope by including different industries and longer observation periods, and consider alternative analytical approaches to generate more comprehensive findings with greater generalizability.

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